


Article

Improvement Actions for a More Social and Sustainable Public Procurement: A Delphi Analysis

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Abstract: Public procurement accounts for almost 20% of Spain’s gross domestic product (GDP). The current legislation allows for the inclusion of social considerations in contracting processes, hence the interest of this study, which defines the procedures and improvement actions for socially efficient public procurement. The Delphi technique has been used, based on online surveys completed by 71 Spanish experts. The universe includes the set of nomenclature of territorial units for statistics (NUTs), as well as a number of agents with the potential to intervene in the analysis process, namely, academia, the business sector, and public administrations. There is an increasing call for the inclusion of social considerations in tender procedures. However, to date, few studies have provided detailed insight into the inclusion of these social aspects. This study contributes to the scientific literature by identifying six possible strategies for including social considerations into public tenders, namely: objectivizing procedures, generating monitoring tools, developing information and training actions for decision-makers, incorporating awareness-raising initiatives, creating transparency systems, and including information and communication technologies (ICTs). The following four key action areas were also detected: social clauses, reserved markets, social impact assessment, and innovation in public procurement. A consensus was reached on four frames for incorporating the strategies and action areas, namely: socio-economic, procedural, competence, and conceptual. This allows for the efficient inclusion of social considerations into public tenders, thereby generating a twofold impact—one via the goods or services acquired, and the second via the impact on the process of producing said goods or services.

Keywords: social impact; public tenders; social metrics; social efficiency; social value

1. Introduction

The entry into force in March 2018 of Law 9/2017 of 8 November on Public Service Contracts provided the Spanish State with an opportunity to include other results into the public procurement contract processes, moving beyond the merely economic approach that had prevailed among public tenders in recent years. This law is in line with the strategic vision of the European Directive 2014/24/EU1, which conceives public procurement as a means of social and economic intervention [1].

The objectives underlying the regulations included in this law are, firstly, to ensure greater transparency in public procurement, and secondly, to secure better value for money. It contemplates reserved percentage markets in order to guarantee contracts for groups at risk of exclusion, as well as social clauses, replacing references to “the best financial offer” for “optimum value for money”. It also refers to the need to take into consideration social values, and provides an excellent opportunity for the creation and inclusion of an assessment model.

The origins of the social clauses included in the new Spanish law lie in “socially responsible public procurement” (SRPP), a concept defined in 2011 by the European Commission as “contracting operations that take into account one or more of the following social considerations: employment opportunities, good employment, compliance with social and labor rights, social inclusion (including disabled persons), equal opportunities, accessibility for all, consideration for sustainability criteria, including ethical trade issues and broader voluntary compliance with corporate social responsibility (CSR), whilst abiding by the consolidated principles of the Treaty on European Union (TEU) and procurement directives”.

The objectives of the current public contract legal system (Law 9/2017) include the use of public procurement as a means of applying both European and national policies in a number of areas, including social issues, the environment, innovation, development, and small and medium enterprises’ (SME) promotion. They are specifically referred to in the preamble as the law’s key aims, seeking to ensure, at all times, efficiency in public spending and compliance with the principles of equality, non-discrimination, transparency, proportionality, and integrity.

This approach requires the analysis of the social value generated by the tender process, whereby the output (quality) controls not only consider the value of the goods or services, but also of other outputs that generate social impact, namely risk, social return, social innovation, or emotional value [2]. It is therefore necessary to design a standardized assessment model, guaranteeing its correct application and inclusion in the tender design phase.

The aim of our research was to detect and define key strategic actions for the efficient social and economic management of public tenders. A Delphi technique with expert opinions was used to identify and reach a consensus regarding the factors that allow for the inclusion of social considerations in tenders, as well as the principal action areas. A further objective was to identify the key initiatives carried out in Spain regarding the inclusion of social considerations in public tenders in order to draw up a code of potential best practices.

The work is in line with a number of previous research projects. One such study addresses improvements to efficiency in public procurement [3], and the use of public tenders in order to obtain socially responsible results [4]. A second line of research focuses on procurement sustainability in accordance with the triple bottom line [5–7]. A final group of studies suggest a series of tools to improve public contracts [2,8]. However, recent legislation and changes in society have led to calls for the greater inclusion of social considerations in public tenders. In this sense, in line with sustainable contracting and based on previous research [6,9], our study aims to contribute to identifying possible areas for action agreed upon by experts (scholars and professionals working in business and public administrations).

In addition to the introduction, the article contains four sections. The first is a theoretical framework, which provides a systematic review of the literature on this topic, contextualizing and laying the foundations for the research process. The next section describes the methodology used, the reasons for choosing the Delphi technique, as well as the selection of experts, the eliciting questions, and the interaction process. The third section presents and discusses the results obtained, including the consensus dialogue and potential implications. The final section contains the conclusions and an assessment of the theoretical and practical contributions of this article.

2. Theoretical Framework

As mentioned in the introduction, public contracting holds vast potential as a tool for social development and the application of socio-economic policies. Certain authors [10] point to public procurement as one of the principal means for securing sustainable development, combating unemployment, and integrating vulnerable social groups, as well as a number of other social objectives. Other authors [3,4] have stressed the two-fold role of public administrations, as follows: on the one hand, as procurers of market goods and services, and on the other, as an interested party in

integral impact (i.e., the activation of the production processes, and delivering products and services to citizens).

