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ON THE SECOND ISSUE OF THE EUROPEAN JOURNAL Of PUBLIC PROCUREMENT MARKETS

The first issue of this Journal was devoted to the transposition of the 2014 Public Procurement Directives and this second issue covers topics from different disciplines answering to 5 questions quite crucial to the improvement of public markets:

a) How to stimulate innovation in public procurement?

b) How to deal with open data policy?

c) How to subdivide contracts into lots increasing the access to SMEs?

d) How to manage public procurement of engineering services?

e) How to promote professionalization in public procurement?

All these questions are also directly related with major European Union policy lines stemming from the EU 2020 Agenda as well as from the 2014 Directives on Public Procurement and the editors hope that this issue will contribute to the process of modernization of Public Procurement in Europe as most evidences collected from different countries seem indicate that such process is slower than expected as it remains quite significant the gap between the new policy lines and most current practices adopted to form and to execute public contracts.

Chief Editors

Luís Valadares Tavares, University of Lisbon, Lisbon.

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Lisbon and Rome, December 2019

RESEARCH AND POLICY PAPERS

Public Procurement of Innovation: A Cultural Challenge!

Luis Valadares Tavares

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.

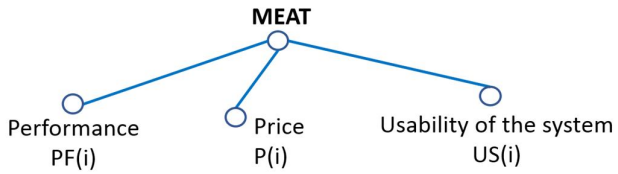
D - General adoption of the single criterion "*minimal price*" to evaluate tenders

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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REFERENCES

- Arantes, A., Costa, A.A., Tavares, L.V. 2013, The evaluation of mandatory e-public procurement in portugal: perceptions and results of the national survey (2010-2012) em Tavares, L.V., ed., 2013, Proceedings of the 1st European Conference on e-Public Procurement (ECPP): E-Public Procurement in Europe : Public Management , Technologies and Processes of Change, OPET.
- Aroso de Almeida, M., 2016, Teoria Geral do Direito Administrativo, 3ª edição, Almedina.
- Assis Raimundo, M., 2013, A Formação Dos Contratos Públicos. Uma Concorrência Ajustada Ao Interesse Público, AA FDL.

- Ben Khelil, K., 2018, Transposition of the 2014 European Directives on public procurement by France, European Journal of Public Procurement Markets 1st Issue pp. 17-26.
- Craig, P, 2012, EU Administrative Law, 2ª ed., Oxford Press.
- Costa, A.A., Arantes, A. e Tavares, L.V., 2013, Evidence of the impacts of public e-procurement: the portuguese experience, *Journal of Purchasing and Supply Management,* 19(2013), pp. 238-246.
- Court of Justice of the European Union, Judgement of the Process C-546/16 of 20 September of 2018, available at:

  http://curia.europa.eu/juris/liste.jsf?language=en&td=ALL&num=C-546/16
- Cunha Rodrigues, N., 2015, A contratação pública como instrumento de política económica, Tese de Doutoramento, Almedina Brasil.
- Estorninho, M.J., 2016, A transposição das Diretivas europeias de 2014 e o Código dos Contratos Públicos: por uma contratação pública sustentável e amiga do bem comum em Estorninho, M.J, ed., A Transposição das Diretivas Europeias de 2014 e o Código dos Contratos Públicos, 2016, Instituto de Ciências Jurídico-Políticas.
- European Commission, 2017, a), Guidance on Public Procurement of Innovation – Working Document, European Commission
- European Commission, 2017, b), Special Eurobarometer 470 - Corruption, European Commission
- Feliu, J.M.G., 2014, Compra Pública Estratégica, *Heraldo de Aragon*, 28, janeiro.
- Georghiou, L., Edler, J., Uyarra, E., Yeow, J., 2014, Technological Forecasting & Social Change 86 (2014) pp. 1-12
- Guidi, V., 2018, The transposition of the 2014 Directives on public procurement into the Italian law: a challenge for a deep reform of the Italian public procurement system, European Journal of Public Procurement Markets 1st Issue pp. 49-55
- Maradana, R. P, Pradhan, R. P., Dash, S., Gaurav, K., Jayakumar, M. and Chatterjee, D., 2017, Does innovation promote economic growth? Evidence from European Countries, Journal of Innovation and Entrepreneurship (2017) 6:1
- Marktest, 2018, Barómetro de Telecomunicações da Marktest - Janeiro de 2018, Marktest
- Mazzucato, M.; 2018; The Value of Everything: Who Makes and Who Takes from the Real Economy; PublicAffairs
- Otero, P, 2016, Manual de Direito Administrativo, Almedina.
- Piga, G., Thai, K., 2007, The Economics of Public Procurement, Macmillan.
- Ministère de l'économie, de l'industrie et du numérique, Décret n° 2016-360 du 25 mars 2016 relatif aux marchés publics, Journal Officiel de la République Française n°0074 du 27 mars 2016 texte nº 28, République Française

- Saastamoinen, J., Reijonen, H., Tammi, T., 2018, Should SMEs pursue public procurement to improve innovative performance, Technovation 69 (2018) pp. 2-14
- Schumpeter, J.A.; 1954; History of Economic Analysis, Allen & Unwin
- Solow, R.M., 1987, Growth Theory and After,Nobel Prize in Economics documents 1987-1, Nobel Prize Committee
- Tátrai, T., 2018, Public Procurement culture after accession to the EU – The case of a Central European transition country, European Journal of Public Procurement Markets 1st Issue pp. 57-66
- Tavares, L. V., Coelho, J.S, Maia, P., 2008, O Modelo e o Software SIAP 2008 para avaliação de propostas e candidaturas segundo o Código dos Contratos Públicos (DL18/2008), OPET.
- Tavares, L.V., 2009, A avaliação das propostas segundo as Diretivas 2004/17/CE e 2004/18/CE e o código dos contratos públicos, *Revista do Tribunal de Contas* nº50/56, julho-Dez 2008.
- Tavares, L.V., 2011, A strategy to reduce public expenditure based on e-tendering and procurement business inteligence: the case of Portugal, Vortal.
- Tavares, L.V., ed., 2013, Proceedings of the 1st European Conference on e-Public Procurement (ECPP): E-Public Procurement in Europe : Public Management , Technologies and Processes of Change, OPET.
- Tavares, L.V., ed., 2014, Proceedings of the 2nd European Conference on e-Public Procurement (ECPP): New Developments on E-Public Procurement, OPET.
- Tavares, L.V., Medeiros, R., Coelho, D., 2014, "The New Directive on 2014/24/EU on Public Procurement", OPET
- Tavares, L.V, 2017, O Guia da Boa Contratação Pública: As Diretivas e o DL 111-B/2017, OPET
- Tavares, L.V., 2018, The transposition of the 2014 EU Directives on Public Procurement by Portugal: woes and expectations, European Journal of Public Procurement Markets 1st Issue pp. 37-48

Utilizing Open Data: A Primer for Public Procurement Research

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Abstract:

Numerous open data initiatives by governments around the globe ostensibly promote better transparency and accountability, yet questions have arisen regarding the immediate usability of these datasets. This research reports on an attempt to utilize purchasing data published under the open data program of the European Union, which provides all expenditure data over certain thresholds from 33 European countries. However, the data and its informational quality as it has been published in CSV format leaves holes in trying to close that accountability gap across countries. This case study offers a recursive model which clearly conceptualizes the quality of data and information, and the research serves as a functional primer warning for users of the experientially-based issues of utilizing this and other open data. Key findings illuminate potential issues when working with open data and provide eight specific caveats on how to navigate the open data initiatives by governments.

Keywords:

open data; data quality; information quality; public procurement; purchasing; transparency; accountability; corruption prevention; European directives; TED.

1. Introduction

The concept and associated practices commonly known as 'open government data' have been around for well over a decade (Blakemore & Craglia, 2006), and its availability emanates from the "*right to information*" (Chun, et al., 2010; Organization for Economic Co-operation and Development, 2008). In terms of government practices, data provided by governments (open data) leads to usable information that generates particularized knowledge that promotes political, social, and economic transformation (Verhulst & Young, 2016). Recently, open data initiatives have fallen more broadly under the umbrella of Electronic Government (Chun, et al., 2010; Davies, 2013; Jaeger, 2003).1 Electronic Government (e-Gov) is often contextualized as the use of information technology to enhance the efficiency, effectiveness, transparency, and accountability of governments (see Jaeger, 2003; Janssen, 2011; Kraemer & King, 2003; Norris & Lloyd, 2006; World Bank, 2012).

Generally, open data refers to government initiatives that make both raw data and information in the public sphere available to be used and repurposed. While researchers of open data often emphasize their potential advantages (Chun, et al., 2010) open data initiatives are not without limitations (Zuiderwijk, et al. 2012; Martin, et al. 2013). For example, maintaining national security or protecting the privacy of citizen data limits the availability of certain types of data for public consumption. It is important to remember, however, that data are simply raw observable

1 While the literature distinguishes e-government from e-governance (see for example, Marche and McNiven, 2003), the current research focuses on open data and doesn't address this debate

facts or figures and only when data are contextualized to make them usefully meaningful are data transformed into "information."

But recent observations attest to the fact that while Sir Tim Berners-Lee argues that free open data are "*a great way to put power in the hands of citizens*" (Information Age, 2015), the World Wide Web Foundation (2015) reports that fewer than 8% of countries provided data on government budgets and spending, public sector contracts, and company ownership under open formats and open license agreements. This is hardly consistent with Anti-Corruption Open Data Principles (2015) advocating that open data needs to be available online; machine-readable in bulk so that it can be downloaded as one dataset and easily analyzed; free of charge; and open-licensed so that anyone has permission to use and reuse the data. However, examination of open government initiatives such as the European Union Open Data Portal (https://data.europa.eu/euodp/home) and other programs reveal substantial issues involving poor data quality (World Wide Web Foundation, 2017), and this has resulted in much research providing frameworks of quality dimensions or recommendations about open data measurements (Frank and Walker, 2016; Zaveri, et al., 2012). Given that most data quality (DQ) literature focuses on technology-related characteristics (see for example Rula and Zaveri, 2014) that are supply-side oriented, a dearth of studies address the user or demand-side of the open data equation (Frank and Walker, 2016) – the subject of the current article.

The Tenders Electronic Daily (aka TED2), the public procurement open data portal of the European Union provides the basis for this exploratory case study. The TED data is considered "open" in a strict sense (Prier et al., 2018; Davies, 2013), and the focus herein is to examine the quality of the TED data from the point of view of an end-user as the user-experience relates to the ostensible openness promised by e-government. The premise herein is simple: bad data leads to bad information, and bad information often leads to poor decisions which can be extremely costly. Therefore, governments not only have a responsibility of making public data freely available, but it must also ensure that the data provided is free of defect and easily usable. Only when data is open and free of defect can end-users make knowledgeable decisions which in turn, should lead to better governance.

The article is organized as follows. First the relationship between open data and usable information is explicated followed by a brief overview of open data quality frameworks that guide this case study. The next section looks at the TED dataset and its context – followed by some methodological groundwork. The core part of the paper identifies experiential challenges of the TED open data, and the final section provides conclusions and recommendations that may be used to enhance the quality of the TED dataset.

2. Open Data and Information Quality

Governmental webportals have become a key interface between citizens and governments in nearly all societies (Norris and Lloyd, 2006; OECD, 2008). While well-designed online services are able to open up government processes and strengthen the link between citizens and various policy and administrative actors (Chun et al.,2010), in all democratic systems it is transparency that

2 For a complete explanation of the TED initiative of the EU, please see http://data.europa.eu/euodp/en/data/dataset/ted-1.

anchors the relationship between integrity and accountability arising from government conduct. This implies that accountability requires providing answers and remaining responsible to others who have a legitimate claim to demand an account (Bovens et al., 2014). Meeting these goals assumes a requisite level of openness whereby non-government actors (the public) have mechanisms to know what governmental actors are doing. Thus, data about governmental behavior may be used to hold actors of the public sphere accountable for their actions (or inactions).

Increasingly data generated in public policy domains are being captured, digitized, and stored, and data availability can result in two outcomes. First, transparency goals are perceived to be enhanced through improved accessibility, which in turn can promote transactional efficiencies and better planning on the one hand, and greater accountability on the other (Leipold, 2007). Second, clarity in public expenditures used to fulfill public sector objectives, obligations, and activities in the pursuit of desired policy outcomes (Prier and McCue, 2009) can enhance better planning and delivery, as well as promote greater business access and enhance competition. However, even when governments provide data accessibility in an open environment, it should be available in a concise, useable and meaningful manner (Frank and Walker, 2016). This suggests that users of open data must be confident that the data is free of defects and that they are able to utilize the data to make informed decisions whether in the public or private sectors. If open data has defects, such as the data is incomplete, invalid, or not compliant with procedural rules, a data quality (DQ) problem becomes evident. When an end-user utilizes defective data to make decisions, the result is an information quality (IQ) problem, and Figure 1 helps to explain this situation.

Figure 1 - Conceptual Relationships Linking Data, Information, and Decisions

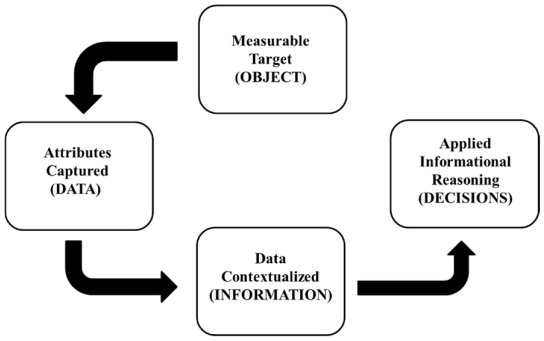

Figure 1 depicts the conceptual relationship between data, information, and decisions adapted to the public procurement decision making situation (see Shannon, 1948; also Liew, 2007). Beginning with the object to be represented or measured, the figure portrays the link between that object and its attributes that may be captured and stored as data. Consequently, discrete objective facts embody the useful features (object attributes) about empirical phenomena that become 'data' consisting of observable representations of a targeted phenomenon or event. Moreover, when each data attribute complies with the rules relating to that piece of data – high levels of data quality are obtained.

Data becomes information when users take and organize the raw data – giving it context – in ways that generate meaning and at which point the data become information. The final linkage in Figure 1 reveals that informed decisions require transforming information to create value for the open data end-user. Thus, data leads to information that undergirds decisions through purposive

application of cognitive reasoning that includes intellectual deliberation as to what, how, and why to apply information that results in effective decisions.

As an example, consider the measurable object to be an actual purchase that takes place on December 1, 2019. When an invoice is created and it registers a purchase date (the data value) as 01-12-2019, all appropriate data is presented to users in a concise and meaningful manner and a high level of information quality can be achieved. However, given the nature of the linkages exhibited in Figure 1, data problems, if they exist, may be inherent in the observations of the object and may be often related to the accuracy and validity of the data attributes. For instance, if a date attribute contains '13' in the month field, this is clearly a DQ problem, and this can then lead to information problems that may or may not become evident when the data is presented for use in a specific context (such as deciding about bidding deadlines, for example). Therefore, DQ problems often lead to IQ issues that may or may not systematically impact informed decisions. In addition, data measurement error issues can also result in IQ problems. For example, a poorly formatted form – while containing all data attributes – can lead the user to misunderstand the appropriate meaning of the data (an object) because the captured attributes are not stored in the appropriate fields. So DQ issues – whether systematic or random, frequently occasion IQ issues thereby making informed decisions problematic.

When a datum complies with all the rules associated with the attribute, transforming DQ into useable and meaningful IQ helps procurement officials to make better decisions. Of course, each linkage in Figure 1 is the result of context generated within and by that coupled association. This implies that context is not confined to the "Information" box but actually anchors the whole recursive process: object selection is done within a context, and so is data capture, yet when the data is stored

in a database or presented in a CSV file, it tends to be stripped of context. All of this suggests that in general, the open data end-user has essentially two options leading to the information box: either attempt to reconstruct the meaning of the object and thus also of the data or create new meaning of the data and hence of the object. These alternative purposes of data manipulation govern the conceptual linkages described above, and it strongly suggests that data in and of itself has no intrinsic value, i.e. absent specified purposes, open data has no intrinsic value proposition.

A logical predicate of good procurement decisions is their basis in appropriate data and information, yet the meanings of DQ and IQ can be elusive and challenging concepts, especially in the context of digitized government data. Scholars use the terms in different research contexts often without establishing clear definitions or only focusing on a narrow aspect of practical application (Wormell, 1990), and when coupled with the evolution of technology, dimensions and frameworks of assessing these issues have changed over time (Glogowska, 2016). Adding potential database (DB) issues (Levitin and Redman, 1995) surrounding timeliness of software updates and DB system reliability, accessibility, usability and security (Fox et al., 1995) multiplies the complexity.

The appreciation of various characteristics associated with the numbers, definitions, and measurability of DQ and IQ has recently emerged (Scannapieco and Catarci, 2002). For instance, the machine readability approach (Erickson et al., 2013) is concerned with linking, finding, relating and reading information typically using automated processes (Rula and Zaveri, 2014), and characteristics typically considered include number of formats, traceability, automated

tracking, use of standards, trustworthiness, authenticity or provenance. Or consider the ambiguous relative construct of "*fit-for-use*" (Wang and Strong, 1996) whereby data or information considered appropriate in one setting may not display acceptable attributes in another (Tayi and Ballou, 1998) thus encumbering measurability and operationalization (Frank and Walker, 2016). Indeed, the problems of data and informational intersubjectivity is not new (see Strong et al., 1997), and they often exude from whether they are related to the data or information itself, its manipulability, or its user intentions, among others (see Emamjome et al., 2013; Klobas, 1995; Naumann and Rolker, 2000; Olaisen, 1990). In summary, it becomes apparent that there are compounding complications from using numerous dimensions to address data and information quality, but adopting a user-centric perspective shows that content perceived as excellent quality by some users might be perceptively considered poor quality by others (Chai et al., 2009). However, it must be noted here, that quality of the data as stored, accessed and manipulated can substantially differ from the quality of the information that the data may offer.

3. The Case of Tenders Electronic Daily in the European Union

The Context

Making public procurement decisions understandable motivates the open data initiative of the European Union (EU). The EU data portal offers a single point of access (https://data.europa.eu/) to a growing range of data covering EU bodies and member states. By providing free access to data, the EC aims to promote transparency and through that accountability. A key component of this initiative is the Tenders Electronic Daily (TED) dataset comprised of public procurement data originally published and accessible as part of the TED public procurement website (http://ted.europa.eu/). The obligation to tender and thus become part of the TED dataset depends on several things, two of which are 1) the type of contracting authority (government or agency) and 2) the value of the planned purchase depending on the object and type of contract such as for goods, services, or works. In order to treat all businesses across Europe fairly, EU directives establish minimum public procurement rules and requirements. To appreciate the scope of the activities captured in this data, TED publishes over half a million awards per year worth about 420 billion Euro per year.