There is no doubt that public tenders have a major impact on the economy, accounting for around 15% of the global gross domestic product (GDP). This percentage rises to 19% in the case of European Union (EU) member states, and accounts for 18.5% of Spain's GDP [11] (European Commission, 2018), further justification for the need for an efficient distribution of the various contracting processes [12].

In their analysis of the public sector procurement process in the United Kingdom, Walker and Brammer (2012) [7] define sustainable contracting as a process in line with sustainable development principles; in other words, guaranteeing a strong, healthy, and fair society, living within the limits of appropriate environmental management and promoting good governance. The Social Value Act can undoubtedly be considered a coherent legislative outcome of this approach, which, in the opinion of the experts [13,14], will allow for the inclusion of social and ethical considerations in public contracts. The Web of Science and Scopus were used to review the literature on public tenders. The former contains a total of 75 published articles that contain the term "public procurement" in the title, and are based on social issues. These publications essentially cover the fields of management (16 article), law (15), and public administration (11).

In turn, the bibliometric analysis using Scopus produced 281 publications, whose titles included the term "public procurement" and dealt with social issues (see Figure 1). The search was limited to articles written in English and Spanish. One of the principal conclusions of this bibliometric analysis is that the research into public tenders mainly covers the following keywords (included in more than 10 articles):

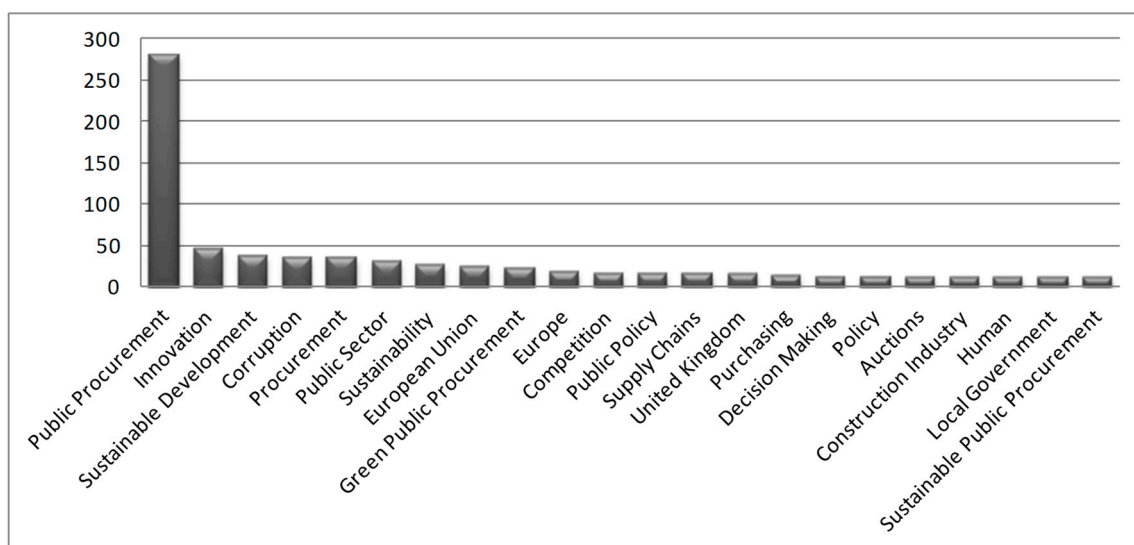


Figure 1. Keywords in articles on public tenders.

Likewise, the terms that were used at least five times have been grouped into clusters based on the similarities between the articles, measured in accordance with the joint use of these terms. This analysis was conducted with Vosviewer software, and allowed for the classification of articles identified into four clusters (see Figure 2), as follows:

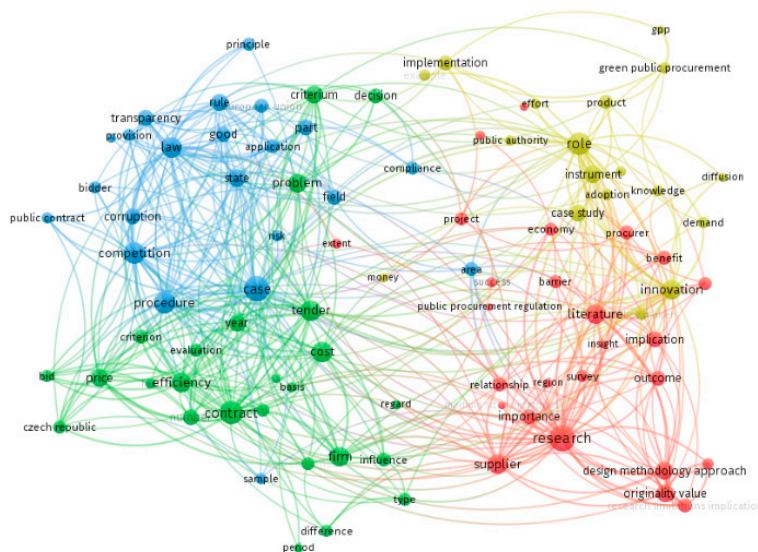


Figure 2. Clusters of articles published on public tenders in the Scopus database.

Worthy of note is the scant importance the term “social” has played in research into public tenders; in fact, no such instances were observed. However, the analysis did reveal the use of terms in line with social value, such as “green public tenders” or “sustainability”.

Walker and Brammer (2009) [6] were amongst the first authors to refer to sustainable contracting. They defined it as a concept in line with the principles of sustainable development, such as securing a strong, healthy, and fair society; living within environmental limits; and promoting good governance. Several other studies are in line with these ideas. In a later study, these same authors [15] used public tender procedures to analyze the gap between social responsibility policies and their application. Akhavan and Beckmann (2017) [9] considered that sustainable tender processes constitute a multi-dimensional approach based on the following three axes: social, environmental, and governance. They built a model that allows for the creation of the following six categories: (1) internal integration and governance; (2) supplier selection procedures based on social or (3) environmental considerations; (4) supplier empowerment, with particular reference to social or (5) environmental considerations; and (6) external governance and inter-organizational cooperation. They posit that these six categories comprise a valuable framework for analyzing how sustainability can be included in contracting strategies and practice. Another key study in this area was conducted by Hojmoose and Adrien-Kirby (2012) [16], who completed one of the literature’s first systematic analyses of socially and environmentally responsible procurement (SERP), based on both a quantitative and qualitative approach.

A considerable number of studies have addressed this issue from an environmental perspective, allowing us to draw a number of conclusions. Firstly, public procurement is the most suitable means of enabling the public sector to promote environmentally responsible practices that contribute to the fight against climate change [17]. Secondly, applying environmental criteria to public tender procedures favors the creation and implementation of sustainable policies [18,19]. Finally, cooperation between procurers and suppliers through public tender processes may lead to more environmentally sustainable economic models [20].

In contrast, only a few studies have addressed social issues, despite the recent legislation and the growing emphasis on social considerations within public procurement. Particularly worthy of mention in this area is the work of McCrudden (2004) [4], referred to previously, which analyses the use of public tenders to generate social value, as well as that of Retolaza et al. (2015) [2], who posit a social accounting model that includes information on the global value generated by procurement processes, and explicit analyses of social clauses [20].

3. Methodology

This section is divided into three parts. Section one explains the choice of method, namely an adaptation of the Delphi technique; section two describes the selection and representativeness of the sample of experts used; whilst the final section describes the points addressed and the contrasting process.

3.1. The Delphi Technique

Our methodology combines the Delphi technique with an online questionnaire. The use of the Delphi technique enables us to obtain a consensus amongst the selected experts, thereby guaranteeing consistency in the results. Additionally, the use of a questionnaire allows for us to objectify the results and distances between the experts, thereby facilitating, to a greater extent, the analysis of how the gap between the various stances is bridged. In turn, this enhances the feedback experts receive regarding the results of the preliminary phase.

The traditional literature considers that the Delphi technique structures a group communication process, thereby enabling a group of individuals—experts to work together on a complex issue [21] and provide a joint response, yet without the need for physical proximity, and avoiding the direct influence that certain “stronger or more relevant” individuals may exert on the results of the work carried out. We consider that the Delphi technique is suitable for the object of our research, as it facilitates a consensus between the opinions of various experts by means of various participation rounds. The fact that both the participants and the feedback generated by the process remain anonymous prevents any possible negative distortion [22,23]. Earlier research has identified the potential of the Delphi technique in the field of business ethics [24].

However, this technique may have a number of weaknesses in terms of its application, such as a lack of direct feedback or difficulty in understanding certain ideas. These problems may be offset by the appropriate management of the process by the project leaders. The first step towards minimizing these weaknesses consists of the optimum selection of the group of experts themselves. This requires identifying a group of individuals that can be considered representative because of their experience and knowledge of public tenders, as well as belonging to one of the groups of agents that intervene in tender procedures, namely, the public, business and tertiary sectors, and academia. Efforts were also made to ensure geographical representativeness for Spain’s various regions, applying the nomenclature of territorial units for statistics (NUTs) representation criterion.

3.2. Expert Sample

As stated above, the Delphi technique implies two key aspects for consideration, namely, the experts selected, and to reflect group consensus, at least in certain aspects.

Two groups were formed in order to detect the processes and procedures. On the one hand, is a coordinated group of experts, comprising doctors that conduct research in business economics from nine Spanish universities that represent all the NUTs, and are familiar with the Delphi technique and online questionnaires. They are also familiar with public tender procedures in Spain, and could therefore all qualify for membership in the Delphi group. This coordinating group selected the group of experts in accordance with the following criteria:

1. Criterion one: competence in the field of knowledge corresponding to the study, namely public tenders.
2. Criterion two: an equal distribution between representatives from academia, public universities, companies, and tertiary sector organizations.
3. Criterion three: representativeness of all Spain’s geographical areas, structured via NUTs.

Worthy of mention is the self-assessment of the experts’ knowledge of the issue in question, thereby indicating the significance and relevance of the results. The competence coefficient was used

to assess this knowledge. The results showed six experts with a low level of knowledge (scoring less than 5 on a scale of 10), and who were therefore eliminated. The remaining experts all obtained a higher result than the cut-off score, obtaining an average of 7.54. In order to prove the panel of experts' skills level, we have included not only their knowledge based on self-assessment, but also their competence in three key aspects, namely, self-assessment, experience in public contracts, and the analyses conducted in this area (see Table 1).

Table 1. Confidence coefficient: experts' assessment. NUT—nomenclature of territorial units for statistics.