The Source

The current study utilizes data from the TED open data website where bulk European public procurement data is published (https://data.europa.eu/euodp/en/data/dataset/ted-CSV). Data come from the official online version of Supplement 32 to the Official Journal of the European Union, which publishes all public procurements made in EU member states that fall above minimum threshold amounts stipulated in the EU regulation for procurement. Other than the twenty-eight EU members, five affiliated countries also publish tender and award notices in the TED Journal to gain access to the EU market – these are Iceland (IS), Liechtenstein (LI), The Former Yugoslav Republic of Macedonia (MK), Norway (NO) and Switzerland (CH). Data in the Journal are collected from standardized public procurement forms as required by the corresponding EU Directive (Directives 2014/18 and 17) and their Annexes. At the time of download, the open data files stored information captured from the contract notices reported in standard forms #2, #4, #5, or #17. These forms announce information concerning a future purchase (i.e. call for tender). In addition, the data files also report contract award notice information on the outcomes of the procurement obtained from standard forms for public procurement #3, #6 or #18

(TED, 2016). Data in the TED Journal is entered through online forms, one notice at a time. The published open datasets also come with a user guide (TED, 2016) describing the fields in the available files.

The Actual Data

The TED open data is very complex because the CSV data files are embedded with three levels of procurement information: a) contract notices (CN); b) contract award notices (CAN); and c) contract awards (CA). While the process of public procurement is inherently complicated, for now it should suffice to state that one and occasionally two CNs lead to one CAN, but one CAN may lead to one or more CAs associated with it (this is because a CN may have a preliminary notice; while a single call may have several parts or lots with each leading to a separate contract being awarded – but published in one CAN notice). Each dataset is published in CSV format using UTF-8 coding and it contains data regarding the version of the XML schema definition (XSD) used by the Publications Office of the EU to publish the data. Calls (CNs) and corresponding awards (CANs and AWARDs) are presented in separate files each with its own data structure represented by a specific header row in the corresponding CSV file. Notices and awards each have both annual as well as cumulative (2009-2015) files. All data files were downloaded January 17, 2017. The total size of the fourteen different data files is approximately 2.13 GB consisting of over 4.5 million records. The datasets are accompanied by a codebook that serves as a guide: contract notice datasets (CN) have 54 fields, while award datasets (CAN/CA) have 50 fields.

4. Methodological Considerations

This research fills a substantial gap in the literature through a case study documenting issues experienced with actual use of the EU TED open data files. While statistical data challenges are reported in Prier et al., (2018), this study provides an experiential general primer on how to approach open data that is anchored in the theoretical literature. Readers can then generalize the applied findings of this public procurement open data by knowing what to expect in terms of operational results of utilizing open data and anticipating the challenges they might they face when attempting to utilize open data – especially for the first time. This helps to identify common issues in accessing open data preparing scholars to judge the status of a dataset before investing substantial effort to ready it for use.

Using the TED dataset as a single case, this study recounts the data-user experience by documenting the issues in each step of the data utilization process. What makes this case especially compelling is that this data is mandated by EU law and regulations and it is a result of iterative cycles of policy-making. One of the highest public sector ideals remains accountability, and this dataset is chosen exactly because it is intended to be an example of quality open data that is supposed to be, by its nature, transparent. While the study is organized in a segmented chronological path that follows a natural progressive timeline of the steps one normally takes to explore new data, the findings offer conclusions based on several key characteristics identified in the literature to judge open data quality.

A set of commonly-available software tools were utilized including MS Excel, MS Access (both from Office 2010 on Win7 OS), SPSS (v22.2), Oracle Database (11g Release 11.2.0.4) with SQLDeveloper interface (v4.1.5), MySQL Database (v5.7.14 on WAMP v3.0.6) with MySQL Workbench (v6.2.5) and the R open source statistical package (v3.3.1). Regarding the default

language setting of the MS Windows operating system (and through that the MS Office package) English (North American) and Hungarian were the languages of choice. Most of the statistical analysis of the original research had been completed in SPSS with some work done in Excel (using Power Pivot) to understand and manipulate the dataset in order to eliminate errors, discover operational issues, and to understand the nature of the data beyond mere reading and statistical summaries.

5. Case Study Results

Data quality is assessed on the following key dimensions identified in the literature: availability, accessibility, readability, technical qualities, data structure, content, usability (ease of use), traceability, and fit-for-purpose.

Availability (and awareness)

Theoretically, anyone interested in using open data for informed decisions should be able to locate it without be required to use "public records" requests to acquire the data. Some public procurement scholars have been aware of the availability of TED data, but prior to July 2016, bulk data had been only made available through periodic updates from volunteers associated with the OpenTED project (http://ted.openspending.org/#welcome). Since then, however, the European Commission itself has published machine-readable CSV bulk extracts of the TED data on its open data portal thereby making the OpenTED project superfluous and the current case study is confined to this EC data only.

Accessibility

One key point of the open data initiative is that the data provided is easily assessable. While there are annual data files available, there is also an integrated file covering seven years available at https://data.europa.eu/euodp/en/data/dataset/ted-CSV. The files are posted in CSV format and individual file sizes span from 60MB to 300MB (except for the integrated files which are .5 and 1.6GB). None of these posed any issues during download: with a normal Internet connection it only took fifteen minutes of work to download and sort the 22 files. The official TED Journal on the other hand offers individual notices as well as daily digests (in zipped xml format) – the size of which is typically 150MBs per monthly data.

Readability

Even though the format is standard CSV, initial opening of the first file using Excel resulted in unstructured lines with no segmentation (i.e. each line was rendered into one cell instead of recognizing the columns): the language setting of the MS Windows OS impacts how Excel reads data, namely, the Regional and Language settings determine the default field separator. Using English as a default enables Excel to read the data correctly and properly separate the fields. Substantively this means that when using other languages such as in this case, Hungarian, the Excel default separator may have to be reconfigured.

But even when the lines were properly segmented into fields, some of the text was scrambled. In fact, reading the file into SPSS or Access – and later adding it to an Oracle and a MySQL Database – often resulted in unreadable text with strange, meaningless characters. Since EU members may use any of the 28 official languages for their tender notice announcements, the problem may be appeared rooted in the encoding schema: the CSV files use UTF-8 which needed to be specifically

defined (and needs to be the 2-bytes version to cover all languages). In Excel the solution was to "import" the CSV instead of simply opening it to allow defining the encoding schema. But Access offered a slightly different hurdle: the character coding is not simply UTF-8, but it must also be language independent (i.e. should not be English or Hungarian, but "All" due to font mixing). This does not work in professional databases where one needs to use a special SQL setting before reading or manipulating the data. As a last point, although expected file sizes were reported at the download page, there was no ready documentation explaining how many lines of data should be correctly read into the CSV files. Hence users have no reliable information that precisely describes a properly imported file.

Technical qualities of the data

Reading the data also entails considerations about datatypes. While Excel has a limited capability to differentiate between a few datatypes such as Text, Date or Number, the CSV format does not carry such information (Excel would automatically assign a datatype though when the CSV file is opened – if nothing else it uses the "General" type as a default). On the other hand, many database or data management tools would offer a range of types, and this set might be quite sophisticated. It is noteworthy that each tool utilized in this project had its own special names and options – with Oracle having a different approach compared to Access or MySQL or even SPSS. In fact, Oracle is known for having a unique stance on datatypes – such as the lack of Boolean. Furthermore, each tool used herein had a different take on the "Date" type (which is understandably crucial in this investigation). All of the tools (Access, Oracle, and SPSS) offer automatic type recognition and also make suggestions regarding the potential maximum size or length of relevant types (such as integer or text).

Although it might sound like a minor concern, much effort was spent struggling with fields of "Date" type. This is due to the fact that there is no unique standard for storing date/time values, each tool offered different options which unnecessarily complicated what should be a simple conversion. For example, the Hungarian version of Access refused to accept the (given TED) English date format, e.g. it would not take "DD.MMM.YY" or "DD-MM-YY", instead, it would require "YYYY.MM.DD" or something similar. Oracle had similar issues while also accepting only a limited set of formats (and, interestingly, would not allow a field with only the year, such as 2015).

Structure

Text field length: Expect variations in field truncation because Access would truncate fields with longer size while Oracle would reject such records – all of which suggests that knowing the longest possible text field is important. Remember that choosing very large values for all fields results in larger database files requiring more storage and more memory to manipulate the data.

Multiple values in one field: A significant issue concerns occasional multiple values in one field where one column reported additional CPV codes and another column registered multiple winners. The former issue can be resolved with some text manipulation, but the latter presents a more sophisticated problem in separating out the individual data values. In public procurement more than one winner may occur in several cases: as a result of using a framework agreement; a dynamic purchasing system; in the case of contract separation into lots; and when the call notice has different parts. In the case of lots or parts, there should be one "contract award" with a unique

"CONTRACT_AWARD_ID" for each lot or part under the same CAN ID. However, for the other two cases, different authorities (in different countries) appear to have established different standards that report the resulting contracts.

Multiplied lines: In addition to all of these issues, every "periodic indicative notice without a call for tender" (a special CN typically used by utilities) is duplicated in the CSV file – which is apparently a mistake. In fact, it has an additional line for each separate lot – which is an even bigger potential source of informational distortion. What is problematic about these cases is that they should not directly lead to CANs yet some are specified (without an actual call with a different CN ID). There is no explanation for this situation in the codebook, and neither do the regulations give any indication of the need for duplicates. Furthermore, while some duplicated lines mirror each other, other lines show some empty fields in one line that are completed in its "duplicated" record (e.g. CPV code). As they both (or all) have the same date stamp, it is very suspicious whether they represent legitimately different actual CNs. The extra values in certain fields are not the result of a change or modification (i.e. the duplication is consistent for all such lines except for a few exceptions – e.g. for 2014 there are 10,050 such cases and even one triplicate).

These unexplained duplications particularly inure at the time of statistical analysis when data uncertainty may produce substantial statistical aberrations. While analysts might ignore cases or remove duplicates, few of the available guides, documents or informational explanations offered a clear resolution.

Content

Inappropriate values in specific fields: Some records report their form number as '2' when these notices should reflect use of Form #4 which indicates use of the wrong form or following outdated reporting regimes. There are also apparently intentional misrepresentations as well, because some contracting authorities entered values into fields that sometimes look suspicious. For instance, the estimated value of a contract is occasionally ad-hoc, such as €1234567 – instead of a proper calculation.

Cancellations: Intimately knowing the measurable objects of the data is imperative to understanding this dataset which requires a brief background in procurement operations. When a contracting authority amends the contractual condition, a modification to an existing contract notice leads to a new entry (called "Additional Information") which may or may not require a new contract notice identification number (CN ID). However, actual contract cancellations are only captured through "cancellation notices" that require a new form. However, this open data experience made clear that the method of and forms for reporting CN and CAN modifications and cancellations had changed over the period covered by the dataset given the new 2014 public procurement directives, and this has significant informational quality implications. This means that minor contract modifications required reporting only a modification that was "additional information" in the new form #14, while major changes including cancellations require using the full notice new form #2. Table 1 shows the distribution of records (forms) across the two CSV file types for the year 2015: contract notices (calls for competition) and contract award notices (actual awarded contracts). One can readily see that since there are no records of contract modifications generated from form #14, attempts at reconstructing the objects (contract processes) are nearly impossible given the data for this procurement procedure. Further, unsuccessful procedures under

the new directives should not be canceled but instead contracting authorities should use the relevant CAN form reporting "no award".

Problematically, all of these contingencies are not readily clear from documentation at the website, and the role of the algorithm in generating these apparently anomalous CSV files. In sum, these ambiguities produce continuity problems within the dataset because those countries which have not yet ratified the new directives into national law apparently still use the old forms.

Table 1. Standard Forms Generating Records of Calls for Competition and Contract Awards, 2015

	Percentages (Ns)		
	(1)	(2)	(3)
Contract Form Number (Descriptor)	CFC Records	CAN Records[a]	Directives
Form 1 (Prior information notice)	0.0% (1)		2014/24/EU
Form 2 (Contract Notice)	88.7% (173,250)		2014/24/EU
Form 3 (Contract Award Notice)		92.5% (497,635)	2014/24/EU
Form 4 (Periodic indicative notice-utilities)	0.2% (338)		2014/25/EU
Form 5 (Contract Notice-utilities)	9.4% (18,361)		2014/25/EU
Form 6 (Contract Award Notice-utilities)		6.5% (35,054)	2014/25/EU
Form 7 (Qualification system-utilities)	0.9% (1,674)		2014/25/EU
Form 10 (Public works concession)	0.1% (289)		2004/18/EC
Form 17 (Contract Notice-Defense or Security)	0.7% (1,447)		2009/81/EC
Form 18 (Contract Award Notice-Defense or Security)		0.4% (2,417)	2009/81/EC
Form 21 (Social and other specific services-public contracts)	0.0% (9)	0.5% (2,580)	2014/24/EU
Form 22 (Social and other specific services-utilities)		0.0% (15)	2014/25/EU
Form 23 (Social and other specific services-concessions)		0.0% (92)	2014/23/EU
Form 24 (Concession notice)	0.0% (5)		2014/23/EU
Form 25 (Concession award notice)		0.1% (390)	2014/23/EU
Total	100% (195,374)	100% (538,183)	5 Different

Source: Calculation by authors

[a] These do not include records that award contracts based on voluntary *ex ante* transparency (VEAT) notices

Content duplicates: As previously discussed, the 2014 Directives marked procedural changes in reporting Contract Notice cancellations and the empirical result has led to CSV files rife with two lines of records for cancellations: one for the modification of the original call and another for the cancellation (coding it as a modification as well). This is clearly a meaningless duplication of the CN (using the same CN ID) as there is no actual call here can potentially distort statistical calculations concerning CNs.

Missing values: According to TED documentation (TED, 2016), connecting contract notices with contract awards requires marrying up two CSV files through a special ID field called Future_CAN_ID. This field is often left empty which makes data quality checking problematic. For example, the consolidated 2009-2015 CN files showed that 66% (Total N=758,604) of this field was empty across that time period. Of course, there are often legitimate reasons for this situation including the fact that the call might have been cancelled (no winner was announced), or the procedure had not yet concluded at the time of publication. Unfortunately, it is also possible that the cancellation was not recorded or improperly coded, thus leaving the user of the data with the assumption that the call is still open.

All of this suggests that currently there is no means to establish this state of the data quality, unless one goes back to the source database and searches each individual notice in question, which is, of course time prohibitive. On the other hand, it is also possible that the cancellation generates a new CSV record (see above) when it officially should not (the problem may be rooted in the TED, where cancellations are recorded as "Additional Information" instead of leading to a new notice with unique CN ID or the use of the 'cancellation' field). Moreover, many Future_CAN_IDs point to documents that will be published in the future but the open data file of that year had not been made available at the time of download. Therefore, assuming that one would not individually search and download relevant notices from the TED using the interactive TED data website, certain types of analysis are either not possible; incomplete; or subject to both validity and reliability issues. This further suggests that although procurement accountability would often require an easy connection of calls to awards and their dates, the generated CSV files make this difficult in many ways – especially if one wants the data analysis process to be (semi)automated.

In addition, there are other potential problems associated with real missing values in numerous other fields. Of course, many of these missing data fields are concentrated in non-key or non-essential data elements such as national contract ID or the national code of the authority. But when needed, the lack of data values in these fields would cause problems in case of statistical analysis targeting those specific fields.

Traceability

Each CN record has a specific variable called "Future_CAN_ID" (and another "Future_CAN_ID_Estimated") which shows the ID number of the award notice resulting from the given call-for-competition notice. However, evidence suggests that this link is often generated inappropriately. Not simply may the Future_CAN_ID value be wrong, but during the generation of the annual CSV CN file new records were created that have no apparent meaning in the original TED. The reason behind these superfluous records is unknown, but manual investigation of several such cases lead to the conclusion that the CSV generating algorithm connects together otherwise unlinked CN and CAN items of the same contracting authority. In one case a Polish contracting authority had 14 CNs in 2014 with 16 CANs in the same or later years, but in the CN

CSV file there were cross-connected records totaling 153. On the other hand, a few of these CNs had additional information (i.e. modifications) using new CNs – but those CNs do not appear in the CSV file at all. The number or percentage of these false (or missing) lines is hard to calculate but it may be in the range of several percent annually. One potential reason for the confusion might be (again) that in 2014 new forms had been introduced.

The clear overall effect of this situation is the unreliability of traces from Contract Notices to Contract Award Notices. Without other means of confirmation there is essentially little confirmable traceability across the breadth of the data in the two CSV filetypes. Obviously, there are CNs without CANs, since not all calls will result in awards – some are revoked, while others may result in no award (no offers submitted or the evaluation was unsuccessful). In addition, the fresher a CN, the more likely the procurement process has not yet concluded. This is normal – as long as there is a cancellation or no award notice issued to record the fact. However, some of such notices also seemed to be missing in the CSV files, which further complicates the linking of records. To make an adequate assessment of the extent and impact of missing data requires a substantial investment of time in understanding the content of the procurement forms and the process of publishing notices – both of which can slightly differ among member countries. For example, the new form #2 should be used to report cancellations, but there appears to be no such field to enter the information, or to reference the notice that is being cancelled in that form.

Another question that arises when trying to understand how pieces of the dataset are linked is how those links have been generated and how the original data (in the TED) is being stored. This then also requires the researcher to know about the structure of the source storage e.g. whether it is stored in normalized tables; in the form of documents; or stored as the original pdf forms. Obviously, this drastically limits procurement field experts who then must also possess the skills of database experts.

Ease of use, usability

Similarly, ease of use appeared to depend on the same three matters as assessing the data: the format of the file (CSV), the tools required to work on the data (various tools had been tried), and the structure and content of the data in the files. The difficulties experienced due to language settings and date formats kept coming back during the analysis of the data whenever data had to be transferred between research sites using different language settings or needed to be loaded from one application to another. Although the data structure is described in the guide, a deep understanding of the meaning of various fields required extensive understanding not only of public procurement but also specific details of EU procedures. This was further complicated by the fact that the CSV fields often did not fully reflect either the fields in the TED nor the original forms contracting authorities required to use when submitting data related to calls and contract results. Even the guide did not explain the mapping between these three formats which further required additional effort in connecting the dots whenever a new research question was asked from the datasets. The fact that data is published in non-normalized form also required additional attention when making statistical calculations (due to multiplication of field values over numerous records).

Fit-for-purpose (value)

Considering the problematic dataset complexity and the requisite deep domain knowledge of European public procurement formalities, doing any kind of statistical analysis utilizing this open

data required a lot of careful preparation and attention including a lot of manual data cleaning. Moreover, analysts must prepare to consider the non-standardized way individual countries have reported data into the TED: some were at contracting authority level while other countries exercised control at the central government level, resulting in missing codes, or missing values or inconsistencies in the names of authorities – all impacting statistical analysis involving the affected data fields.

Perhaps the most obvious recurring issue that will affect any data analysis using this open dataset is the problem of missing values across numerous fields. In some cases, a simple visual browsing of the file was enough to see that certain records had missing values, while in other cases the statistics revealed a number of "no value" items. Whether the missing value was a result of the way CSV files were generated or that data had not been entered at all (the latter is most likely) is not known, but these data validation concerns can be difficult to detect because cancellation of calls appears to not always be reported consistently. Consider that over the period of 2009-2015 60% of the calls (452,078 of 754,378) had no reported outcome (i.e. had no award indicated and yet were not cancelled either). Given the centrality of a procurement outcome in an open dataset that is devoted to making government spending more transparent, a more complete documentable explanation by the authorities providing the data seems reasonable.