NUT	No. of Experts in NUT	Knowledge Coefficient (0–10) μ (6)	Knowledge Coefficient (0–10) μ (6)	Argumentation Coefficient (0–3 μ)			Argumentation Coefficient (0–10 μ)	Experts' Competence Coefficient (Out of 1)	Assessment
		UNREFINED	REFINED	Self-Assessment	Experience	Analyses Conducted			
1	7	6.89 (1.8)	7.14 (1.4)	2.00	1.29	2.43	6.35	0.7	MERIT
2	7	7.71 (1.25)	7.71 (1.2)	2.14	1.29	2.14	6.19	0.7	MERIT
3	1	9	9	1.00	1.00	1.00	3.33	0.6	PASS
4	12	6.75 (2.0)	7.27 (1.1)	2.55	1.36	1.82	6.36	0.7	MERIT
5	18	7 (1.4)	7 (1.4)	2.00	1.72	2.22	6.60	0.7	MERIT
6	17	6.11 (2.4)	7 (1.6)	1.86	1.50	2.21	6.19	0.7	MERIT
7	13	7.15 (1.8)	7.72 (1.2)	2.18	1.73	1.73	6.26	0.7	MERIT

A second criterion applied to the selection of the sample was the nature of their expertise, determined by the origin. The following three types were identified: university-research, public administration, and private business/social organization. An equal distribution between all three groups was obtained. Each category included a minimum of ten experts at each phase of the process, thereby allowing for the independent analysis of the results by type.

Given that the research was conducted on a national scale, it was essential to ensure a balanced distribution between the various Spanish territories. We therefore applied a territorial distribution based on the NUTs (nomenclature of territorial units for statistics), which is considerably more balanced than that of the autonomous communities.

In short, an initial group of 143 experts was identified, although the sample was reduced to 69 research subjects. This was partly due to design considerations, as only those that complied with all three criteria in a balanced manner were retained, namely: a high degree of knowledge of the topic (7 out of 10), representation of the three types (academia, public administrations, and private organizations), and representation of the seven NUTs. Other reasons included general fatigue and tiredness of the sample subjects, associated with a shortage of time and the effort involved in responding to multiple rounds of feedback. It must also be stressed that the participants were assured that their individual data would remain confidential, and that the results obtained would be used solely for our research purpose. Participation was voluntary and non-remunerated. The participating experts expressed their agreement with a commitment to confidentiality and to the research ethics.

As shown in Table 2, a total of 52 valid responses were maintained, as well as a total of 188 validated questionnaires throughout the process. In addition, open questions accounted for more than 50% of the total, although they occasionally hindered and delayed participation. Of particular relevance and significance is the fact that 42 experts displayed maximum consistency levels, participating in the entire process.

Table 2. Expert type analysis: level. NGO—non-governmental organization.

	TOTAL	1. University/Research	2. Public Administration	3. Company/Social Organization/NGO
Round 1	69	17	33	18
Round 2	61	14	31	16
Round 3	52	9	26	17

3.3. The Process and Questionnaires

Figure 3 shows the process timeline and evolution. Each of the three phases of the process included the design of a questionnaire, which was pre-tested with the group coordinator before being sent out to the group of experts. The experts were provided with feedback from the preceding rounds during phases two and three, and a report was drawn up at the end of the process.

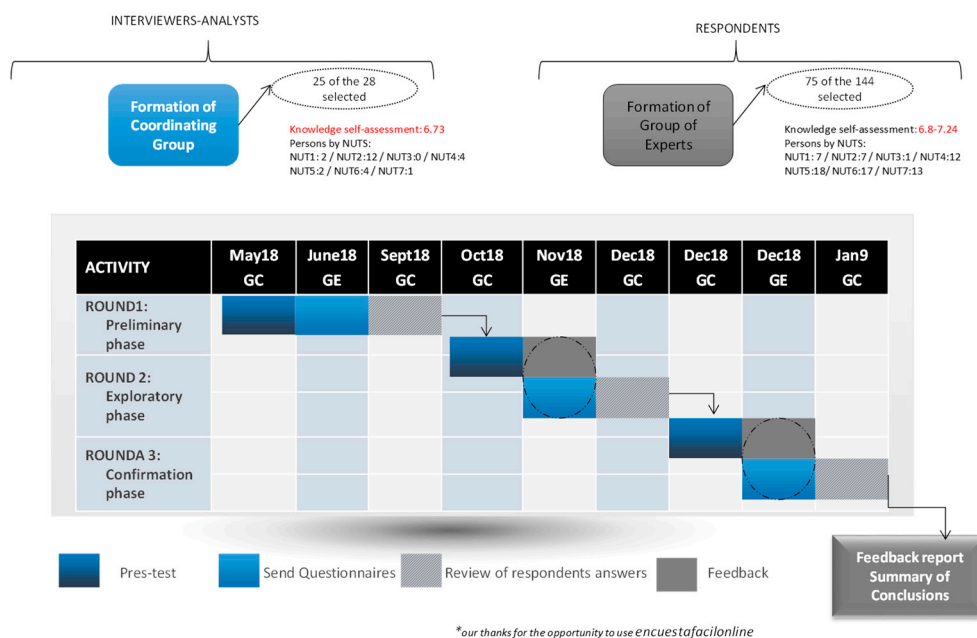


Figure 3. Analysis phases: Delphi with concatenated surveys. GC—group convergence and GE—group experts.