6. Discussion and Insights on Open Data

The technical details of the open data experience outlined above suggest that if one wishes to go beyond the analytical capabilities of Excel, technical issues may remain a hurdle to the user of the open data files and should probably be addressed. Overall, loading the data into management tools may require several preparation steps, such as assessing the types and sizes of fields as well as obtaining and applying the proper settings during the conversion. This case study offers a cautionary tale to those new to open data – and does so with a clear warning: one should be careful to spend time and effort preparing any project that intends to utilize large open data sets prior to making resource allocation decisions. While quality of actual datasets differs widely, this study documents at least three seemingly unrelated skills that are needed to appropriately utilize open data including those based in data management; data issues associated with software applications, as well as domain knowledge and expertise when attempting research that intends to rely on open data.

The result of this case study suggests the following eight generalized issues that end-users should consider when preparing to work with open data:

1) Finding the data: check for the data source to be authentic and whether the data is up to date and if it came with adequate and up-to-date description and sufficient documentation;

2) Downloading data sets: open data may come in many different formats and its size could be large (in the range of gigabytes) and is often composed of several files or parts;

3) Opening, loading and checking files: make sure that you have several tools available and that their settings fit the requirements of the data format – if something does not look right, try different language, coding and location settings;

4) Transforming the data: open data often looks different in software tools and transformation of different formats might be necessary – special support or expertise may be required to decide which tools fits best (don't stick with a tool just because that is the only one you know);

5) Assessing structure and content: even with available documentation, be careful – there might be errors, missing information, or the data structure might be so complex that considerable domain expertise might be required to understand both the meaning and the structure of the data;

6) Linking inside and outside the set: open data is rarely standalone and is often composed of several parts of related/connected datasets that may require referencing documentation of other sets (i.e. country codes, national abbreviations, etc.) - pay special attention and double check all such references for accuracy;

7) Manipulating the data for use: search out and find explanation for duplicates, missing values or even missing or omitted fields;

8) Interpreting and analyzing the data: depending of the issues uncovered during the earlier steps, the researcher might need to reconsider the questions that could be meaningfully answered from the dataset in actual use (which often differs from the intended use). Special attention should be paid to any generated statistical results which obviously depend on the records/fields/values.

7. Conclusions and Potential Future Directions

Open data are gaining increased attention in academic research, but data quality can vary dramatically. While a few frameworks have been put forward on how to assess open data quality and what measures to utilize, experiential studies investigating actual cases are lacking. This case study utilized procurement data from EU countries to demonstrate potential generalized hazards likely to be found in open data relevant to a variety of academic fields, and the experience recounted here provides useful insights for others planning to work with open government data for the first time.

This study explains a simple model that describes the conceptual relationships between a measurable target or object of inquiry; data; information; and policy decisions, and it lays the groundwork to more clearly think about myriad open data issues. This recursive model suggests how scholars can clearly conceptualize the quality of data and information and it is consistent with social phenomena that are often subject to this problematic lack of isomorphism (for example, see Bailey 1990, 13-47). This conceptual precision suggests that modeling social processes – in this case, procurement – involves varying levels of data itself which in turn influences how data and informational quality is conceived. For instance, filling out forms is actually data generation of the procurement process (the object). However, when the forms are transformed into flat CSV files, the forms can then also be considered to be the object which generates data in CSV format. Applying this logic reveals the consistently recursive nature of data generation even when decisional knowledge about the object is ultimately the goal of any data generation algorithm.

In sum, this article explains how the relevant literature examines specific data and informational quality issues that are often discussed in isolation from real-world experience. What makes this study different is filling the gap between theory and practice for researchers of open data by illuminating potential issues and providing applicable solutions. The eight general issues

described here go beyond offering differential measures of quality and instead, prepares researchers with warnings and tips on how to think about navigating the proliferating nature of public sector open data.

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References

- Bailey, J. E. and Pearson, S. W. 1983. Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, 29, 5: 530-545.
- Bailey, Kenneth D. 1990. *Social Entropy Theory*. State University of New York Press, Albany.
- Batini, C., Cappiello, C., Francalanci, C. and Maurino, A. 2009. Methodologies for Data Quality Assessment and Improvement. *ACM Computing Surveys*, 41, 3, 16: 1–52.
- Blakemore, M. and Craglia, M. 2006. Access to Public-Sector Information in Europe: Policy, Rights, and Obligations. *The Information Society* , 22,1: 13-24.
- Bovens, M., Goodin, R.E. and Schillemans, T. (eds.) 2014. The *Oxford HanDBook of Public Accountability*. Oxford University Press, Oxford.
- Chai, K., Potdar, V. and Dillon, T. 2009. Content quality assessment related frameworks for social media. In *Procss of the Computational Science and its Applications Conference*, Springer, Berlin, 791-805.
- Chun, S.A., Shulman, S., Sandoval, R. and Hovy, E. 2010, Government 2.0: Making Connections between Citizens, *Data and Gov. Inf. Polity*, 15, 1-2: 1-9.
- Davies, T. 2013. *Open Data Barometer. 2013 Global Report.* Retrieved January 21, 2017, from
- http://www.cocoaconnect.org/publication/open-data-barometer-2013-global-report.
- Dedeke, A. 2000. A Conceptual Framework for Developing Quality Measures for Information Systems. In *Proceedings of the 5th International Conference on Information Quality*, 126-128.
- Emamjome, F. F., Rabaa'i, A. A., Gable, G. G. and Bandara, W. 2013. Information quality in social media: a conceptual model. In *Proceedings of the Pacific Asia Conference on Information Systems (PACIS 2013)*, Seoul, AIS Electronic Library (AISel).
- Erickson, J. S., Viswanathan, A., Shinavier, J., Shi, Y. and Hendler, J. A. 2013. Open Government Data: A Data Analytics Approach. *IEEE Intelligent Systems*, 28, 5: 19-23.
- Frank, M., and Walker, J. 2016. User centred methods for measuring the quality of open data. *The Journal of Community Informatics*, 12, 2: 47-68.
- Fox, C., Levitin, A., and Redman, T. C. 1995. *Data and data quality*: *Total Data Quality Management Research Program*, Sloan School of Management, MIT, Boston.
- Glogowska, D. J, 2016. *Information Quality Assessment in Social Internet Media*. Master Thesis, University College Cork, Ireland.
- Information Age 2015. *Sir Tim Berners-Lee calls on governments to honour their promises on open data. Online at* http://www.information-age.com/sir-tim-berners-lee-calls-governments-honour- their-promises-open-data-123458878/. Downloaded January 7, 2018.
- Jaeger, P. T. 2003. The endless wire: E-government as global phenomenon. *Government Information Quarterly*, 20: 323-331.

- Janssen, K. 2011. The Role of Public Sector Information in the European Market for Online Content: A Never-Ending Story or a New Beginning? *Info*: *the J. of Policy, Regulation and Strategy for Telecommunications, Inf. and Media*, 13, 6: 20-29.
- Kahn, B. K., Strong, D. M. and Wang, R. Y. 1997. A Model for Delivering Quality Information as Product and Services. In *Proceedings of the 1997 Conference on Information Quality*, Cambridge, MA, 80-94.
- Klobas, J. E. 1995. Beyond information quality: fitness for purpose and electronic information resource use. *Journal of Information Science*, 21, 2: 95-114.
- Kraemer, K.L., and King, J.L. 2003. *Information technology and administrative reform*: *Will the time after e-government be different?* Retrieved December 10, 2016 from http://www.crito.uci.edu.
- Leipold, K. 2007. *Electronic Government Procurement (e-GP) Opportunities & Challenges*. Talk given at the Congress to celebrate the fortieth annual session of UNCITRAL in Vienna, 9-12, July 2007. Retrieved February 26, 2012 from http://www.uncitral.org/pdf/ english/congress/Leipold.pdf.
- Levitin, A. and Redman, T. 1995. Quality dimensions of a conceptual view. *Information Processing & Management*, 31, 1: 81-88.
- Liew, Anthony. 2007. Understanding Data, Information, Knowledge and Their Inter-Relationships. *Journal of Knowledge Management Practice* 8(2): Accessed on 1-19-18 at http://www.tlainc.com/articl134.htm.
- Marche, S., & McNiven, J. D. (2003). E-government and e-governance: the future isn't what it used to be. Canadian Journal of Administrative Sciences, 20, 1: 74-86.
- Martin, S., Foulonneau, M., Turki, S., Ihadjadene, M., Paris, U. and Tudor, P.R.C.H. 2013. Risk Analysis to Overcome Barriers to Open Data. *Electronic Journal of e-Government*, 11, 1: 348–359.
- Naumann, F. and Rolker, C. 2000. Assessment methods for information quality criteria. In *Proceedings of the 5th International Conference on Information Quality*, Humboldt-Universität zu Berlin, Institut für Informatik, 148-162.
- Norris, F. D. and Lloyd, B. A. 2006. The scholarly literature on e-government: Characterizing a nascent field. *International Journal of Electronic Government Research*, 2, 4: 40-56.
- OECD [Organisation for Economic Co-operation and Development]. 2008. *OECD Recommendation of the Council for Enhanced Access and More Effective Use of Public Sector Information* [C(2008)36]. Retrieved December 10, 2016, from http://www.oecd.org/internet/ieconomy/40826024.pdf.
- OECD [Organisation for Economic Co-operation and Development]. 2017. *Trust and Public Policy*: *How Better Governance Can Help Rebuild Public Trust, OECD Public Governance Reviews*, OECD Publishing, Paris.
- Olaisen, J. 1990. Information quality factors and the cognitive authority of electronic information, in Information quality: Definitions and dimensions. In *Proceedings of a NORDINFO Seminar, Royal School of Librarianship, Copenhagen, 1989,* Wormell, I. (ed.), Taylor Graham, London, 91- 121.

- Open Data Barometer (2016) accessed on 6-7-2018 at https://opendatabarometer.org/?_year=2016&indicator=ODB.
- Pignotti, E., Corsar, D. and Edwards, P. 2011. Provenance Principles for Open Data. In
- *Proceedings of DE2011*.
- Prier, E. and McCue, C.P. 2009. The Implications of a Muddled Definition of Public Procurement. *Journal of Public Procurement*, 9, 3&4: 326-370.
- Prier. E., Prismakova, P., and McCue, C.P. 2018. Analysing the European Union's Tenders Electronic Daily: Possibilities and Pitfalls. *International Journal of Procurement Management*, 11(6): 722-747.
- Rula, A. and Zaveri, A. 2014. Methodology for assessment of linked data quality. In *Proceedings of the 1st Workshop on Linked Data Quality at the 10th International Conference on Semantic Systems, LDQ@SEMANTiCS 2014, Leipzig, Germany*, volume 1215 of CEUR Workshop Proceedings.
- Scannapieco, M. and Catarci, T. 2002. Data quality under a computer science perspective. *Archivi& Computer*, 2: 1–15.
- Shannon, Claude E. 1948 [2001]. "A Mathematical Theory of Communication." *Bell System Technical Journal* 27: 379-423, 623-656, July, October, 1948. [Corrected version reprinted in ACM SIGMOBILE Mobile Computing and Communications Review 5(1): 3-55.]
- Strong, D. M., Lee, Y. W. and Wang, R. Y. 1997. Data quality in context. *Communications of the ACM*, 40, 5: 103-110.
- Tayi, G. K., and Ballou, D. P. 1998. Examining data quality. *Communications of the ACM*, 41, 2: 54-57.
- TED. 2016. *TED Processed Database*: *Notes & Codebook, Version 2.2*. Retrieved January 20, 2017 from http://data.europa.eu/euodp/repository/ec/dg-grow/mapps/TED(CSV)_data_information.doc.
- Ubaldi, B. 2013. *Open Government Data*: *Towards Empirical Analysis of Open Government Data Initiatives*, OECD Working Papers on Public Governance, No. 22. Retrieved January 20, 2017 from http://dx.doi.org/10.1787/5k46bj4f03s7-en.
- van Zeist, R. and Hendriks, P. 1996. Specifying software quality with the extended ISO model.
- *Software Quality Journal*, 5, 4: 273-284.
- Verhulst, S. and Young, A. 2016. Open Data Impact: When Demand and Supply Meet - Key Findings of the Open Data Impact Case Studies. GovLab, Retreived 12/18/2017 at: http://odimpact.org/files/open-data-impact-key-findings.pdf.
- Wang, R.Y. and Strong, D.M. 1996. Beyond accuracy: What data quality means to data consumers. *Journal of Management Information Systems*, 12, 4: 5-33.
- World Bank. 2003. *Definition of E-Government*. World Bank: Washington, DC.
- Wormell, I. 1990. Information quality: definitions and dimensions. In *Proceedings of a NORDINFO Seminar, Royal School of Librarianship, Copenhagen*, T. Graham. London.
- Zaveri, A., Rula, A., Maurino, A., Pietrobon, R., Lehmann, J. and Auer, S. 2012. Quality assessment methodologies for linked open data. *Semantic Web Journa*l, 1, 5: 1-31.
- Zuiderwijk, A., Janssen, M., Choenni, S., Meijer, R. and Alibaks, R. S. 2012. Socio-technical Impediments of Open Data. *Electronic Journal of e-Government*, 10, 2: 156–172.

The Concept of Economic Operator and the Setting of Limitations to Awarding by Lots in Public Procurement in the Light of the Portuguese Public Contracts Code

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Abstract:

According to the EU 2014 directives, the contracting authority should divide into lots - or to justify not doing so. Furthermore, it may decide (i) to limit the number of lots to which each economic operator may submit tenders; (ii) to limit the maximum number of lots to be awarded per economic operator, or (iii) to aggregate all or part of the lots.

In view of the limitation on the number of lots for which tenders may be submitted or the maximum number of lots to be awarded per competitor – either limitation to be determined in advance at the contracting authority's discretion – the article addresses the question of whether albeit legally distinct competitors that maintain an economic unit or interdependent links may submit bids for different lots or groups of lots in the same procedure.

Keywords: lotting; competition; Portuguese Public Contracts Code; Concept of undertaking; economic operator.

1. Awarding by lots and the promotion of SME participation in public procurement

The new 2014 package of directives on public procurement was negotiated during the economic crisis that has affected parts of the European Union since 2008. It sought to take advantage of the economic impact generated by public procurement – equivalent, on average, to some 16% of the GDP of each EU Member State.[1] The policy aims were to link public procurement more clearly with the pursuit of so-called horizontal or secondary policies, with ulterior goals traditionally less connected to the objectives of public procurement such as environmental protection or promoting of social policies.[2]

Among other policies, it was sought to promote the participation of small and medium-sized enterprises (SMEs) in pre-contractual procedures. Studies then conducted by the European Commission had shown that these companies were frequently rejected in public procurement procedures for a variety of reasons, including bureaucratic obstacles, or resulting from the generally lower economic efficiency of SMEs when compared with large corporations.[3]

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[1] See European Commission data for the year 2016 available at http://ec.europa.eu/trade/policy/accessing-markets/public-procurement/

About promoting the participation of SMEs in public procurement, v. ANTHONY FLYNN, *Investigating the implementation of SME-friendly policy in public procurement*, Policy Studies, 39:4, 2018, pp. 422-443.

[2] Regarding these policies, see NUNO CUNHA RODRIGUES, *A contratação pública como instrumento de política económica,* Almedina, Coimbra, 2013, reimpressão, pp. 260-303.

[3] In this regard, see the report of the European Commission *Evaluation of SMEs' access to public procurement markets in the EU – Final Report*, Ares (2014)75984 – 15/01/2014, available at

It is accordingly understandable that the 2014 directives have regulated instruments such as the European Single Procurement Document[4]; enhanced electronic public procurement[5] and defined the rule of awarding by lots (linked to the 'divide or explain' principle)[6], with the intention of increasing SME participation and thereby fostering competition in public procurement.[7]

This fresh perspective on public procurement led some scholars to refer to a paradigm shift, from an approach followed until 2014 which centered on an aggregating dimension of public procurement by prohibiting the splitting/reduction of expenditure[8], to an approach from 2014 onwards which *also* contemplated a disaggregating (or splitting) dimension of public procurement.[9]

One of the most significant innovations introduced in the revision of the Portuguese Public Contracts Code (PPCC), approved in 2017 by the Decree Law no.º 111-B/2017, of 31 August 31, concerns the obligation for contracting authorities covered by the Classical Directive to proceed as a rule to the award of public contracts by lots. This obligation applied to public contracts for the purchase or hire of goods or services valued over EUR 135,000.- and public works contracts of a

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http://ec.europa.eu/DocsRoom/documents/2153/attachments/1/ translations/en/renditions/pdf, in particular pp. 110-114.

[4] See Article 59 of Directive 2014/24 / EU (henceforth referred to as the Classical Directive).

[5] See Directive 2014/55 / EU of the European Parliament and of the Council of 16 April 2014 on electronic billing for public contracts.

[6] See Article 46 of the Classical Directive.

[7] See recital 78 to the Classical Directive, stating that *"... in order to increase competition, contracting authorities should be encouraged in particular to divide large contracts into lots*."

Until 2014 the European directives did not regulate the division of batch contracts or the aggregation of those lots.

The reference to the division of bundled or aggregated contracts was provided in the notice that, where the contracts were subdivided into lots, the contracting authority should indicate the possibility of bidding for one, for several or for all lots (see annex VIIa to Directive 2004/18).

[8] See LUÍS VERDE DE SOUSA, *Algumas notas sobre a adjudicação por lotes*, in Revista E-pública, volume 4, no 2, November 2017, available at http://e-publica.pt/volumes/v4n2a04.html, p. 69 adding, *ibidem,* p. 71, that the unbundling or division into lots does not necessarily entail a batch award since the contracting authority may use more than one procedure to award the parts in which it has decided to split the unit (provided that the subject matter of the contract is divisible).

The award by lots should also not be confused with the prohibition of splitting the expenditure, according to which the contract, depending on the contractual value, cannot be divided into several procedures if the subject matter can be awarded in the same procedure.

This prohibition is provided for in Article II(7) of the Government Procurement Agreement (GPA) by the World Trade Organization; in Article 5(2) of the Classical Directive and in Articles 17(8) and 22(1) of the Portuguese Public Contracts Code (PPCC).

[9] See LUÍS VERDE DE SOUSA, *Algumas notas*..., p. 70.

value greater than EUR 500,000.-. Contracting authorities may refrain from such splitting, however, provided the decision is duly justified (see Article 46-A(1) of the PPCC).[10]

The principle of "divide or explain" was thus enshrined, which constitutes a pressing obligation on the contracting authority to divide lots "in the absence of sufficient reason to decide otherwise".[11]

2. Awarding by lots:

2.1. Discretion of the contracting authority and the "divide or explain" obligation:

In awarding by lots, the object subject to competitive tendering must be divided in such a way as to enable each of the resulting segments (or the whole, as explained below) to be awarded independently, even in the same procedure (see Article 46-A(1) of the PPCC).

Without prejudice to its obligation to effect a division into lots - or to justify not doing so - the contracting authority may decide in advance in the call or in the program of the procedure (i) to limit the number of lots to which each economic operator may submit tenders; (ii) to limit the maximum number of lots to be awarded per competitor, or (iii) to aggregate all or part of the lots (lot bundling). This possibility results from Article 46-A of the PPCC, which provides that in the parts of the procedure the contracting authority may:

a) limit the maximum number of lots that can be awarded to each competitor (restriction on arrival[12]) and must indicate these limitations in the call or the program of the procedure along with the objective and non-discriminatory criteria on which the choice of lots to be awarded to each

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[10] The Classical Directive confers on Member States the freedom to determine whether the division into lots is mandatory.