During the first round, a questionnaire containing open questions was sent out to the experts in order to obtain their thoughts and opinions on the issues surrounding public procurement, free from the influence of any third-party opinions. Of even greater interest for the purpose of our research were their contributions regarding the factors that would enhance the efficiency of public procurement, in order to better meet society’s needs and requirements.

Following the analysis of the results of the first round, round two consisted of the design of a questionnaire that would further the relevance of the various improvement factors from the perspective of their range (importance) and plausibility (possibility of putting them into practice).

The third and final round included a review of the significance of the improvement proposals assessed during the previous phase, in order to determine the most relevant results, and to continue working towards a consensus of the results. This round included a consensus of the various stances regarding the improvement proposals, as well as determining the suitability of the most highly rated methods.

The following table (see Table 3) contains a list of the specific questions posed.

These rounds were conducted between 1 June 2018 and 7 January 2019. One and two phases were both completed over a 13-day period, whilst the third and final phase was conducted over 25 days. Even in the case of the longest phase, an average of 60 experts was maintained throughout the process, producing a total of 182 responses (188 when including those that assessed themselves as low-level experts in this field).

Table 3. Questionnaires: questions.

Round	Questions
One	<p>Four open questions: How can public procurement be used as a means of generating socio-economic value in the environment in which said procurement occurs? Are you aware of any significant initiatives? Could you describe them? What positive/negative impact have they had on society? What are the key problems and limitations of the use of public procurement as an instrument to boost an area's socio-economic activity? Can you think of any ways that could minimize these problems?</p>
Two	<p>The second round was divided into the following five parts: A quantitative assessment of the best improvement proposals detected. A subjective assessment of the five interpretation frames proposed, and suggestions for their extension or integration. Possible identification of specific experiences not collected in the first phase, drawn up as a list. Any ideas for furthering understanding of the four potential areas identified: social clauses, reserved markets, social impact assessment, and innovative public procurement. Any additional ideas considered appropriate.</p>
Three	<p>The third round was divided into the following four parts: A quantitative assessment of the most highly rated improvement proposals. Any ideas that could optimize the development capacity of the improvements specified. Rating of the suitability of the improvements specified. Any additional ideas considered appropriate.</p>

4. Results Analysis

Following the completion of the three rounds, the results of our research were as follows:

4.1. Experiences and Their Optimization

In the initial questionnaire, the experts were asked to propose ways of using public procurement to generate socio-economic value in the environment where it occurs. A total of 77 ideas were posited (see Table 4), which can be grouped into the following four areas: environmental clauses, reserved markets, social impact assessment, and innovative public procurement.

Table 4. The experts' responses.

Analysis of Prior Experiences	Optimization of Tender Results Using the Tools Detected
1. Environmental clauses	<p>Training and information for the persons responsible for managing the tender processes. Inclusion as a technical requirement, assignment criterion, and a special contract condition. Increased weighting of these clauses in assessment procedures. Broad assessment of these clauses: local and circular economies, energy savings, and use of renewable energies. Participation of public environment bodies in drawing up terms and conditions. Application of the options included in Annex IV of the new Law on Public Service Contracts (LCSP in its Spanish initials).</p>
2. Reserved markets	<p>Compliance with reserve share percentages included in special employment centers and insertion companies' legislation. Set separate reserve quotas for special employment centers and insertion companies. Limit access to reserve markets exclusively to social initiative special employment centers and insertion companies. Limit reserved markets to local strategic sectors and supply or service contracts.</p>

Table 4. Cont.

Analysis of Prior Experiences	Optimization of Tender Results Using the Tools Detected
	<p>Compliance with the indications included in the common good balance sheet.</p> <p>Promotion of a seal for public administrations that comply with reserved market indications.</p> <p>Training for civil servants and politicians holding positions of responsibility in the possible applications of these reserved markets.</p> <p>Support for tenders for companies within the territory.</p>
3. Social impact assessment	<p>Creation of standard, approved tools that are both objective and precise in order to calculate the social value generated by the tender.</p> <p>Training for process administrators in tools for the social assessment of the tender process.</p> <p>Creation of a scorecard to assess the results obtained.</p> <p>Measurement of the employment created, and the return and savings for public administrations.</p> <p>Transparency and communication of the results needed in order to clarify that the most economical bid is not necessarily the best one.</p> <p>Citizen participation in defining the assessment criteria.</p> <p>Compliance with the common good balance sheet indicators.</p>
4. Innovative public procurement	<p>Training in innovative public procurement for tender process administrators and managers.</p> <p>Use of ICTs in tender processes.</p> <p>Sharing best practices and benchmarking.</p> <p>Pre-commercial phase Research, Development and Innovation (R&D&I) public procurement processes.</p> <p>Tenders for products and services not yet detected, as required by public administrations (unrevealed needs).</p> <p>Open data clauses.</p>

4.2. Initiatives

Naturally, there are numerous examples indicating the suitability of including social aspects in public tenders. In this sense, the experts consulted during the first round were able to identify at least 23 instances in which this has occurred (see Table 5).

Table 5. Experts' responses.

Geographical Application	Initiatives
Avilés City Council/Comunidad Castilla-La Mancha (autonomous government)/Los Llanos Ariadne City Council/Madrid City Council/Brazil/Valladolid City Council	Reserved markets.
Madrid City Council/Generalitat Valenciana (autonomous government)/Lugo Provincial Council/Barcelona City Council/Gijón City Council/Albacete City Council	Inclusion of social clauses.
Generalitat Valenciana (autonomous government)/Basque Country Autonomous Government/Adif	Environmental clauses.
Vitoria City Council/Junta de Andalucía (autonomous government)/Seville City Council	Guide to responsible contracting.
Zaragoza City Council	Public contract observatory
Valencia City Council	Monitoring of the social impact of responsible contracting. Register of socially responsible bidders.

Table 5. Cont.

Geographical Application	Initiatives
Barcelona and Valencia Provincial Councils	Software to detect cases of conflict of interests and collusion, amongst others, in contracting processes.
Vigo City Council	Use of digital tenders to boost bid numbers in smaller contracts.
Galician Innovation Agency	Innovative public procurement tenders: unmanned aerial vehicles.
Madrid City Council	Reduced guarantees in public energy contracts, previously reserved for the energy oligopoly and now accessible for small renewable energy companies.
University of Santiago de Compostela	Inclusion of concepts such as those stipulated in Law 9/2017.

4.3. Improvement Proposal Frames

A total of 34 improvement proposals were made, grouped into four action frames (see Table 6). The experts rated each frame with a minimum score of 3.5 out of 5.

Table 6. Improvement proposals.

Improvement Proposals Grouped by Frame	
Conceptual frame (includes concept and assessment): Application criteria for public tenders to boost their impact.	Encouraging free competition in tenders, guaranteeing equal access thereto.
	Promoting the development tools to monitor bidding companies: records of ethically responsible companies, declassification lists, and report/social balance sheet/social accounting requirements.
Competence and skills frame: Concepts related to the actual tender process and its assessment criteria.	Work on informing and training staff responsible for administering and managing tender processes, providing them with a knowledge of the various tools and applicable legislation in order to keep the information up-to-date.
	Promotion of awareness raising actions aimed at eliminating administrative inertia and overcoming resistance to change.
Procedural frame: Development of skills and competences of the persons responsible for administering and managing public tenders.	Boosting transparency in tender processes, facilitating access to information.
	Encouraging the introduction of new technologies (ICTs) into tender processes.
Socio-economic frame: Definition and management of public tender processes that facilitate the participation of various operators.	None of the proposal included in this frame obtained a score higher than the stipulated value.

The full list of improvement actions are as follows:

- P1 Encouraging free competition in tenders, and the equality of access to public procurement.
- P2 Drive the application of an innovative purchasing system, which provides clarity in social objectives.
- P3 Apply these criteria not only in certain public marginal purchases, but extending use to the reserved markets.
- P4 Encourage the application of objective criteria in tenders, restrict the preeminence of particular interests.

- P5 Creation of tools to improve the objectivation of additional criteria, limiting discretion during the assessment procedure.
- P6 Promoting the development of tools to monitor bidding companies, as follows: records of ethically responsible companies, declassification lists, report/social balance sheet/social accounting requirements.
- P7 Work on informing and training the staff responsible for administering and managing tender processes, providing them with knowledge of the various tools and applicable legislation in order to keep the information up-to-date.
- P8 Promotion of awareness raising actions aimed at eliminating administrative inertia and overcoming resistance to change.
- P9 Creation of multidisciplinary work equipment in the administrations, to favor the management of these processes, facilitating the participation in the same of more operators, such as SMEs/non-governmental organizations (NGOs).
- P10 Boosting transparency in tender processes, facilitating access to information.
- P11 Define the proper places, whether for the presentation processes of offers, and the duration of the own tender.
- P12 Encouraging the introduction of new technologies (ICTs) into tender processes.
- P13 Adjusting the payment terms of the services to be provided in the tender, to minimize the requirement of the financial capacity to the tenders.
- P14 Develop transparency tools in processes, to the objective of avoiding practices not appropriate in your adjudication and reducing judicialization.

4.4. The Experts' Consensus on the Improvement Proposals

After analyzing the results of Rounds 2 and 3, a further analysis was conducted, this time combining both techniques, as follows: on the one hand, a descriptive statistical analysis based on deviation and means evolution, and the traditional interquartile range analysis [22]. The interquartile range (IQR; The interquartile range is a suitable measure of variability when the median is the central position used. It is defined as the difference between the third quartile (Q3) and the first quartile (Q1), in other words $RQ = Q3 - Q1$. Half of the interquartile range is referred to as the quartile deviation (DQ), and is affected only slightly by extreme points of distribution. This makes it an effective dispersion means for biased distributions, as follows: $DQ = RQ/2 = (Q3 - Q1)/2$) was calculated as the difference between the first quartile subtracted from the third quartile. Group convergence (GC), defined by Ray Pradip and Sahu (1990) [25] and backed by Landeta (2006) [23], was also used. The convergence was zero, indicating the group's consensus regarding the application of these improvements.

The improvements proposals, coded P5, P7, P8, P10, and P12, were selected as the most relevant, as they registered the highest mean and lowest deviation scores. Improvement proposal P6 was also selected, as in Round 2, it obtained an interquartile range of less than 1, specifically 0.5, indicating an acceptable degree of consensus. This improvement proposal also increased its mean score in terms of relevance, obtaining 4.6 on a maximum scale of 5 (see Table 7).