See recital 78 of the Classical Directive: "*Member States should be free to go further in their efforts to facilitate the participation of SMEs in the public procurement market by extending the scope of the obligation to consider whether to divide contracts into smaller lots, requiring contracting authorities to justify their decision not to divide the contracts into lots or to make the division into lots compulsory under certain conditions. To the same effect, Member States should also be free to provide for direct payment mechanisms to subcontractors.*"

In the special sectoral directive (Directive 2014/25/EU), a more flexible regime was established. In that case, the duty to state the reasons why a contract was not divided appears in recital 87 as a mere possibility for Member States to go beyond the directives and in Article 65 (1), which contains the rule allowing awarding by lots. Lastly, the Concessions Directive (2014/23/EU) does not expressly refer to awarding by lots. In this regard, see MIGUEL ASSIS RAIMUNDO, *Dever de ponderação da adjudicação por lotes e dever de fundamentação da não divisão no direito dos contratos públicos,* in Revista E-pública, vol. 4, n.º 2, November 2017, p. 27.

[11] See MIGUEL ASSIS RAIMUNDO, *Dever de ponderação …*, p. 24.

The PPCC presents the following exemplary list of grounds for non-division: (a) where the services to be covered by the respective object are technically or functionally inseparable, or if their separation would cause serious inconvenience to the contracting authority; (b) where, for reasons of urgency or for technical or functional reasons, the management of a single contract is more efficient for the contracting authority.

[12] See LUÍS VERDE DE SOUSA, *Algumas notas …* p. 73.

tenderer is based in cases where the application of the award criteria results in the allocation to the same tenderer of more than the maximum fixed number (see no.º 4), and

b) conclude contracts combining several or all lots, provided that such a possibility is expressly mentioned in the invitation or the program of the procedure, in which case the criteria underlying the various combination scenarios provided for must be established and indicated in advance (see no.º 5);

The contracting authority also has the power to set limits in advance on the number of lots for which an applicant may apply (restriction at departure) which, although not explicitly contained in Article 46-A of the PPCC, is accepted in recital 79 of the Classical Directive, as a way of "*preserving competition or ensuring reliability of supply*".[13]

In other words, the contracting authority may decide in advance, in the call or in the program of the procedure: (i) to limit the number of lots to which each economic operator may submit tenders; (ii) to limit the maximum number of lots to be awarded to a single competitor, or (iii) to aggregate part or all of the lots (*lot bundling*)[14] to be awarded without having to formally justify any of the options taken. Instead the contracting authority must only establish, in the invitation or in the procedure: (a) the objective and non-discriminatory criteria which determine the choice of lots to be awarded when the maximum number of lots is exceeded[15], or (b) the criteria underlying the possibilities of planned aggregated lots.[16]

[13] Assuming this possibility, see JOSÉ DUARTE COIMBRA, *A adjudicação …*, pp. 366-367 and LUÍS VERDE DE SOUSA, *Algumas notas* …, pp. 73 and 75

[14] On the awarding of aggregated lots, see LUÍS VERDE DE SOUSA, *Algumas notas* …, pp. 80-84 and LAURA CARPINETI, GUSTAVO PIGA and MATTEO ZANZA, *Benchmarking European Public Procurement Practices: Purchasing of 'Fix-Line Telephone Services' and 'Paper for Printers'* (September 2006), available SSRN: https://ssrn.com/abstract=934504 who report a case in Italy where the national central purchasing body (Consip) decided in July 2002 to approve a procedure for the award of two lots: one for landline telecommunications services and the other for mobile telecommunications services. It was also possible for competitors to submit aggregated tenders for the two lots, which did not prevent the two lots from being ultimately awarded to two different competitors.

[15] See JOSÉ DUARTE COIMBRA, *A adjudicação* …, p. 366.

[16] As observed by LUÍS VERDE DE SOUSA, *Algumas notas* …, p. 83, in a scenario of aggregated awarding, "*in addition to the award criterion and the tie-breaking criterion (see Article 74(4) of the PPCC), the contracting authority must also indicate the criterion (or criteria) for the awarding of aggregated lots*" which is "*subject to a single quantitative limit, corresponding to the verification that the whole (i.e the aggregation of lots) is better (because the price is lower or the score is higher) than the sum of the different parts, all while excluding the need of proving that this asset is substantial or significant*." (*ibidem,* p. 81).

A related issue is whether the submission of conditional tenders is permissible, i.e. whether tenderers can submit variable tenders depending on the number and types of lots to be awarded to them.

Some scholars see the rule of awarding by lots as a mechanism to counteract, if only impliedly, the modern trend of centralization of public procurement that accompanies economies of scale and the concentration of market power (*buyer power*) conferred on public entities.[17]

The increased purchasing power of public entities (*buyer power*) may result in some cases in an effective monopsony, which in turn could distort the competitive functioning of the markets by leading to the removal of SMEs from purchasing centres.[18]

From this perspective, the 2014 directives are somewhat paradoxical in that they aim on the one hand to promote SME participation in public procurement[19], but on the other hand to facilitate the centralization of public procurement, which itself may lead to a distancing of SMEs from these centres, given the smaller economies of scale they are able to generate when compared to large companies. However this would be a precipitate conclusion, since the objectives of centralizing purchasing and division into lots are different, and because purchasing centres are also subject to the divide or explain principle.[20]

The awarding by lots rule (divide or explain) may thus legitimately be seen as one of the most significant instruments to ensure increased SME participation in pre-contractual procedures. However, the promotion of SME participation in public procurement is not equivalent to giving a

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[17] Concerning the centralization of public purchases, see ALBERT SANCHEZ-GRAELLS and IGNACIO HERRERA ANCHUSTEGUI, *Impact of Public Procurement Aggregation on Competition: Risks, Rationale and Justification for the Rules in Directive 2014/24* (December 5, 2014). University of Leicester School of Law Research Paper n.º 14-35, available at SSRN: https://ssrn.com/abstract=2534496; IGNACIO HERRERA ANCHUSTEGUI, *Centralizing Public Procurement and* Competitiveness in Directive 2014/24 (July 20, 2015), available at SSRN: https://ssrn.com/abstract=2633445 and MARCO CALDEIRA, A centralização das compras públicas: a propósito (mas não só…) das Directivas de 2014, in Revista de Contratos Públicos, CEDIPRE, n.º 14 (May-August 2014), pp. 19-44.

The 2014 directives extended the possibility of centralizing public procurement by making it possible, for example, to create cross-border contracting authorities. Nonetheless, the centralization of public procurement has been closely monitored by the European Commission and several competition authorities (*National Competition Authorities* - NCA) all across the European Union. See recital 59 of the Classical Directive: "*the aggregation and centralisation of purchases should be carefully monitored in order to avoid excessive concentration of purchasing power and collusion, and to preserve transparency and competition, as well as market access opportunities for SMEs."*

[18] In an economic and competitive law analysis of purchasing power (including public procurement), see CAROLINA SAITO and ZACK DOUER, *Grupos de compras: cooperação ou colusão?*, in Revista de Direito da Concorrência, CADE, n.º 1, volume 6, May 2018, pp. 120-155.

[19] With data concerning the difference between the share of SME's in public procurement and their role in the economy, see GUSTAVO PIGA, *Centralization vs. bundling: the victory of an Italian David against an Italian Goliath*, in European Journal of Public Procurement Markets, 1st issue, October 2018, pp. 70-71.

[20] See MIGUEL ASSIS RAIMUNDO, *Dever de ponderação …*, p. 32. This duty must be fulfilled in any pre-contractual procedure, in particular in the framework agreements often used by central purchasing bodies.

As GUSTAVO PIGA recognizes in *Centralization vs. bundling: the victory of an Italian David against an Italian Goliath*, European Journal of Public Procurement Markets, 1st issue, October 2018, p. 68, "*centralization does not need to be inevitably tied to the aggregation of tenders in ever bigger lots"*.

guarantee of the award of lots to SMEs. It may even be the case that the contracting authority (i) opts not to divide into lots for any reason duly substantiated (see above), or (ii) despite a division into lots, makes no award to SMEs.[21]

The legal procedure provided for by the Portuguese legislator grants the contracting authority a margin of discretion in the definition and implementation of lot-splitting, even though this is confined to the configuration of lots in qualitative and quantitative terms.[22]

In this context, the contracting authority must duly substantiate compliance with the "*divide or explain*" obligation, it being understood that this weighting, when carried out in an appropriate manner, will hinder a possible judicial scrutiny.[23]

For this reason, the contracting authority must first consider the exceptional situation[24] in which it opts not to divide into lots.

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[21] It should be noted in this regard that it is somewhat incomprehensible for the PPCC to determine in Article 74(6) of the PPCC that, in the event of a tie between tenders, preference should be given to that presented by an SME, in that such a choice by the national legislator is not stated (nor could it be) in the 2014 directives and, on the other hand, it violates the equality principle laid down in Article 13 of the Constitution of the Portuguese Republic.

[22] See recital 78 of the Classical Directive: "*The size and subject-matter of the lots should be determined freely by the contracting authority (…*)".

Regarding procedural discretion in division into lots, see JOSÉ DUARTE COIMBRA, *A adjudicação …*, pp. 328-346

[23] See recital 78 of the Classical Directive: "*Where the contracting authority decides that it would not be appropriate to divide the contract into lots, the individual report or the procurement documents should contain an indication of the main reasons for the contracting authority's choice*."

The present author shares, however, the understanding of MIGUEL ASSIS RAIMUNDO, *Dever de…*, p. 39 for whom the decision of the contracting authority is legally open to scrutiny in the light of the general principles of public procurement and in particular of the principle of competition, for which reason the reasoning relied on by the contracting authority not to be divided into lots must appear in the underlying administrative file in the pre-contractual procedure concerned.

[24] The exceptional nature is inferred from the wording, even if exemplary, provided for in Article 46 –A, nº 2, which refers to the exemplary cases where (a) the benefits are technically or functionally unavailable or, (b) where, for reasons of urgency or for technical or functional reasons, the management of a single contract proves to be more efficient for the contracting authority.

See recital 78 of the Classical Directive: *"…the contracting authority finds that such division could risk restricting competition, or risk rendering the execution of the contract excessively technically difficult or expensive, or that the need to coordinate the different contractors for the lots could seriously risk undermining the proper execution of the contract*."

2.2 Impact on competition of division into lots (lotting)

As GIAN LUIGI ALBANO observes, the decision to divide a contract into lots is one of the most significant in the design of a competitive pre-contractual procedure.[25] Thus, the anticipation of the market response to the division into lots underlying the pre-contractual procedure may even in some cases entail the need for preliminary market research (see Article 35-A of the PPCC), since the division into lots should be oriented towards the upholding of competition.[26] The contracting authority may consider several criteria for dividing into lots, including (i) geographical; (ii) divisibility of the product; (iii) the price of the various lots; (iv) the operational division of the service, or (v) others.27

Either option will have both advantages and disadvantages, which must be duly anticipated and weighed by the contracting authority.

For instance, deciding to divide into lots based on geographical criteria may facilitate the geographical distribution of markets but also creates incentives for collusion between competitors.[28] Division into lots based on consistent and constant base prices has commercial advantages but may also facilitate collusion between competitors.

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[25] See GIAN LUIGI ALBANO, Working Party no.º 2 on Competition and Regulation -Competition in Public Procurement Markets, 19 June 2017, available https://one.oecd.org/document/DAF/COMP/WP2(2017)1/en/pdf , p. 10: "*By affecting the number and the type of firms that are able to compete, 'lots design' can have a dramatic impact on the intensity of competition in the market, and hence for current and potential future contracts.*"

[26] In this regard, see NUNO CUNHA RODRIGUES, *O princípio da concorrência nas novas diretivas sobre contratação pública*, in Maria João Estorninho (coord.), A Transposição das Diretivas Europeias de 2014 e o Código dos Contratos Públicos, ICJP / CIDP, 2016, available at https://www.icjp.pt/publicacoes/pub/1/9030/view and MIGUEL ASSIS RAIMUNDO, *Aiming at the market you want: a critical analysis of the duties on division into lots under Directive 2014/24/EU*, in P.P.L.R. 2018, 4, pp. 167-187 (in particular pp. 178-179).

[27] Concerning the division criteria, see recital 78 of the Classical Directive: "*Such division could be done on a quantitative basis, making the size of the individual contracts better correspond to the capacity of SMEs, or on a qualitative basis, in accordance with the different trades and specialisations involved, to adapt the content of the individual contracts more closely to the specialised sectors of SMEs or in accordance with different subsequent project phases.*"

[28] Here comes into question an agreement between companies which infringes Article 101, nº1 TFEU or Article 9, nº 1 of the Competition Law.

In this regard, see v. Ski Taxi, Case E-03/16, decided by the EFTA Court, on December 22 2016, available at http://www.eftacourt.int/cases/detail/?tx_nvcases_pi1%5Bcase_id%5D=281&cHash=77ab5837d77b1e3b57be524fc45a0394 in which a cartel was set up following the launch by the Oslo Hospital in 2010 of a call for tenders for the conclusion of framework agreements on the transport of patients, which was divided into nine lots organized by geographical areas adjacent to the Hospital. For two of these lots, the Hospital received only one proposal, presented jointly by two taxi companies. Since the contracting entity - the Hospital - expected different tenders to be submitted, it was understood that there was a cartel and therefore the procedure for these two lots was cancelled and the Norwegian Competition Authority prosecuted the two companies, potentially competitors, on the grounds that there was a cartel (object restriction). Later the lots were redesigned which allowed the emergence of new competitors.

Seen in this light, the option to award by lots is a complex undertaking.[29]-[30]

Nevertheless, splitting generally generates efficiency gains which accrue to the contracting authority, ensuring in particular:

a) the sharing of risks that the award of various lots generates between different suppliers, thus avoiding excessive dependence or concentration of the contracting authority on a single or a few suppliers;

b) the possibility of allowing competitors at a regional or local level to submit proposals which they would otherwise be unable to do (e.g. in the case of lots with a national dimension);

c) an increase of suppliers, thus allowing the contracting authority to compare the performance of different contracts by different suppliers;

d) an increase in market dynamism, based on varied approaches and solutions inherent in each lot, given the possibility of several competitors to simultaneously ensure the supply of goods and services;

e) the possibility of new entrants to the markets (e.g. SMEs and specialized companies), in particular where the division contemplates lots of heterogeneous goods or services[31];

In this regard, see NUNO CUNHA RODRIGUES, *Contratação Pública e concorrência: de mãos dadas ou de costas voltadas?,* in Revista de Concorrência & Regulação, ano VIII, n.º 32, October-December 2017, pp. 131-145.

Believing that the division of contracts into geographical lots could allow greater participation of SMEs which, for logistical reasons, would be unable to compete, see GIAN LUIGI ALBANO, *Working Party No. 2 on Competition and Regulation -Competition in Public Procurement Markets,* 19 June 2017, disponível em https://one.oecd.org/document/DAF/COMP/WP2(2017)1/en/pdf , p. 12.

[29] Criticizing the preference for the award by lots, see MIGUEL ASSIS RAIMUNDO, *Dever de ponderação …*, p. 27.

Regarding the advantages and disadvantages of division into lots, see also ALBERT SANCHEZ GRAELLS, *Public Procurement and the EU Competition Rules*, 2.ª edição, Oxford Hart, 2015, pp. 347-352 and ALBERT SANCHEZ-GRAELLS, *Prevention and Deterrence of Bid Rigging: A Look from the New EU Directive on Public Procurement* (April 1, 2014), published in G Racca & C Yukins (eds), Integrity and Efficiency in Sustainable Public Contracts (Brussels, Bruylant, 2014), available at SSRN: https://ssrn.com/abstract=2053414. In American doctrine, see D. PANGBURN, *The Impact of Contract Bundling and Variable–Quantity Contracts on Competition and Small Business*, in Public Contract Law Journal, 1995-1996, p. 69 e I. AKYUZ, *Bundling into the Millenium: Analyzing the Current State of Contract Bundling*, Public Contract Law Journal, 2000-2001, p. 123.

[30] See GIANCARLO SPAGNOLO and CHRISTOPHER R. YUKINS, *Lots – the economic and legal challenges of centralized procurement*, in Gustavo Piga / Tunde Tatrai (eds.), Public Procurement Policy, Routledge, 2016 and GUSTAVO PIGA, *Centralization vs. bundling: the victory of an Italian David against an Italian Goliath*, in European Journal of Public Procurement Markets, 1st issue, October 2018, pp. 67-78.

[31] What may occur with, e.g., computer software; chemical reagents or medical equipment.

f) a reduction of the lock-in[32] effect that can be verified by two essential factors:

i) the learning curve (learn by doing) that the incumbent company benefits from as it reflects on the proposal in the light of acquired experience. The supplier's knowledge of the needs of the contracting authority strengthens its ability to present better proposals in subsequent procedures which, in monopsony situations[33], may prevent other tenderers from submitting proposals and therefore benefiting from the learning curve.

ii) reduced costs. The need to make investments which are not recoverable (e.g. in infrastructure) may alienate other competitors, thus creating a barrier to entry.

g) reduced risk of explicit collusion in so far as the possibility for different types of companies to submit proposals in the same procedure (e.g SMEs and large companies) will mitigate possible collusive strategies that may arise between similar companies often present in cartels. It may even be said that the greater the number of potential companies competing, the less potential for collusion between them.[34]

On the other hand, the division into lots can have negative impacts as follows:

a) it potentially reduces competition, in particular by removing large companies for which small lot procedures may be unattractive.[35] This ultimately depends on the relationship between the numbers of lots and potential interested parties, which is why this argument can be considered reversible.

b) the cost of the good or service to be provided to the contracting authority (*value for money*) may be higher in view of the potential reduction of economies of scale resulting for bidders arising out of the division of lots;

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[32] Concerning the lock-in effect in public procurement, see NUNO CUNHA RODRIGUES, *A contratação pública …,* p. 90.

[33] Regarding the power of monopsony in public procurement, see NUNO CUNHA RODRIGUES, *A contratação pública* …, p. 90.

[34] In this regard, see R. P. MCAFEE and J. MCMILLAN, *Incentives in Government Contracting*, pp. 57-60; V. GRIMM *et alli*, *Division into Lots and Competition in Procurement*, in N. Dimitri et al (eds. by), Handbook of Procurement, Cambridge, Cambridge University Press, 2006, pp. 168 and 175. 54 and L. CARPINETI *et alli*, *The Variety of Procurement Practice: Evidence from Public Procurement*, in N. Dimitri *et alli*, *Handbook of Procurement*, Cambridge, Cambridge University Press, 2006, pp. 14 and 23-24.

See also see GUSTAVO PIGA, *Centralization vs. bundling: the victory of an Italian David against an Italian Goliath*, in European Journal of Public Procurement Markets, 1st issue, October 2018, pp. 74-75.

[35] See J.-Y. CHEROT, *Droit public économique*, Paris, Economica, 2nd edition, 2007, p. 728. Against the aggregation of lots due to the anti-competitive effects it can generate, see also OFT, Assessing the Impact of Public Sector Procurement on Competition, 2004, pp. 16-20 e 110-125 and recital n.º 25/2012 – 24. jul. – 1.ªS/SS of the Court of Auditors, in which it was stated that a provision of a tendering program which limited the possibility of awarding to a single tenderer only two lots (in a universe of five), *"is likely to have limited the universe of potential competitors, in that some potential interested parties would be interested only in submitting proposals if they could be awarded all lots, possibly aiming for economy of scale*".

c) awarding by lots may not be possible in the case of certain goods and services (e.g. public works contracts);

d) technical problems may arise during the execution of the contracts, taking into account the different approaches that each supplier will adopt in executing the lot awarded to them;

d) it cannot be assumed that the lots are necessarily awarded to different competitors. Although the division into lots promotes competition, it may ultimately be that they are awarded to the same competitor, thus prolonging the risk of lock-in;

e) it may lead to inefficiencies among competitors since, in the case of awarding by lots, large firms that benefit from economies of scale, which cannot be generated through small lots, may withdraw from the procedure or convert inefficiency into an increased cost of the proposal (see above item b));

f) it facilitates collusion by solving issues inherent in the formation and distribution of lots between members of a cartel (e.g. in the case of geographical division of lots or division of lots on the basis of the same price);

The disadvantages listed must be resolved or mitigated through the application of various solutions.[36]

In particular, in may be possible to determine, through prior procedural design, the award of combined or aggregated lots in addition to the award of individual lots (*package bidding*).[37]

It is also possible to define a maximum number of lots to be awarded per competitor, in which case competitors may be required to indicate the order of preference of lots for which they submit their tenders, in case the maximum number of lots to be awarded is exceeded.

These solutions will generate different strategic behaviours on the part of competitors, in particular because:

1) in fixing of a maximum number of lots to be awarded per tenderer, it is possible that:

a) the incentive towards collusion between competitors increases, since competitors can always justify the non-submission of tenders for certain lots with the fact that the maximum number of lots for which they can compete is limited, thereby making it difficult to detect *bid-rigging*[38] practices;

b) the ability of competitors to submit tenders becomes limited. Thus, the division into two heterogeneous lots, one of high value and another of residual value, may lead to large companies submitting proposals only for the larger lot, leaving to SMEs the submission of proposals for the lowest value lot(s), which, while promoting the participation of SMEs, ultimately leads to a

[36] Closely following some of the hypotheses suggested by GIAN LUIGI ALBANO, *Working Party* …, p. 12.

[37] See recital 79 and Article 46(3) of the Classical Directive. Concerning *package bidding,* see N. DIMITRI, R. PACINI, M. PAGNOZZI, & G. SPAGNOLO, *MultiContract Tendering and Package Bidding in Procurement*, in N. Dimitri, G. Piga, and G. Spagnolo (Eds.). Handbook of Procurement 2006, Cambridge University Press, pp. 193-219.

[38] V. ALBERT SANCHEZ-GRAELLS, *Prevention and Deterrence…*, *passim.*

reduction in competition in the procedure and leads the contracting entity to accept less competitive and less efficient proposals, resulting in turn in a loss of value for money.

On the other hand, it is legitimate to consider that this solution may have pro-competitive effects by allowing new competitors to enter the market.

Finally, in high value public contracts (e.g. framework agreements managed by centralized agencies[39]), it can be considered whether the value of the lots should be similar (homogeneous lots) or different (heterogeneous lots), anticipating the competitors' reaction to this division. In some cases, dividing into heterogeneous lots can also facilitate the task of distribution between (asymmetric) members of a cartel. In this case, the division into heterogeneous lots should seek to anticipate any correspondence with the market share of potential competitors and modify the division so as to avoid this correspondence in the lot division;

2) The risk of division into lots facilitating collusion can be mitigated by dividing the contract into fewer lots than the expected number of competitors. Given the impossibility of all competitors winning lots, the stability of the cartel will be disrupted, forcing an understanding of the specific lots concerned by the cartel, thereby increasing the likelihood of detection of anti-competitive practices in the procedure.

On the other hand, the number of lots to be awarded must exceed the number of incumbents, in order to facilitate the emergence of new entrants or competitors.

Finally, lots should not be stable and predictable. Contracting authorities should modify the batch division carried out in previous procedures, making it less predictable for potential competitors.

In consideration of the solutions described above, reflected in the procedural design prepared by the contracting authorities, competitors may submit tenders (i) for one of the lots; (ii) for a substantial portion of the lots, or (iii) for all lots. When tendering for a single lot, competitors must identify in the tender the lots they prefer, in ascending or descending order of preference.

With tenders for aggregated lots (or *package bidding*), tenderers may submit tenders for the individual lots and / or for various (or even all) lots, in the latter case specifying the proposed conditions, which must be better than those proposed for each individual lot. Here, the invitation or the program of the procedure must provide for the criteria on which the combination or aggregation hypothesis is based.

Finally, competitors may submit tenders for individual lots and / or for all lots (*bundle*). In this way, it is avoided that large companies seeking economies of scale deviate from batch-sharing procedures, opening up the possibility of winning all the lots (*winner takes all*).

[39] In this regard, see MIGUEL ASSIS RAIMUNDO's comment available at https://contratospublicos.net/2017/04/17/divisao-em-lotes-e-centralizacao-de-compras-duas-politicas-que-se-contradizem-e-anulam-ii/

3. The concept of economic operator (competitor) and the setting of limits on awarding by lots:

As has been shown, the contracting authority may, in the invitation or the program of the procedure, provide for the combined or aggregated tendering of lots, on the basis of the wide margin of discretion granted in the legislation.

Contrary to the intended objective of the awarding by lots rule, however, this scenario can lead to disinterest by SMEs, since large companies may intuitively be considered as being the most suitable for the awarding of aggregated or combined lots.

It is accordingly understandable that the legislator has also made it possible for contracting authorities to limit the submission of tenders to a given number of lots or to set a maximum number of lots to be awarded per tenderer: a tool that will surely be used in the future (see Article 46–A of the PPCC).

In view of the limitation on the number of lots for which tenders may be submitted or the maximum number of lots to be awarded per tenderer – all of which is to be predetermined by the contracting authority – it may be expected that competitors, even if legally distinct but who maintain a common economic unit or have ties of interdependence, between them may submit several tenders for different lots or groups of lots in the same procedure. This with the intention of circumventing the limitations previously laid down by the contracting authority.

This problem has been examined by the scholarly writing, the Court of Justice of the European Union and the national administrative courts, albeit in a related way.

In the 2009 *Assitur*[40] judgment, the issue arose in the case was whether two companies, between which there was a controlling interest, could legitimately submit tenders in the same procedure. The governing Italian law - which specifically regulated employment contracts - established an irrebuttable presumption that the controlled company's tender was known to the dominating company.

The law in question - the *Legge Merloni* (Law no.º 415, of 18 November 1998) - provided that tenders on all contracts offering an abnormally low price, itself identified by Community thresholds and by calculating the average of tender prices, would be compulsorily excluded.[41] In practice, the system created by the Legge Merloni created incentives for competitors to submit multiple tenders, aiming to influence the estimate of the abnormally low price and thereby enhance their chances of success.42

In response, the legislator considered that the two companies would not be able to submit proposals with the necessary independence, seriousness and reliability, since they were associated

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[40] See Assitur judgment, proc. C-538/07 of 19 May 2009, EU: C: 2009: 317. Commentary on the the Assitur judgment, see JOANA AZEREDO, A participação simultânea, num mesmo procedimento adjudicatório, de empresas que se encontram numa relação de domínio ou grupo e o princípio da concorrência, in Revista Electrónica de Direito – October 2016 – n.º 3, available at https://www.cije.up.pt/download-file/1507.

[41] Explaining the facts underlying the Assitur judgement, see JOÃO AMARAL E ALMEIDA, *A participação simultânea de sociedades em relação de domínio ou em relação de grupo em procedimentos de contratação pública*, in Estudos em Homenagem a Mário Esteves de Oliveira, Almedina, Coimbra, 2017, pp. 28-37.

[42] Illustrating the *Legge Merloni*, see JOÃO AMARAL E ALMEIDA, *A participação* …, p. 33 (n. 35).

by a close communion of interests. The companies would therefore be excluded from the tendering procedure.[43]

In the ensuing litigation, the Italian court referred a question to the CJEU as to whether the principle of *"favor participationis"* should overlap with a rule such as that laid down by Italian law, in order to safeguard the equal treatment of candidates and transparency of the procedure.

The CJEU responded, based on the principle of competition in public procurement rather than competition law, by stating that the solution provided for by Italian law would considerably reduce competition at the Community level. The mere finding of a controlling relationship between the undertakings concerned, be it by virtue of a right of ownership or the number of voting rights they could exercise at ordinary shareholders' meetings, was insufficient for the contracting authority to automatically exclude them from the awarding procedure. Rather, the contracting authority would have to first verify whether that controlling relationship had had a specific effect on the conduct of those companies in that procedure.

In the Assitur[44] judgment, the Luxembourg Court therefore held that European Union law is infringed when *"(...) national legislation (...) provides for the automatic exclusion of participation in that procedure (...) both for a stable consortium and for the undertakings which are members of the consortium, where the latter have submitted proposals competing with those of the consortium under the procedure* ".

It should be noted that in the *Assitur* judgment it was not the application of competition law (whether national or European) that came into question, but only the examination of the possibility that associated companies could manipulate the calculation of the average prices proposed, thereby, disrupting the abnormally low price and as a result being automatically excluded under Italian law.

More recently, in the *Lloyd's of London* judgment of 8 February 2018[45], the CJEU examined the possibility of a Member State regulation allowing two competitors to be excluded from participating in the same tendering procedure on the grounds that their tenders were signed by the same general representative.

Similarly to *Assitur*, the *Lloyd's* case turned on the Italian law regulating public procurement (*Codice dei contratti pubblici relativi a lavori, servizi e forniture*). Pursuant to Article 38(1)(m) of the Code, the proposers who are *"in relation to another participant in the same award procedure, in a situation of domain under Article 2359 of the Civil Code or in any relationship, even if de facto, if the domain situation or the relationship implies that the tenders are attributable to a single decision-making center,* would be precluded from participating in procurement procedures or conclude subcontracts relating to such procurement.

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[43] Analyzing the economic effects produced by the joint participation, see GIAN L. ALBANO, GIANCARLO SPAGNOLO and MATTEO ZANZA, *Regulating Joint Bidding in Public Procurement*, in Journal of Competition Law & Economics, Volume 5, Issue 2, 1, June 2009, pp. 335–360.

[44] See *Assitur* judgment, proc. C-538/07, May 19, 2009, EU:C:2009:317.

[45] See *Lloyds of London* judgment, proc. C-144717, February 8, 2018, ECLI:EU:C:2018:78.

In the event, on 13 August 2015, Arpacal launched a public tender for an insurance contract to cover the risk associated with its civil obligations towards third parties and workers for the period from 2016 to 2018. The contract was to be awarded on the basis of the most economically advantageous offer.

Two Lloyd's member unions - Arch and Tokio Marine Kiln - participated in this process, in which both offers were signed by the Lloyd's general representative for Italy.

Consequently, Arcapal excluded these two unions from the process due to an alleged infringement of Article 38(1)(m), on the grounds that the tenders were objectively attributable to a single decision-making centre as they had been submitted, formulated and signed by the same person,.

The CJEU considered that the automatic exclusion of candidates and tenderers who are in a control or associative situation with other competitors went beyond what is necessary to prevent concerted behaviour and to ensure application of the equal treatment principle and compliance with the obligation of transparency (see paragraph 35). The Court concluded that "such automatic exclusion constitutes an inescapable presumption of reciprocal interference in the respective bids of companies linked by a controlling or associating relationship. It thus rules out the possibility of such candidates or tenderers demonstrating the independence of their tenders and is therefore contrary to the Union's interest in ensuring the widest possible participation of competitors in a public tender."

Thus, in the *Lloyd's of London* judgment, the CJEU concluded that the principles of transparency, equal treatment and non-discrimination arising from Articles 49 and 56 TFEU[46] must be interpreted as meaning they admit a Member State regulation not allowing the exclusion of two competitors from participating in the same public tender for insurance services on the sole grounds that their tenders were signed by the same general representative for that Member State. On the other hand the exclusion would be admissible if it were established on the basis of undisputed evidence that the proposals were not formulated independently.[47] A similar decision was taken by the ECJ in the recent *Specializuotas transportas* judgement.[48]

Thus the *Assitur* case law and the more recent *Lloyd's of London* judgment both refer to situations in which the exclusion of bids from companies in the same group (i) was determined by national law in (ii) open pre-contractual procedures.

This article, however, addresses a separate question. In view of the limitation on the number of lots for which tenders may be submitted or the maximum number of lots to be awarded per

[46] On the relationship between these principles and public procurement law, see NUNO CUNHA RODRIGUES, *A contratação pública …*, pp. 304-318.

[47] See *Lloyd's of London* judgment, proc. C-144/17, 8 February 2018, EU:C:2018:78.

[48] See *Specializuotas transportas* judgement, C-531/16, 17 may 2018, ECLI:EU:C:2018:324. The court concluded that "*the contracting authority, when it has evidence that calls into question the autonomous and independent character of the tenders submitted by certain tenderers, is obliged to verify, requesting, where appropriate, additional information from those tenderers, whether their offers are in fact autonomous and independent. If the offers prove not to be autonomous and independent, Article 2 of Directive 2004/18 precludes the award of the contract to the tenderers having submitted those tenders.*"

competitor – either limitation to be determined in advance at the contracting authority's discretion – whether albeit legally distinct competitors that maintain an economic unit or interdependent links may submit bids for different lots or groups of lots in the same procedure.

Applying the reasoning of PEDRO GONÇALVES *mutatis mutandis*, although according to formal legal logic, the underlying regime for groups of companies provided for in the Portuguese Commercial Companies Code, Article 54(2) does not directly regulate the situation at issue, it would follow that *"(…) it cannot be said that a society dominated ("A") by another society, the dominant society ("B"), is itself a member of the grouping".*[49]

Since entities in a group relationship are not caught by the (2) of Article 54 of the PPCC - legally different entities are therefore not considered a single competitor for the purposes of Article 59(7). Thus it could be concluded that there is no legal rule prohibiting the simultaneous participation of those entities in procedures where the maximum number of lots for which tenders may be submitted or the maximum number of lots to be awarded per tenderer have been limited.

To reiterate, however, the question is not whether entities within a group can be part of different groupings for the purposes of Article 54, nº 2 of the PPCC[50], but rather whether, in those specific procedures where limits on awarding by lots by competitors were established, such companies should be regarded as a single competitor in the light of Article 53 of the PPCC.

In other words, the question is not whether the principle of prohibition of dual participation in a pre-contractual procedure under Article 59(7) of the PPCC has been respected.[51]

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[49] In the same vein, albeit not using the concept of *company* as in Competition Law, see PEDRO GONÇALVES, *Direito dos Contratos Públicos*, Almedina, Coimbra, 2018, p. 616. In a different sense, see MARIO ESTEVES DE OLIVEIRA, *Agrupamentos de Entidades Adjudicantes e de Candidatos e Concorrentes em Procedimentos de Contratação Pública*, in Estudos de Contratação Pública – II, Coimbra Editora, 2010, pp. 129 and ss. proposing an extensive interpretation of Article 54(2) of the PPCC.

[50] About the prohibition on competing participation in the same tendering procedure by a 'consorzio stabile' ('permanent consortium') and one of its member companies see case Serrantoni, C-376/08, 23 December, 2009, ECLI:EU:C:2009:808, concluding that "*community law must be interpreted as precluding national legislation, which provides that, when a public contract is being awarded, with a value below the threshold laid down in Article 7(c) of Directive 2004/18/EC but of certain cross-border interest, both a permanent consortium and its member companies are automatically excluded from participating in that procedure and face criminal sanctions where those companies have submitted tenders in competition with the consortium's tender in the context of the same procedure, even if the consortium's tender was not submitted on behalf and in the interests of those companies.*"

[51] As noted by PEDRO GONÇALVES, *Direito dos Contratos Públicos*, Almedina, Coimbra, 2018, p. 615, "*The prohibition of double participation is justified by the purpose of reducing the risk of information transfer or passing from one grouping to another (in the case of participation in more than one grouping) and, therefore, preventing and not promoting or facilitating practices that may distort competition rules. On the other hand, now from the perspective of public procurement's own values, what is sought is to prevent situations of false competition and non-genuine competition between economic operators which, after all, differ only on a formal level. (it is sometimes argued that it is advisable to give contracting authorities the power to define exceptions to the rule on the prohibition of dual participation, in order to increase the number of applications or tenders."*

Rather, the question at issue is whether, in the light of the notion applicable for the purposes of Competition Law, the possibility of setting limits on the award of lots to competitors is an example in which the participation of related trading companies or, strictly speaking, different entities forming part of one undertaking, may make it difficult for third parties to participate and is accordingly not neutral.[52]

In response it is argued as follows.

In accordance with Article 53 of the PPCC, an economic operator (competitor according to the PPCC) is defined as *"the entity, natural or legal person, who participates in any contract formation procedure by submitting a tender."*

In Portugal, after initial confusion resulting from the erroneous application of the *Assitur*[53] judgment, administrative jurisprudence has evolved to consider that different companies, despite presenting *"the same corporate structure and the same managers", nevertheless "(…) are autonomous legal entities, having their own legal personality and, as such, it is considered that we are facing two competitors, each presenting its proposal."*[54]

This understanding was reiterated in 2016 in the TCASUL ruling[55], which concluded that "(…) the Public Contracts Code (…) adhered to a definition of competitor based on the traditional concept of legal personality, determining that a competitor is a natural or legal person who submits a bid and therefore, such persons, not being grouped together for the purposes of a tendering procedure (in accordance with Article 54), are autonomous persons with autonomous tenders."

Consequently, as a preliminary rather that definitive conclusion, it may be assumed that even legally distinct competitors which maintain an economic unit or interdependent links may submit bids for different lots or groups of lots in the same procedure, always provided that the proposals were independently formulated (following the conclusive reasoning followed in the *Lloyd's of London* and the *Specializuotas transportas* judgments).

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[52] To this extent, the novelty that the 2014 Directives brought with regard to the division into lots and which have been incorporated into Article 46(a) of the PPCC may now lead to a different conclusion from that stated by JOÃO AMARAL E ALMEIDA, *A participação* …, p. 51 *in fine* when he considers that the participation, in the same procedure, of two or more related companies is completely neutral with respect to competing third parties. The same reasoning can be applied to the change in the rules regarding the setting of prices or abnormally low bids, currently provided for in Article 71, which can now be defined in the invitation to tender or call for proposals, *"taking into account the percentage deviation from the average bid price to be admitted, or other criteria deemed appropriate"* which may motivate the participation of several companies of the same group, in view of the *change in the average proposed prices* and is therefore not neutral with respect to third parties.

[53] See JOÃO AMARAL E ALMEIDA, *A participação* …, pp. 46-47.

[54] See the *TCASUL* judgment, nº 12542/15 of 26.11.2015, available at www.dgsi.pt

[55] See the *TCASUL* judgment, nº 13205/16 of 26.11.2015, available at www.dgsi.pt

In this case, some scholars considered it possible to invoke the (current) Article 70(2)(g) of the PPCC providing for the exclusion of tenders whose examination reveals strong evidence of acts, agreements, practices or information that could distort competition rules.[56]

However, we do not share this understanding.