The consensus reached by the experts following their assessment of the results obtained in the three rounds was used to draw up a proposal aimed at facilitating the inclusion of social considerations in public tenders, as shown in the following figure (see Figure 4). It is shown in the three frames, including the new purpose, that the inclusion of a sustainability aspect in public procurement processes is permitted. The law has pushed flourishing different tools in order to include a sustainability view of procurement; the most important environmental clauses, reserved markets, social impact assessment, and innovative public procurement. It is a consensus in which all of the areas of interest are included—academic (with the inclusion of theoretical perspectives), companies (including active, implicate, and executive process perspectives), and administration (the regulatory and client perspective inclusion). Therefore, the results are robust and establish the basic areas in which it is necessary to

make progress, they are of course generalizable, at least in the European Union; but probably to other countries with similar social interest and market-base economies. However, each application should always be reviewed so as to consider the particularities of each country in order to properly establish the sustainability public procurement model that we purpose here.

Table 7. Relevance of improvement proposals.

CODE	Round 2 *						
	$\mu 2$	$\mu 2$	$\mu 2$	$\sigma 2$	Q3(2)	Q1(2)	IQR(2)
	A	L	R	R	R	R	R
P1	3.87	3.45	3.65	0.79	4.00	3.00	1.00
P2	3.98	2.98	3.45	0.71	4.00	3.00	1.00
P3	3.92	3.05	3.46	0.78	4.00	3.00	1.00
P4	3.85	3.23	3.53	0.87	4.00	3.00	1.00
P5	3.98	3.13	3.53	0.79	4.00	3.00	1.00
P6	4.20	3.18	3.66	0.78	4.00	3.50	0.50
P7	4.18	3.63	3.90	0.77	4.50	3.50	1.00
P8	4.13	3.12	3.59	0.74	4.00	3.00	1.00
P9	4.12	2.88	3.45	0.80	4.00	3.00	1.00
P10	3.98	3.67	3.82	0.83	4.50	3.50	1.00
P11	3.52	3.47	3.49	0.94	4.00	3.00	1.00
P12	3.87	3.85	3.86	0.73	4.50	3.50	1.00
P13	3.90	3.12	3.49	0.73	4.00	3.00	1.00
P14	4.02	3.00	3.47	0.74	4.00	3.00	1.00
CODE	Round 3						
	$\mu 3$	$\sigma 3$	Q3(3)	Q1(3)	IQR(3)	$\mu 3 \times (1/\sigma 3)$	
	R	R	R	R	R	R	
P1	3.75	0.93	4.00	3.00	1.00	4.05	
P2	3.77	0.85	4.00	3.00	1.00	4.41	
P3	3.60	0.96	4.00	3.00	1.00	3.77	
P4	3.80	0.96	4.00	3.00	1.00	3.96	
P5	3.82	0.82	4.00	3.00	1.00	4.68	
P6	3.98	0.86				4.63	
P7	4.35	0.66	5.00	4.00	1.00	6.62	
P8	4.18	0.77	5.00	4.00	1.00	5.45	
P9	3.45	0.92	4.00	3.00	1.00	3.74	
P10	4.12	0.77	5.00	4.00	1.00	5.38	
P11	3.65	0.82	4.00	3.00	1.00	4.45	
P12	3.73	0.83	4.00	3.00	1.00	4.51	
P13	3.82	0.91	5.00	3.00	2.00	4.20	
P14	3.92	0.89	5.00	3.00	2.00	4.40	
CODE	Decision of most important improvement proposals.						
	$\mu 3 - \mu 2$	$\sigma 3 - \sigma 2$	CG	IQR(2) < 1	CG < 0.5	Max $\mu 3$ and $\sigma 3 < 0.85$	
	R	R	R	R	R	R	
P1	0.098	0.137	0		P1		
P2	0.322	0.142	0		P2		
P3	0.140	0.174	0		P3		
P4	0.276	0.095	0		P4		
P5	0.291	0.025	0		P5	P5	
P6	0.324	0.078		P6		P6	
P7	0.454	-0.10	0		P7	P7	
P8	0.587	0.027	0		P8	P8	
P9	0.006	0.126	0		P9		
P10	0.296	-0.06	0		P10	P10	
P11	0.155	-0.11	0		P11		
P12	-0.13	0.095	0		P12	P12	
P13	0.337	0.182	-1				
P14	0.450	0.152	-1				

* Round 1 is not included because it is more qualitative than quantitative, but we could provide it under request.
A: amplitude; L: likelihood; R: relevance, then $R = \text{root}(A \times L)$