The reason for exclusion under Article 70(2)(g) of the PPCC is to rule out proposals that violate competition law rules. Moreover, the current wording corresponds to the wording of the original 2008 PPCC.[57]

Exclusion in this case primarily concerns bid-rigging practices that often occur in the context of public procurement.[58]

In our view, the cause of exclusion under Article 70(2)(g) will only occur in the event of infringements of competition law. This is why the legislator has provided, in Article 70(4) of the PPCC, that the exclusion of any proposals on the basis of paragraph 2 (g) and the existence of evidence of restrictive practices, even if they did not lead to the exclusion of the tender, should be notified to the Competition Authority. It cannot, therefore, apply to situations where the same undertaking seeks to use different legal entities (e.g. fictional companies) to try to win all tendered lots, in cases where the contracting authority has previously limited the maximum number of lots for which competitors may apply or may be awarded.

Indeed, informing the Competition Authority of a situation in which two companies in the same group submit different tenders for lots in the same procedure will not lead to the opening of any investigation. This is for the cardinal reason that in the light of Competition Law these two companies constitute a single company, and there is accordingly no agreement between companies (*bid-rigging).*[59]

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56 In this regard, see JOÃO MOREIRA, Cartelização em Contratação Pública, in Estudos de Contratação Pública – III, Coimbra Editora, Coimbra, 2010, pp. 240 and 241 and, advocating that "*the application of Article 70, nº 2 (g) of the PPCC should be extended*" to "*situations in which the same company will seek to use different legal entities (e.g. a" front company ") in an attempt to win all lots in a tendering procedure, thereby circumventing the limitation provided for in the parts of the procedure* ", see LUIS VERDE DE SOUSA, *Algumas notas* …, p. 80.

57 The 2008 PPCC provided, in Article 70(3), that the exclusion of any proposals on the basis of (g) should be immediately notified to the Competition Authority (CA) and, as it stands in current wording, the CA must also be notified should there be evidence of restrictive competition practices. Furthermore, these are rules which underpin the provisions of the Directives. See recital 101 of the Classical Directive and Article 57(d) of the Classical Directive.

58 Analyzing other anti-competitive practices in public procurement (abuse of dominant position), see NUNO CUNHA RODRIGUES, *A contratação pública …*, pp. 372-375 and NUNO CUNHA RODRIGUES, *Contratação Pública e concorrência: de mãos dadas ou de costas voltadas?,* in Revista de Concorrência e Regulação, year VII, issue 32, October – December 2017, pp. 131-146 (in particular pp. 139-142).

59 In this sense, although in light of the group corporate relations arising from the application of the Companies Code, see JOÃO AMARAL E ALMEIDA, *A participação simultânea de sociedades em relação de domínio ou em relação de grupo em procedimentos de contratação pública*, in Estudos em Homenagem a Mário Esteves

Given the impossibility of the contracting authority invoking that cause of exclusion, it may be asked whether there will be other mechanisms for removing competitors who, since they maintain an economic unit or interdependent ties, submit bids in the same pre-contractual procedure with limits on lot numbers to be tendered for or awarded.

Because, in light of competition law, those same companies constitute a single company.[60]

The answer to this question will depend on the types of procedures concerned. Two basic types are as follows:

a) Open pre-contractual procedures:

In this case, competitors that are part of the same undertaking may submit different bids in the same pre-contractual procedure, in light of the principles of *'favor participationis'*, competition, transparency, equal treatment and non-discrimination. This follows from the *Assitur* and *Lloyd's of London* judgments[61], which established that it is not sufficient to conclude that the competitors belong to the same business group. Rather it is necessary to verify whether, in the specific circumstances, this relationship had an effective influence on the content of the tenders submitted by each of the companies.

It should be noted that in these procedures, the principle of competition is fully assumed, which means that the exclusion of competitors is admissible only if it is found, on the basis of undisputed evidence, that the tenders were not formulated independently.

b) Limited access pre-contractual procedures:

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de Oliveira, Almedina, Coimbra, 2017, pp. 9 and following and RODRIGO ESTEVES DE OLIVEIRA, *Empresas em Relação de Grupo e Contratação Pública*, Revista de Contratos Públicos, n.º 2, 2011, pp. 89-109.

[60] Regarding this notion of company in Competition Law, see NUNO CUNHA RODRIGUES, *ibidem,* pp. 381-386 and NUNO CUNHA RODRIGUES, *A nulidade dos contratos públicos à luz do Direito da Concorrência,* in Estudos de Contratação Pública, CEDIPRE, Coimbra, volume IV, 2012, pp. 181-230.

It should be noted that, for the purposes of competition law, the legal form taken by the company is irrelevant, requiring only consideration of the materially practiced economic activity, without imposing an analysis of its legal nature, which gives the concept a considerably broadened scope, conferring it a functional and broadened notion of company.

[61] See also case Edilux, C-425/14, 22 october 2015, ECLI:EU:C:2015:721, concluding that a contracting authority may provide that a candidate or tenderer be automatically excluded from a tendering procedure relating to a public contract for not having lodged, with its tender, a written acceptance of the commitments and declarations contained in a legality protocol, the purpose of which is to prevent organised crime from infiltrating the public procurement sector.

Still, the ECJ recognizes that "*however, inasmuch as that protocol contains declarations that the candidate or tenderer is not in a relationship of control or of association with other candidates or tenderers, has not concluded and will not conclude any agreement with other participants in the tendering procedure and will not subcontract any type of tasks to other undertakings participating in that procedure, the lack of such declarations is not to lead to the automatic exclusion of the candidate or tenderer from that procedure.*"

In these procedures, the limitation is imposed *ope legis* (e.g. in public tender by prior qualification)[62] or by the contracting authority (e.g. in the invitation or program of the procedure), and aims to ensure that competitors in the procedure enjoy a certain *level playing field* with one another regarding their bidding capacity.[63]

In certain cases, more rigorous efforts are also being made to avoid the unfolding of the corporate or business personality that would allow multiple proposals to be submitted.

The principle of competition is therefore preconditioned, in that it is not intended in such cases to attract as many opponents as possible but only those who have certain characteristics.

In this context, and in view of the nature of the pre-contractual limited access procedures, it will be permissible for the contracting authority to be able to limit, *ex ante* - in the invitation to tender or in the program of the procedure - the nature of the competitors who may apply to the procedure.64

Consequently, in light of the notion laid down in Competition Law, for cases where competitors in the same *company* (undertaking for competition law purposes) submit different bids in procedures where the contracting authority has restricted the maximum number of lots for which tenders may be submitted or which may be awarded per competitor, three solutions are proposed.

First, in light of the notion applied by competition law (see Article 132(4) of the PPCC), the contracting authority may, *a priori*, establish in the call or in the program of the pre-contractual limited access procedure, a ban on the participation of more than one company or entities of any kind that are part of the same undertaking,.[65]

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[62] The PPCC distinguishes the concept of candidate (in limited access pre-contractual procedures), applicable at the first phase, from the one of competitor, applicable to any economic operator that submits a proposal (after the first phase in a limited access pre-contractual procedure or in an open procedure). See article 52 of the PPCC which states: "*Candidates – it is consider to be candidate any entity, whether natural or legal, which participates in the qualification phase of a restricted competition by prior qualification, a negotiating procedure, a competitive dialogue or an innovation partnership by submitting an application.*"

[63] Although not expressly referring to it, this seems to be JOÃO AMARAL E ALMEIDA's understanding in *A participação …*, p. 54 which lists three examples where this is possible: (i) restricted tendering procedures by prior qualification or negotiation; (ii) public procurement procedures with a phase for the negotiation of bids and (iii) framework agreements.

[64] As noted by JOSÉ DUARTE COIMBRA, A adjudicação …, pp. 366 regarding prior limitation of the maximum number of lots to be awarded per competitor, this limitation *"(…) is naught but a way of anticipating (at the time of submission of tenders) the diversification effect of potential contractors that underlies the whole lot-award scheme and, in particular, the very rule of Article 46(4)(a) itself. If the aim here is to avoid concentrating on one operator all the benefits of awarding all or most of the lots, it is not difficult to understand that the most immediate way to avoid such concentration is to limit the procedural participation space of each competitor when submitting his bids to the various lots.*"

[65] See Article 132(4) of the PPCC: "*4 - The tender program may also contain any specific rules on the public procurement procedure which the contracting authority considers appropriate, provided that they do not prevent, restrict or distort competition.*"

In such a case, the contracting authority, using the procedural self-regulatory power provided for in Article 132(4) of the PPCC, must forbid the participation of bidders of the same undertaking in the parts of the pre-contractual limited access procedure, in accordance with the notion provided for in Article 3 of the Portuguese Competition Act.

It should be noted that the notion of 'the undertaking' provided for in the Portuguese Competition Act does not *only* cover companies of the same group. It is also a question of all the companies which, although legally distinct, constitute an economic unit or maintain interdependent links, e.g. natural persons who hold shares in legal persons or even irregularly incorporated companies.[66]

The proposed scenario can be achieved, not only in pre-contractual limited access procedures where a limitation on departure or arrival is foreseen in the award by lots, but also in all procedures for restricted access to a qualified number of participants, in order to ensure the effectiveness of the competition principle in limited access procedures.[67]

The solution advocated does not conflict with the CJEU case-law cited above, where the exclusion of proposals submitted by companies which were part of the same group (i) was determined by national law (ii) in open pre-contractual procedures.

As the present author understands, the hypothesis that arises allows us, to exclude competitors that are part of the same undertaking, in light of the concept provided for in Article 3(2) of Law no.º 19/2012 of 8 May (Portuguese Competition Act), which may be determined by the contracting authority (i) previously in the invitation or program of the procedure, and (ii) in limited access pre-contractual procedures.[68]

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[66] See Article 3(2) of Law no.º 19/2012 of 8 May 8 (Portuguese Competition Act):

2 - A group of companies is considered to be a single company where, although legally distinct, they constitute an economic unit or maintain interdependent links arising, in particular, from: (a) A majority interest in capital; (b) The holding of more than half of the votes attributed by the holding of shares; (c) The possibility of appointing more than half of the members of the management or supervisory board; d) The power to manage their respective businesses.

[67] See PEDRO COSTA GONÇALVES, Direito dos Contratos Públicos, Almedina, Coimbra, 2018, p. 617: "*In such cases, the prohibition has the legitimate purposes of, on the one hand, avoiding undermining genuine competition between different competitors and, on the other hand, deterring economic operators from the temptation of splitting into fronts with the aim of occupying the seats available in the procedure*." See also RODRIGO ESTEVES DE OLIVEIRA, Restrições à participação em procedimento de contratação pública, in Revista de Direito Público e Regulação, nº 1, p. 34, available at http://www.fd.uc.pt/cedipre/

[68] The question still arises as to whether the exclusion will cover all bids submitted by competitors that are part of the same undertaking, or whether one of the bids may be approved while all remaining bids are excluded.

It is understood that, because a single competitor - identified with a single company – is concerned, the contracting authority should exclude all tenders that have been submitted by all competitors in the company. In this particular scenario, the plea under Article 146, nº 2 (i) of the PPCC could be applied, provided that the same competitor - in line with the notion provided for in the program of the procedure - submitted two (or more) proposals for each lot, breaching Article 59(7) of the PPCC.

Secondly, as suggested above, it may also be the case that the contracting authority has not *a priori* defined the prohibition on the submission of tenders to entities forming part of the same *undertaking*, in accordance with the notion provided for in Competition Law.

In that case, in accordance with the *Assitur* case-law, the contracting authority may assess the facts in order to determine whether the relationship between the two competitors had a concrete influence on the content of their tenders, sufficient to exclude those companies from the proceeding[69] or to resort to the theory of lifting the corporate veil or *disregard of legal entity*.[70] [71]

These assumptions may be considered in open or limited access pre-contractual procedures.

The use of the theory of lifting the corporate veil or disregard of legal entity presupposes the practice of abuse of rights by a single *company* (albeit translated into the submission of different proposals) which fictionalizes the existence of *several* proposals by *several* competitors.

However, the concrete action of the theory of disregard of the legal entity of societies still suffers from a certain lack of theoretical rigour, because it relies not on concrete legal norms, but rather on principles such as good faith and abuse of law, related to the instrumentalisation of that entity. Furthermore, it is in fact controversial, since there are no entirely convergent understandings as to the formulation of the respective requirements.[72]

Third, in cases where, in line with the 2017 PPCC review, the abnormally low price is determined in the tendering program by setting a percentage deviation from the average bid - somewhat similar to the facts underlying the *Assitur* judgment – then the bids submitted by competitors which, in concert and even though being part of the same economic group, aim to *distort* the average bid price and in turn influence the value of the *abnormally low bid* - may be excluded not only where a rule to that effect is laid down in the tender program[73], but also in light of Article 70(1)(c) of the PPCC. This is because since it is impossible to evaluate bids due to the form of presentation of any of the respective attributes - the proposed value - which, having been previously fixed or combined with other competitors (even within the same economic group) cannot be objectively evaluated. In the latter case it should be noted that we are not within the scope of Competition Law, but only within the scope of Public Procurement Law, which is why we do not consider that the simultaneous application of the provisions in Article 70(2)(g) of the PPCC is valid.

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[69] See the *Assitur* judgment, cit., paragraph 32.

[70] Regarding the application of this theory to Administrative Law, see JOÃO AMARAL E ALMEIDA, *Os organismos de direito público e o respectivo regime de contratação: um caso de levantamento de véu*, in Estudos em homenagem ao Professor Doutor Marcello Caetano, FDL, Lisboa, Coimbra Editora, 2006, pp. 633-656.

[71] Considering that in such cases, the exclusion of tenders submitted is based on the provisions of Article 146(2)(i) of the PPCC, provided that one competitor has submitted two tenders to each lot in breach of Article 59(7) of the PPCC, see LUÍS VERDE DE SOUSA, *Algumas notas* ..., p. 80.

[72] Regarding this theory, see, more recently, MARIA DE FÁTIMA RIBEIRO, *A desconsideração da personalidade jurídica: as realidades brasileira e portuguesa*, Direito das Sociedades em Revista, March 2016, Year 8, Vol. 15, pp. 29-57.

[73] As stated by JOÃO AMARAL E ALMEIDA, *A participação ...,* p. 57.

In summary, this paper argues that in view of the new possibilities offered by the 2014 Directives and the revised PPCC on awarding by lots, including the possibility for contracting authorities to limit the maximum number of lots for which each tenderer may apply and / or the maximum number of lots to be awarded per tenderer, it would be prudent for contracting entities, using the power of procedural self-regulation provided for in Article 132(4) PPCC, to prohibit the participation of competitors in the same undertaking. Further, in light of the concept provided for in Article 3(2) of Law 19/2012 of 8 May, such prohibition should be provided for (i) in advance of the call or program of the procedure and (ii) in limited access pre-contractual procedures.

In other cases, i.e. open pre-contractual procedures where limits are set on the maximum number of lots for which tenders may be submitted or the maximum number of lots to be awarded per tenderer, the contracting authority may use the provisions of Article 70(1)(c) PPCC or the theory of lifting the corporate veil or disregard of legal entity in order to exclude tenders submitted even by companies of the same group in cases where, in accordance with the *Assitur* case-law, it is determined that *"(…) the relationship of control at issue influenced the respective content of the tenders submitted (…) A finding of such influence, in any form, is sufficient for those undertakings to be excluded from the procedure in question."*[74]

[74] See *Assitur* judgment, cit., paragraph 32.

The Impact of Professionalization in Public Procurement

- evidence from a case study -

Maria Antonietta Coppola Gustavo Piga[1]

Abstract

The importance of public procurement for achieving value for money in public purchases - thus obtaining important savings in the use of taxpayers' money and effectiveness in meeting citizen's demand for public goods of a given quality - is widely recognised, as made clear by the Directive 2014/24 of the European Union and the international legal framework for public procurement at large. But how can these goals be met? Professionalization is a necessary condition and thus represents a key part of the final answer. But what kind of professionalization is really needed? In what environment? With which results? These questions are rarely answered with real life examples.

Taking advantage of a questionnaire-based cohort of individuals that have gone through a process of professionalization in an international environment, this paper expands on its challenges and on the importance of professionalization of the persons working in public procurement-related activities as key to an efficient use of public money.

Keywords

Public procurement; professionalization; advanced training; career progression

1. Introduction

Public procurement is a lever for the sound use of taxpayers' money while implementing economic and social policy objectives. The achievement of value for money and the creation of a level playing field which guarantees to economic operators equal treatment and fair competition during the whole procurement process are key principles which are clearly stated by the European Directive 2014/24/EU, the 2014 Agreement on Government Procurement (GPA) and by the 2014 OECD Recommendation of the Council on Public Procurement. National laws and regulations of many States aim at implementing these principles both for high and low value purchases while not refraining from adding other specific tailored goals. These latter reflect a wide variety of sensitivities that governments over the world, with different emphases, usually have within their national procurement strategy. The OECD indeed recognizes as "secondary policy objectives" those who refer "*to any of a variety of objectives such as sustainable green growth, the development of small and medium-sized enterprises, innovation, standards for responsible business conduct or*

[1] The opinions of the authors are personal and cannot be attributed to their organizations. Corresponding author: Gustavo Piga,

broader industrial policy objectives, which governments increasingly pursue through use of procurement as a policy lever, in addition to the primary procurement objective"[2].

Equal treatment, fair competition, value for money as well as other strategic policy objectives can only be met by implementing adequate procurement procedures during all phases of the procurement process: pre-award, award and post-award phase. To make practical examples, the use of such procedures may include market consultations and product-related analysis of public expenditures and procurement needs during the first phase of the process. These could be extremely useful to write tender documents that correctly identify the object of procurement and its specific technical requirements. Moreover, the accurate definition of needs and of the object of procurement facilitates the use of the right acquisition procedures and award formulas, which are key to the award of a contract where economic operators offer the best combination of quality and price. Last but not least, a sound procurement process provides for the application of (well thought-ahead) contract management procedures that monitor the performance of the contract by suppliers. The whole procurement process may thus be intended as a cycle, where appropriate contract management coupled with performance monitoring is used in the definition of procurement needs and in the preparation of tender documents.

The implementation of such procedures during the whole public procurement process certainly needs to be regulated by national laws and regulations but this is not sufficient. It is indeed crucial that the workforce which is appointed for procurement-related tasks is well trained and experienced both in the knowledge of the related legal environment and of the managerial and technical issues that pertain to each tender.

It is a widespread general understanding that there is an active waste of public money while performing procurement activities related to integrity issues that may take place during the procurement process. Such risks may be linked to corrupt or fraudulent practices which cause misallocation of funds, higher prices and/or less quality of what is being procured. Countermeasures to prevent integrity risks can be the application of anticorruption measures, data mining to identify anomalies, the regulation of conflicts of interest as well as the implementation of integrity standards and transparency measures both at the national and institutional level. Nevertheless, integrity issues and corrupt practices are just part of the causes related to the wrongful use of public funds. As rigorously shown in a landmark study made by Bandiera, Prat and Valletti[3], the main cause of waste of government spending can often be considered passive waste, pertaining to incompetence-driven inefficiencies[4]. In "Bureaucratic Competence and Procurement Outcomes" by Francesco Decarolis, Leonardo M. Giuffrida,

2 Organisation for Economic Cooperation and Development (OECD). (2015). OECD Recommendation of the Council on Public Procurement. OECD. https://www.oecd.org/gov/ethics/OECD-Recommendation-on-Public-Procurement.pdf

3 Bandiera, O., Prat, A., Valletti, T. (2009). Active and Passive Waste in Government Spending: Evidence from a Policy Experiment. American Economic Review, vol. 99, n. 4, 1278–1308, 2009.

4 We here do not deepen the relevant concept that passive and active waste, incompetence and corruption, are strategic complements that reinforce each other. This makes the issue of professionalization, also independently of anticorruption competence, relevant also to tackle and abate corrupt practices.

Elisabetta Iossa, Vincenzo Mollisi and Giancarlo Spagnolo this is confirmed: the authors argue, looking at the US public procurement market, that *"a one standard deviation increase in competence reduces cost overruns by 29 percent and the number of days of delay by 23 percent. It also reduces by half the number of renegotiations. This implies that, if all federal bureaus were to obtain NASA's high level of competence (corresponding to the top 10 percent of the competence distribution), delays in contract execution would decline by 4.8 million days and cost overruns would drop by $6.7 billion over the entire sample analysed"* [5].

Passive waste is intended to be any action which does not provide a personal benefit but it is rather caused by the lack of skills of the procurement personnel, the lack of incentives that public officials have in order to minimise costs and the excessive regulatory burden that hinders the simultaneous implementation of discretion and efficiency during the procurement process. Bandiera, Prat and Valletti outlined the causes of the misuse of public money and, after performing a policy experiment in Italy, affirmed that passive waste accounted for 83% of the total estimated waste.

Ten years after this study passive waste still remains an issue to be tackled and professionalization may be its solution. The following paragraphs illustrate the approach of the European Union to professionalization in public procurement and provide evidence from a practical case study.

2. Professionalisation Of The Procurement Function In The European Union

The EU acknowledged in its Directive 24/2014 the presence of a […]"*strong trend emerging across Union public procurement markets towards the aggregation of demand by public purchasers, with a view to obtaining economies of scale, including lower prices and transaction costs, and to improving and professionalising procurement management*[…]"[6] but it waited three years more to approve a recommendation on the professionalisation of the public procurement profession.

Unlike Directive 24/2014, in its Recommendation 2017/1805 the European Commission does not draw a link among the emerging trend of demand aggregation and professionalisation of the procurement function. As a matter of fact, the Recommendation is addressed to all Member States regardless the type of procurement system – either centralised or decentralised – they adopt[7]. Indeed, the 2017/1805 preamble (7) states that […]"*However, under their centralised or decentralised procurement system, Member States should further encourage and support contracting authorities/entities in rolling out professionalisation initiatives*" […].

[5] Decarolis, F., Giuffrida, L. M., Iossa, E., Mollisi, V. and Spagnolo, G. "Bureaucratic Competence and Procurement Outcomes". Working Paper 24201: http://www.nber.org/papers/w24201.

[6] Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC. Official Journal L 94, 28.3.2014, p. 65–242, Preamble 59.

[7] Commission Recommendation (EU) 2017/1805 of 3 October 2017 on the professionalization of public procurement — Building an architecture for the professionalization of public procurement. Official Journal L 259, 7.10.2017, p. 28–31, Preamble (7).

By approving Recommendation 2017/1805 the EU Commission further recognised the role of public procurement *"to achieve smart, sustainable and inclusive growth"*[8] in national environments characterised by the need for digitalisation, innovation and sustainability. Such needs unfortunately in the mind of many collide with the availability of limited budgets for public investment, but in reality, they can be more than met by the efficient use of public procurement through the removal of passive waste.[9]

The Recommendation defines the objective of professionalisation of public procurement as "the overall improvement of the whole range of professional skills and competences, knowledge and experience of the people conducting or participating in tasks related to procurement"[10]. The definition is based on a holistic and strategic approach to be embedded in national policy architectures that foster the professionalisation of pubic administrations in order not only to attract, but to develop and retains skills.

To do so, the strategic approach outlined by the European Commission for the professionalisation of the public procurement personnel recommends the creation of both initial and lifelong training programmes which benefit from the cooperation with academia. It also recommends the sharing of knowledge and good practices among practitioners as well as the creation of fora and social networks.

Another aspect of the strategic approach outlined by the Commission is the creation of defined career paths that allow not only for continuous training and improvement of skills and experience but also for incentives linked to the level of responsibility of the procurement personnel. Moreover, the implementation of tools - especially IT tools - and processes for public procurement allow EU Member States to foster the professionalisation of the procurement workforce. Other key aspects mentioned by Recommendation 2017/1805 is the promotion of integrity by means of compliance and transparency measures to be implemented by Member States.

3. IMPPM: The Case Study Of Tor Vergata University Of Rome

Tor Vergata University of Rome, more specifically its Faculty of Economics, is one of the most important centres for procurement in Italy. It has an interdisciplinary team of professors and experts working in the field of public and private procurement and supply chain, which is recognized at the international level for its top quality consultancy and training activities. Moreover, the Faculty offers a wide array of courses and interdisciplinary programs related to procurement at graduate and post-graduate level.

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[8] Commission Recommendation (EU) 2017/1805 of 3 October 2017 on the professionalisation of public procurement — Building an architecture for the professionalisation of public procurement. Official Journal L 259, 7.10.2017, p. 28–31, Preamble (1).

[9] Indeed Bandiera et al. quantify waste in Italy at almost 2% of GDP, and only for waste due to high prices in goods and services. If we were to extend the calculation of waste to works and to quantities, such percentage may rise further. There is no sense that waste in other countries differs too much from the Italian figures (see for example the quote on the US experience by De Carolis et al. In this paper).

[10] Ibid., Preamble (5).

In 2004 the Faculty launched the 1-year Italian Master in Procurement Management (MPM, *Master in procurement Management - Approvvigionamenti e Appalti*). This postgraduate Master program, which graduated so far more than 500 students now working in private and public organizations mostly in the field of procurement, is entirely taught in Italian, and is designed for young graduates and professionals who wish to have an interdisciplinary training on both public and private procurement. After nine years of experience, in 2013, MPM led to the creation of a wider international project, the International Master in Public Procurement Management (IMPPM). This is a 1-year postgraduate Master program, jointly organized by the Tor Vergata University of Rome and the European Bank for Reconstruction and Development (EBRD), with the patronage of the Central European Initiative (CEI) and the Italian Ministry of Economy and Finance. In the Master, the EBRD not only offers grants for public purchasers coming from its countries of operation, but it also contributes to training students by inviting some of its main procurement officers to deliver lectures. Other multilateral development banks, like the African Development Bank and Islamic Development Bank, have also contributed to the program through scholarships for expert public procurers of countries of operation.

Given the complexity of the tasks asked to the public procurement personnel, the IMPPM Master program provides an interdisciplinary training on many aspects the procurement function: negotiation strategies and techniques; legal frameworks and economic principles for effective procurement; organization and strategy of procurement; strategic tools for procurement procedure; economic analysis of the market and cost analysis; integrity and transparency practices; e-procurement. Being an international program, it also provides training on international procurement principles and best practices.

Such education - which covers many aspects of the public procurement process - is addressed to professionals coming from different parts of the globe who afterwards are going to implement what they learn during the programme in the institutions where they work, according to national laws and regulations in force. Furthermore, once IMPPM Alumni go back to their work activity, Tor Vergata University of Rome facilitates continuous training and the possibility for the exchange of good practices by organising numerous conferences and events (e.g. the Global Procurement Conference and the Interdisciplinary Symposium). The enthusiasm of a multitude of IMPPM Alumni has also brought to the creation of an Alumni Association that supports a wide social network of public procurement experts.

It is in this context that in 2018 in Paris during the 3rd Workshop on Contemporary Issues in Procurement Practice a survey on IMPPM Master program was distributed among the Alumni of the first five editions. The survey was anonymous and aimed at verifying the actual impact of the multidisciplinary training provided for in the professional life of the Alumni. Out of a total of 141 students coming from 31 countries[11] – located in Africa, Asia and Europe – the Master Secretariat received 103 responses.

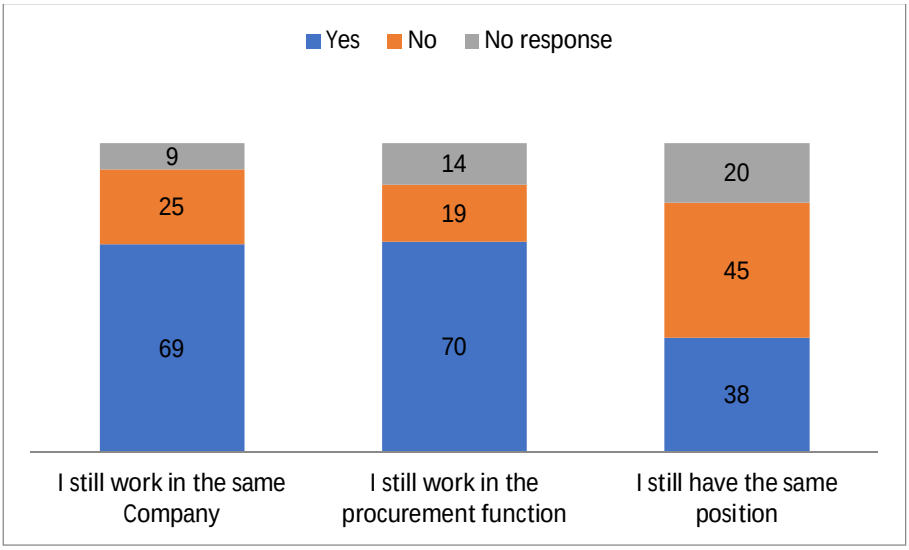
[11] Republic of Albania, Republic of Armenia, Bosnia & Herzegovina, Republic of Bulgaria, Republic of Croatia, Arab Republic of Egypt, Republic of the Gambia, Federal Republic of Germany, Georgia, Hungary, Republic of Italy, Hashemite Kingdom of Jordan, Republic of Kazakhstan, Kyrgyz Republic, Republic of Latvia, Lebanese Republic, State of Libya, Republic of North Macedonia, Republic of Moldova, Montenegro, Kingdom

The survey was structured around 14 questions and below we report the most relevant ones together with the ensuing results and some comments on those.

Question 1: Career Mobility

The first question was related to the career mobility of the Alumni, who were asked to indicate whether - after having completed the Master program - they still work in the same company, still work in the procurement function, have the same position or a higher one. The purpose was to check if indeed, at least within this sample, greater capacity building in public procurement generates 1) upward mobility in terms of career recognition within one's institution and 2) greater attractiveness from other outside institutions. We also wanted to check if, after a period of capacity building, institutions would take advantage of such greater knowledge and keep the employee within the procurement function.

Figure 1 – Question 1



The results show that 73% of the Alumni that completed the questionnaire and answered this question still work in the same company or institution and that 79% of them still work in the procurement function[12] and therefore do procurement related activities. It is interesting to see that among the 45 Alumni that declared to have changed position 62% (28 people) have a higher one (from an additional question not shown here) and out of those 57% (16 of them) still work within the same institution. It is obviously not possible to affirm that changes in job positions or institutions are directly correlated to the successful attendance of the Master program even though these results seem to provide *prima facie* evidence of its impact.

of Morocco, Republic of Namibia, Republic of Belarus, Romania, Russian Federation, Republic of Serbia, Slovak Republic, Taiwan, Republic of Tunisia, United Arab Emirates, Ukraine.

[12] The procurement function may include procurement-related job positions such as: legal counsels; buyers; category managers; project managers.

The fact that a majority of Alumni still remains in the same company can be probably explained by the human resource investment done by the employers that have supported former students in attending the Master program. A majority also remains in the procurement function: this too can be related to the advantages for the employer of making use of the increased specialization of the procurement professional on the activities linked to the procurement function.

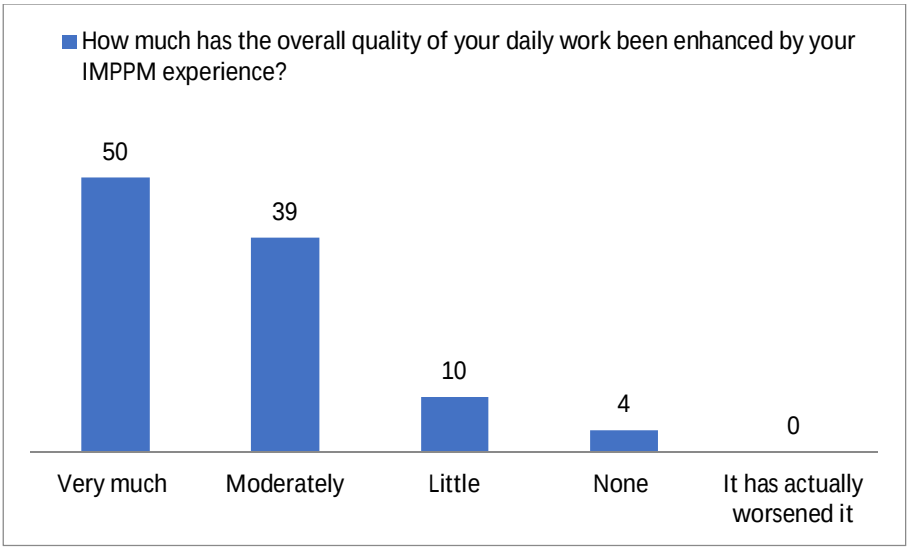
However, if one analyses the cluster of students that answered "yes" to the first two questions (47 students that work in the same company and same function), we can observe a low level of inside career mobility within the same procurement function. In this case career mobility is intended as a change in the position within that function when the student remains in the same Company. Indeed, only 36% of such students (17 persons) have changed position and among those 65% have a higher one. Therefore, generally speaking, the relatively few that have changed position within the same company have often perceived this change as a promotion.

Moreover, if one analyses the smaller cluster of students that declared not to work in the same company but to still work in the procurement function (18 persons), one can observe a high level of career mobility related to their job position. In fact, 83% (15 persons) of them declares to have changed position and, among those, 67% declares to have a higher one. In this case, we can observe that a change of employer increases the probability to change the job position as well as the one to obtain a higher one. It seems they have moved in order to take advantage of new opportunities.

Question 2: Overall quality of the daily work

The second question was about the performance of the daily work after the IMPPM experience.

Figure 2 – Question 2



None of the participants to the survey declared that the overall quality of their daily job has worsened after IMPPM. 86% of the former students either declared that the overall quality had "very much" or "moderately" been enhanced. Some of the comments linked to the responses "none" or "little" show that these former students do not actually work in the procurement function

anymore. This points to a tremendous "soft" impact of the acquired professionalization, in terms of personal satisfaction, independently of formal recognitions. This could be related to greater understanding of one's role in the institution and society, greater collaboration and/or leadership within the internal team, greater recognition, greater capacity to engage in network-related activities.

One of the respondents actually points out the fact that being IMPPM an international program it is difficult in some cases to implement at the national/local level what has been learned. Some other comments that are worth highlighting are that the notions taught during the program have helped some Alumni to "see the bigger picture" of procurement activities and to understand complex procurement procedures. Indeed, four different comments contained the word "confidence" related to the impact of the increased understanding of the procurement function.

Question 3: Salary Variation

Question 3 of the survey was related to the change of the yearly salary after having attended the Master program. The purpose of this question was to check whether employers tend to implement economic incentives for the procurement personnel that undergoes a professionalisation program. The question was therefore about the correlation between salary variation and the attendance to the IMPPM Master Program.

20% (21 persons) of the former students stated that IMPPM contributed "very much" to influence the change of their yearly salary, 25% (26 persons) chose the answer "moderately", 22% (23 persons) "little" and 32% (33 persons) affirmed that IMPPM did not contribute to their change of yearly salary.

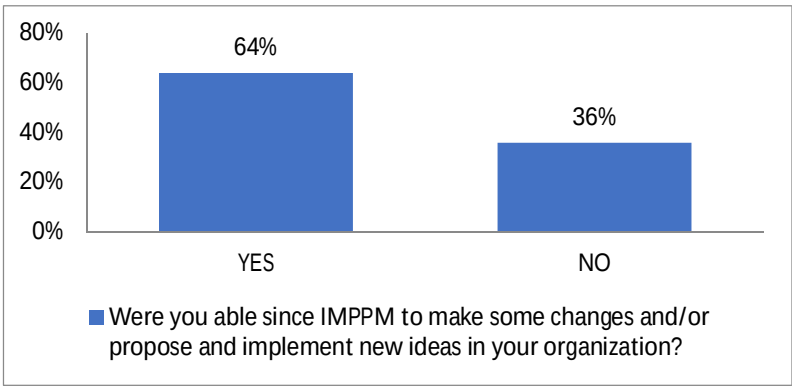
If one analyses the cluster of Alumni who answered "very much" to Question 3, we observe that 81% (17 out of 21 persons) declared to have a higher position and that only 14% (3 persons) declared not to work in the procurement function anymore. In addition, always within the same cluster of Alumni, we observe that 52% declares not to work anymore for the same company whereas 33% declares to still work within the same company (the remaining Alumni not replying). We can therefore assume that the Alumni that affirmed that the Master program highly contributed to their change of yearly salary usually have higher positions and keep working within the procurement function thus taking advantage of their further specialization. More than 50% does not work for the same company and therefore we can assume that in their case retention policies and economic incentives put in place by their previous employers were not enough in comparison with the higher specialization acquired.

The abovementioned observations seem to be confirmed by a further analysis of the cluster of Alumni who answered "none" to Question 3. These Alumni affirmed a lack of correlation between their salary variation and the attendance of the IMPPM Master Program. Out of 33 Alumni, only 2 persons declared to have a higher position; one works for the same company and the other does not; both of them still work within the procurement function. Further comparing Question 3 and Question 1, we observe that 82% of them (27 persons) still work for the same company, 15% have changed company (5 persons) and one person did not reply. It is not possible to affirm that the former students who have answered "none" to Question 3 did not have any upward variation of their yearly salary (as it could have been, in their mind, unrelated to the IMPPM attendance). Nevertheless, it is important to observe that the majority of the former students that did not affirm

a correlation between such variation and the attendance of the professionalisation program still works for the same company or institution. One possibility is that the home organization cannot implement wage raises related to attending a Master, also explaining why many who had a raise wage connected to the Master attendance have had to leave their organization. In this case – following their investment in the capacity building of employees – employers should possibly find further specific economic incentives as part of their retention policies.

Question 4: Bring the Change

Figure 3 – Question 4



Question 4 refers to the capacity of graduated students to matter operatively within their institution after the achievement of the degree.

The histogram speaks for itself. 64% of the former students declared that they had had the possibility to make some changes or implement new ideas within their organization. The result is surprising if we consider that public procurement institutions are, in the mind of many, often associated to high levels of bureaucracy and rigid processes.

Alumni were asked to comment their answer. Not many Alumni that declared they were not able to make some changes or implement new ideas within their institution commented their answer. Generally speaking, it was observed that either they went through a recent change of company/institution or that there is not much room for change within the institution. Also, these former students pointed out the lack of opportunity to propose new ideas and in some cases the fact that the job position and the type of tasks performed do not allow to implement new ideas.