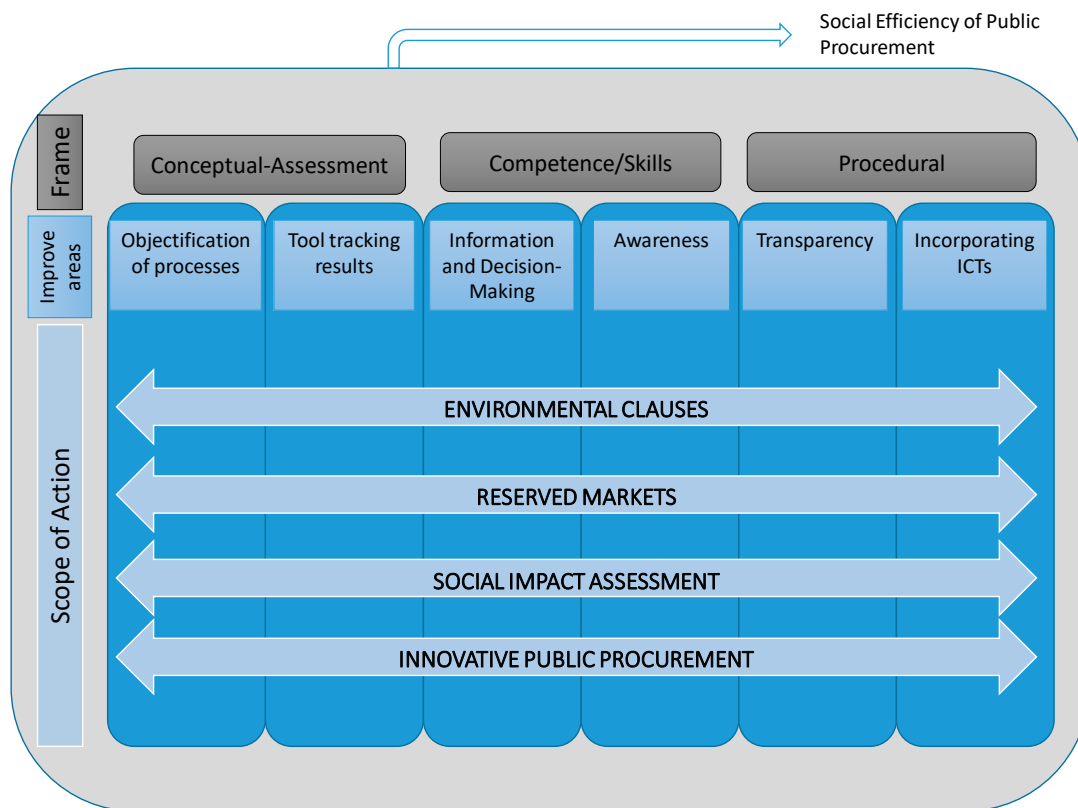


Figure 4. Global descriptive proposal.

5. Conclusions

As shown in the theoretical framework, the experts confirmed the existence of a growing consensus for the need to include social value in public tenders. They share concerns regarding the need for an objective combination of financial and social factors, rather than leaving it to the decision-makers' criteria, which, in addition to breaching the principal of equality, also favors corruption.

The primary contributions of our research are the conceptual frames; broad-reaching concepts that allow for the identification of action areas. A total of four frames are proposed, namely: conceptual, competence, procedural, and socio-economic. This contribution is theoretically relevant, as it allows for the identification of differential reference theoretical frameworks for four different areas within the framework of the social analysis of public tenders.

Our work has also allowed for the identification of 35 potential research issues related to the social impact of public procurement. The experts considered the following to be of particular potential value: (P5) Creation of tools to improve the objectivation of additional criteria, limiting discretion during the assessment procedure. (P6) Promoting the development tools to monitor bidding companies—records of ethically responsible companies, declassification lists, and report/social balance sheet/social accounting requirements. (P7) Work on informing and training the staff responsible for administering and managing the tender processes, providing them with knowledge of the various tools and applicable legislation in order to keep the information up-to-date. (P8) Promotion of awareness-raising actions aimed at eliminating administrative inertia and overcoming resistance to change. (P10) Boosting transparency in tender processes, facilitating access to information. (P12) Encouraging the introduction of new technologies (ICTs) into tender processes.

Furthermore, four areas for improvement were identified, namely, environmental clauses, reserved markets, social impact assessment, and innovative public procurement, which can be implemented in conjunction with six previously identified potential variables. As to the manner of overcoming the current price-oriented (input)tender model, in favor of a value-generated (output) alternative,

the experts reached a consensus on a number of suggestions, as follows: (1) Training of staff with expertise involved in the contracting process, broadening their vision from price to value; (2) design and implementation of campaigns aimed at raising citizens' awareness off the value generated by the use of qualitative environmental, social, and economically sustainable criteria in public tenders; (3) the introduction of objective accounting models for these alternative factors, in addition to price considerations; (4) the inclusion of new assessment criteria capable of identifying and quantifying the social value generated.

The theoretical implications correspond to a perspective change, in which the price-based bidding model (inputs) is substituted with public procurement systems, where the efficiency of the outputs in relation to inputs is considered the main goal, and therefore, it is possible to prioritize the optimization of outputs. This step, which permits getting sustainable public procurement, should be based on the perspective of the optimization of the value achieved for society as a whole. Our findings also have practical implications. They suggest the need to develop an objective social accounting system, capable of calculating, in a standard and predictable way (with the aim to obtain an easy and reliable tender's process system), the social value generated by the tender to the various interest groups, and to the society in general. It should be bear in mind the particular relevance to the citizens administered by the competition management entity, to whom, as a public entity, it represents, and is due.

The limitations of our research include those of the Delphi technique itself. Despite its vast potential, it is based on qualitative analyses and the consequent bias of the research coordinating team's interpretation and the experts' understanding and interaction. Future research should center on contrasting, in statistical terms, the usefulness of the frames, variables, areas, and actions proposed in terms of the theoretical analysis and the practical application of the tenders. In this sense, the results obtained may inspire other researchers wishing to address the issue of the social utility of public tenders. The scenario perspective analysis will be a future option as well, with the aim to establish the best option of situations, in which the social aspects and/or environmental ones are included.

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