Among the ones that declared to have been able to make some changes or implement new ideas, the most recurrent theme was the implementation of e-Procurement. Also, other former students mentioned the modification of forms and internal procedures, the implementation of procurement procedures that had scarcely or not been used before (such as framework agreements). Some other comments were related to the implementation of the principles of transparency, competition and anti-collusion practices. Some comments were also related to the implementation of capacity building and training measures at company level.

Going more into detail, it can be interesting to compare the answers to Question 2 and to Question 4. If one analyses the cluster of former students that declared that they were able to bring a change

within their organization we can observe that 57.5% of such students also declared that the overall quality of their daily job had been very much enhanced by the IMPPM experience. On the contrary, if one analyses the cluster of students that answered "no" to Question 4 we can further observe that only 32% declared that the overall quality of their daily job had been very much enhanced by the same experience. Therefore, we can speculate that there is a tight link between the possibility to impact within the home organization and the increase of the overall quality of the daily job of former students.

Question 5-6: Relevant topics

Question 5 asked former students whether there are other fields or topics that can be useful during a career in procurement and that were not covered during the program. 42% answered positively and suggested additional topics that could be covered during the Master.

The two main suggestions were related to contract management and to the importance of practical cases studies in order to better understand how to implement the notions learned. Also, procurement of innovation and green public procurement implementation were mentioned.

It is also important to highlight an anonymous comment, which is related to integrity and transparency practices:

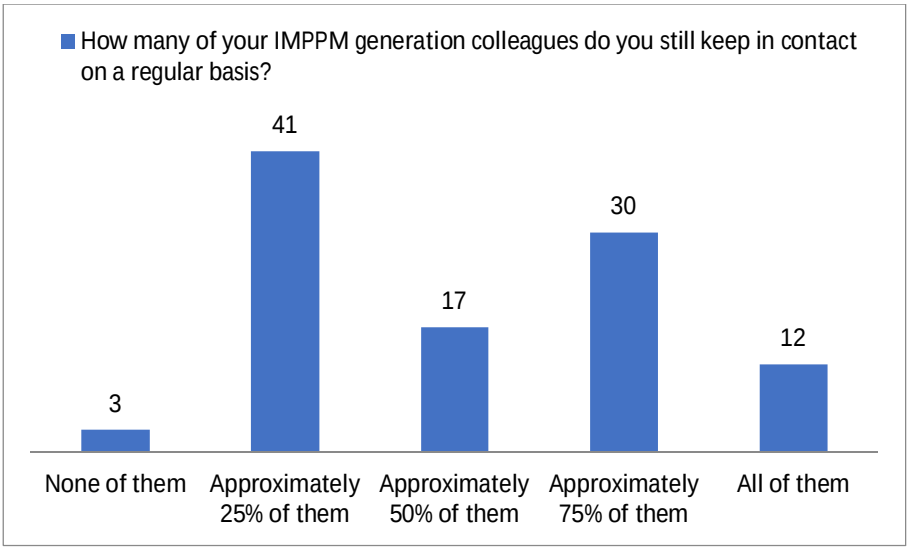
"During my study in Italy, one question was in my mind all the time: can we protect a public procurement officer from the public authorities themselves, where he/she is working? If yes, how? In fact, this matter is very important because when we treated the principle of the protection of any bidder, who decides to cooperate with the public authorities, in order to reveal the colluded procedures in the tenders' system, the main question which remains without a clear answer was: how can we protect the public officers from the sanctions of the system itself, when this system is totally corrupted?" – cit. Anonymous

This comment highlights the necessity to implement adequate anticorruption measures in order not only to detect unlawful practices but to guarantee adequate protection and anonymity to the person who uses whistleblowing mechanisms. At the same time, it points to a cultural heterogeneity among different institutions that could prove capable of nullifying outright the impact of professionalization on graduate students.

Question 7-10: Networking

The following questions were related to networking. Alumni were asked with how many colleagues that have attended the same Master course they still keep in touch on a regular basis.

Figure 4 – Question 7



It was interesting to see that - notwithstanding the fact that many students are located in different countries and continents - 29% of them declared to keep in touch with close to 75% of the former students with whom they attended the same class and 12% declared to keep in touch with all such students.

Furthermore, Question 8 asked students to tell whether they have exchanges with other students that attended different editions (years) of the same Master program. 62% replied “yes, sometimes”, 10% replied “yes, a lot” and 28% replied “no, never”.

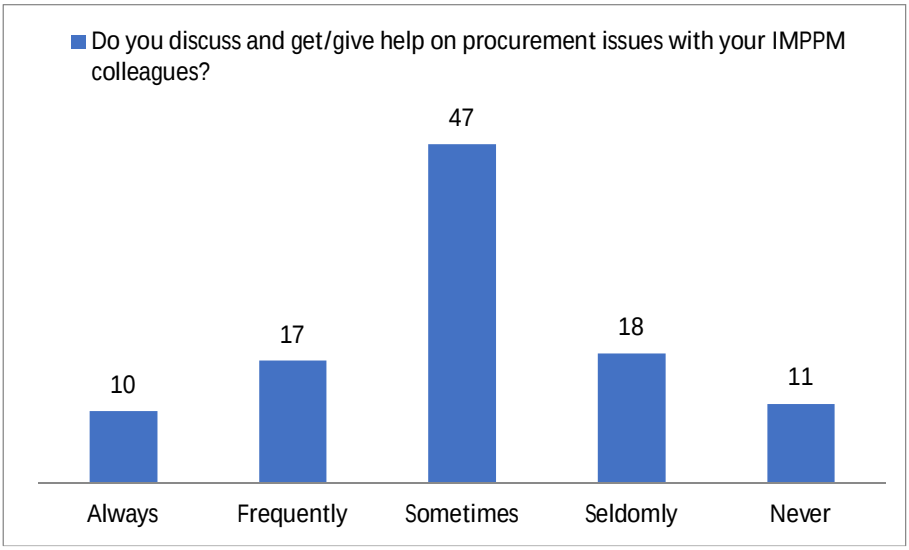
What we observe is therefore the advanced (but not fully complete) creation of a wide social network among procurement professionals that have attended the same edition of the Master program. Such network has also been established among former students that have attended different editions and is likely to create an additional externality which increases the value of an education program in procurement, both at the human and professional level. This pattern of relationships is probably due to several reasons.

Students that come from the same country or that work for the same institution usually get in touch to exchange experiences before one of them is to move to Rome to attend the Program. These students tend to keep in touch also after attending the Program thus establishing an additional, smaller, local network. Another reason is related to the international conferences/workshops and social events organized within the activities of the Master program and of the Alumni Association to which all former students are invited to participate. Moreover, what should not be underestimated is the human aspect linked to an intense Campus life which complements the professional experience. In fact, the majority of students are not Italian and in order to attend the Master program they have to live abroad - in Rome - for some months. They have thus to leave their families and to be housed in a University campus, all together. Therefore, we can conclude that the bond that was created among students was not just due to the creation of study groups

inside or outside class hours but it was also the direct consequence of the sharing of real-life everyday experiences in a challenging culturally new environment.

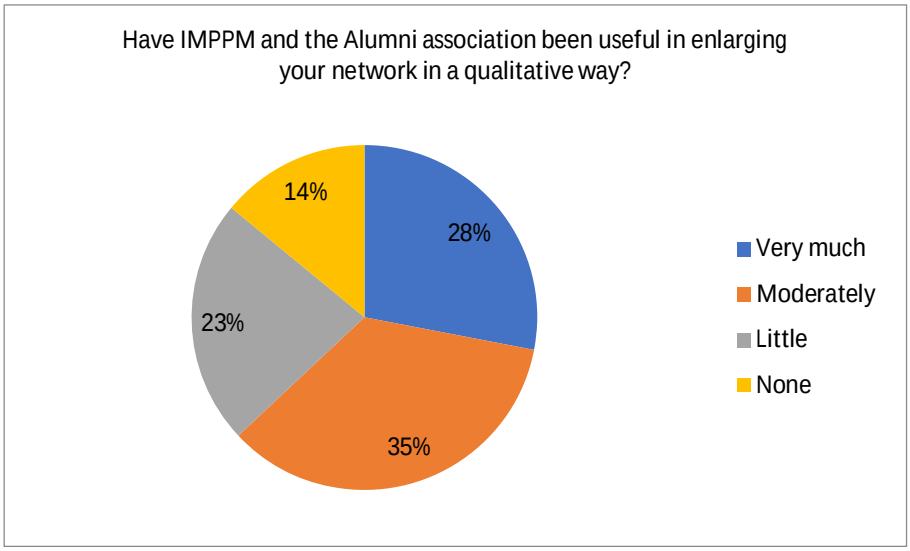
On a similar note, the following question was related to the type of interaction that occurs among former students, and it asked whether they discuss about procurement-related issues. The answers confirm the personal, in addition to professional, bond established among the Alumni as interactions are not always related to procurement topics.

Figure 5 – Question 9



Lastly, Question 10 was related to the role of the Alumni Association and asked former students whether it has been useful in enlarging their network in a qualitative way.

Figure 6 – Question 10



Alumni were given the opportunity to write comments in order to indicate how to improve the role of the Alumni Association in enlarging their network. Few suggested to organize more

international meetings or workshops. On the other hand, more comments suggested the use of a communication platform, fora, or social networks to communicate and/or share ideas given the geographic distance among Alumni. In general terms, participants asked for more opportunities to interact either online or in person.

4. Conclusions and Main Findings

Public procurement is a fundamental instrument for obtaining important savings in the use of taxpayers' money and effectiveness in meeting citizen's demand for public goods of a given quality. In its Directive 2014/24 the European Union considers value for money, equal treatment, competition and transparency as key principles for the implementation of public procurement activities. Moreover, OECD recommends the sound use of public procurement for the achievement of policy goals which are related to the economic, social and environmental aspects of national policies. The role of public procurement in achieving such principles and objectives appears to be internationally recognised and is implemented at the national level by many States.

In order for the abovementioned role of public procurement to be not only recognised but also efficiently implemented, it is necessary to approve adequate laws and regulations at the national and/or subnational level. However, this is not enough. Rules and regulations are implemented every day by professionals that perform procurement-related tasks and need to be aware of the importance and of the complexity of their job. For this reason, professionalisation of the public procurement workforce is becoming more and more a key issue for companies and institutions. As was mentioned already in 2015 by Joachim Nunes de Almeida: "*the EC is developing a policy to promote professionalization of public buyers. The policy will include inter alia professionalisation plans, promotion of defined training schemes, capacity building and exchange of best practice. Market intelligence, business skills and a focus on skills must become the heart of public purchasing. In short, public procurement needs to become a business skill - rather than an inefficient (at best) or corrupt (at worse) administrative endeavour*"[13].

So the question is: what kind of professionalization is really needed? In what environment? And how should we invest in professionalizing people?

Starting from this last question, the results of the case study with regard to incentives and career paths show that the procurement workforce that attends a capacity building program usually remains in the same company and continues working in the procurement function holding the same job positions. Few Alumni that did not change company after attending the Master Program have changed position within the same procurement function and the ones that underwent such change usually perceived it as a promotion.

Notwithstanding the low level of internal career mobility, one can observe that the human resources investment done by employers in supporting the capacity building of procurement professionals is confirmed by the fact that almost 80% still performs procurement related activities. Moreover, when it comes to economic incentives, which may be conceived as part of

[13] Piga G., Tátrai T. (2015). Public Procurement Policy. Series The Economics of Legal Relationships, Routledge, p.5.

broader retention policies, only a small percentage of Alumni did not recognize a link between their salary variation and the attendance of the capacity-building program. Based on the results, we can infer that companies keep investing in the procurement workforce that has been trained, as the majority of these employees neither changes company nor job function. However, it is important to note that an upward change in position is more likely to occur when the procurement professional changes employer. The results of the case study should be read taking into account the peculiarities of the public sector - which is usually considered less flexible in comparison with the private sector in terms of salary and job position variations - as the majority of the Alumni works within the public sector.

In line with the responses, a capacity building program for procurement professionals should take into account many aspects of the procurement process in order to blend the practical and theoretical aspects of the tasks performed. Indeed, if one observes the description of a procurement process in all of its phases it can be noticed that a procurement professional is asked to know and implement notions related to different disciplines (e.g. law, economy, statistics, social sciences). Also, being procurement embedded in complex processes, its related activities require interaction and cooperation among different functions that hold different competencies within the same company or institution.

As Decarolis, Giuffrida, Iossa, Mollisi and Spagnolo recently stated in their working paper "Bureaucratic Competence and Procurement Outcomes", *[…]"Cooperation in the bureau seems to be by far the most important component of bureau competence in terms of the effects on procurement performance."[…]* As a matter of fact, given the interdisciplinarity and the complexity of public procurement activities, cooperation is indeed a crucial element that needs to be taken into account for the efficient performance of such activities. It is in this light that the abovementioned working paper highlights that existing certification programs mainly target individual contracting officers and therefore might not be sufficient.

Capacity building in public procurement based on interdisciplinary – and international - university programs can bring together professionals of different ages, university backgrounds, and cultures to confront on the principles at the base of their daily job activities. Such programs should provide students with a comprehensive view of public procurement in order to allow them to frame the job activities they perform within a bigger picture. This can bring more confidence, job satisfaction and improve the overall quality of the daily job allowing professionals to understand their role in the achievement of wider policy objectives as stated in some comments highlighted in the analyzed case study.

To this regard, it is important to mention the results of Question 4 of the survey: more than 60% of the Alumni declared to have had the possibility to matter operatively by making some changes or implementing new ideas within their organization. The capacity to innovate and suggest new solutions is a peculiarity of employees equipped with a wide vision of the frame where their job activities stand. These results might seem surprising if we consider that many public institutions are in the mind of many associated to high levels of bureaucracy and rigid processes. However, it might one way to provide job satisfaction to skilled individuals there where other rigidities do not allow for other types of more direct remunerations; whether these satisfactions are enough to retain the same individual is another issue.

University environments are the places where it is possible to receive interdisciplinary training in order to obtain such a broad and comprehensive vision. They may be considered as “playgrounds” where students tend to feel at ease and at the same level regardless of the qualification or job position they hold. Such feeling allows students to confront on job-related topics in an open manner getting to know different ways in which procurement activities can be performed and implemented.

However important in the working life of an employee such university programs might be, learning is a continuous process and outlasts the time of a professionalisation program. This continuous process on one side is definitely encouraged by the creation of professional social networks which allow Alumni to confront on a regular basis on different topics related to their job activities. On the other side, continuous learning processes need to be supported by employers who should incentivize the implementation of the notions learned and recognize - when it is the case - the value added brought by the employer who undergoes a continuous learning process.

CASE STUDIES

Good practices in public procurement of engineering services

Alexis de los Reyes Darias

Abstract:

This opinion article outlines the challenges involved when contracting engineering services by the Public Sector in Spain, and how they can be solved from a practical perspective.

Keywords:

public procurement, engineering services, Spain.

1. Introduction

Contracting engineering services is a complex matter that requires a cautious and solid planning. technical, financial, economic, legal, organizational and experience aspects are involved and must be considered.

When procuring these services, the Spanish legislation contemplates option to use traditional procedures (open, negotiated or competitive dialogue), although it considers better suited the restricted procedure.

This is significant because until now the open or restricted procedures –widely used by any Administration, regardless of their size – had often been considered unsuitable for contracting complex and high-value services due to the problems derived from the costs, because they associate these procedures with a fixed price.

While the estimation of Open Book Costs, which is the negotiated procedure basis, came to solve that issue, it could also create possible conflicts of interest or violate the principles of equal treatment and transparency.

2. The Spanish Public Procurement Law

The Spanish Public Procurement Law (LCSP), in its Article 102.1, establishes that public sector contracts will always have a specified price, which will be paid to the contractor based on the services provided in accordance with the agreement, with a breakdown of prices except when this is not possible.

Therefore, the law establishes the need to determine a specified price that should not be confused with a fixed price, for which it will be necessary to save the asymmetry of economic information between contractors and contracting party.

The public purchase should not be low-cost, but neither should pay it at any price. It is about finding the best quality vs. price ratio by promoting concurrence while leaving the door open to creative and innovative ideas.

Quality must be the key factor in the evaluation of these services. The LCSP itself establishes that the quality criteria should prevail and account for at least 51% of the assignable score in the valuation of offers (Article 145.4 of the LCSP).

Engineering services are not commodities, and therefore, the quality of these services can only be parameterized to certain limits, especially if we do not want to limit creativity and innovation. Additionally, the automation of the evaluation process, by means of formulas, does not necessarily produce objective results, since the formulas may be subject to bias and be reductionist, and they are, in fact, subject to controversy and dispute.

For the reasons stated, the objective evaluation of complex services requires to consider and evaluate specific and expert knowledge based on the criteria that have been previously defined.

The LCSP itself recognizes this when, even for the restrictive case of the simplified open procedure, it allows the weighting of these criteria, based on value judgment, to reach 45% of the total score (Article 159.1.b).

A critical aspect of valuation methods is the use of value judgments and they require close attention. The LCSP itself establishes that, when its weighting is greater than the automatically evaluable criteria, the participation of an experts committee will be required (Article 146.2), establishing a clear separation between the roles of the body proposing the contract and the one evaluating the offers. This separation guarantees the independence of the decision-making process of the Contracting Authority.

Therefore, there are three major challenges in this type of contract:

1) the asymmetry of economic information between contractors and contracting party.

2) the difficulty of promoting concurrence.

3) ensure the independence of the decision-making process of the Contracting Authority.

For the reasons stated, contracting authorities are increasingly relying on professional expertise to carry out complex and high-value public contracts, which is considered a good practice. The objective is the convergence of the principles and practices of good project management, contracts and cost auditing, ensuring the independence of the roles of the body proposing the contract and the one evaluating the offers.

The elaboration of technical requirements or the definition of the criteria for the evaluation of the offers, for both automatic and those that depend on value judgments, are the face of a coin in whose reverse resides the technical evaluation of the offers or the monitoring and control of contracted costs.

The identification of needs and solutions requires the participation of all interested parties in the process of defining the requirements and technical specifications of the contract.

The cost audit is the basis for the determination of budgets, of the eligible costs or for deciding risks allocation between the Administration and the contractor.

Further to this, it may even be feasible to automatically reconcile the concepts of the electronic invoices with the details of the unit concepts accrued from the different data sources and in various formats (even unstructured), determining the admissible costs, that is, the costs of the services actually performed under the agreed terms and conditions, during the entire life cycle of the contract.

For this to be feasible, the amounts of electronic invoice concepts must be disaggregated at the unit concept level defined in the specifications but must be grouped into sets of technical and accounting elements that will allow us to verify that they are individually reasonable and acceptable by detecting, for example, if a contractor assigns expenses of a contract group to another, if the agreed conditions apply, if the number of units actually carried out are computed, etc.

3. Conclusions

We can recap and complete our recommendations for contracting engineering services by the Public Sector in the form of the following Decalogue:

1. Identify and plan needs.

2. Involve all interested parties.

3. Use procurement procedures that are familiar with.

4. Define a true price in terms of unit prices.

5. Let the market propose creative and innovative solutions.

6. Search for the best quality / price ratio.

7. Separate the proposer and evaluator roles.

8. Decide risk management and allocation.

9. Develop and implement a contract monitoring and evaluation plan.

10. Learn from experience.

References

- Ley 9/2017, de 8 de noviembre, de Contratos del Sector Público (LCSP). «BOE» núm. 272, de 09/11/2017. https://www.boe.es/eli/es/l/2017/11/08/9/con

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