Electronic Auction in European and Croatian Public Procurement Law

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***Abstract* - Electronic auction is the electronic process of implementation of a part of a public procurement procedure, which enables bid ranking by using automated evaluation methods, and it is recommended when technical specifications of the items of procurement can be accurately determined. We believe that this procurement process, which is envisaged by the EU legislation, as well as Croatian legislation, however, underutilised in the Republic of Croatia. As a consequence, an electronic auction has a very strong market match between the bidders, and thus the lower prices of procurement items. Likewise, this form of public procurement reduces the possibility of misuse. That is why we believe it is necessary to analyze in detail the possibilities of the E-governance, and the practice of its use in order to understand its advantages, which are significant in pursuit of a more transparent and more favorable public procurement.**

Keywords - electronic auction; public procurement; E-governance; automated evaluation methods;

I. INTRODUCTION

Electronic auction (further: E-auction/reverse auction) is an instrument of public procurement in which prices and other elements of tenders are revised downwards. It is an effective technique for negotiating tender prices and achieving cost savings. A substantial part of public investment is spent through public procurement (around €2 trillion per year, representing 14% of EU GDP), and high-quality public services depend on modern, well-managed and efficient procurement. Improving public procurement can yield big savings: even a 1% efficiency gain could save €20 billion per year [1]. In the Republic of Croatia (further: Croatia), the total value of public procurement purchase in 2017 amounted to 40,451,227,766 Croatian kunas without VAT [2]. Also, procurement expenses amount to approximately 13% of GDP on average in OECD countries [3]. Considering the aforementioned amounts, we have decided to explore and evaluate opportunities of using E-auctions in Croatia for savings in public procurement.

Therefore, the aim of this paper is to explore the development and implementation of E-auctions, to determine its benefits and as well as the best practices for its successful application, and to propose *de lege ferenda* solutions to enhance the use of the E-auction technique.

II. E-AUCTIONS IN PUBLIC PROCUREMENT LAW

In the traditional auctions, also referred to as forward auctions, a seller offers a product that is demanded by several buyers who compete and bid up the price. The highest bidder wins and buys the product. On the contrary, in a reverse auction, it is the buyer who is in control of the process. Unlike traditional auctions that occur at physical locations, reverse auctions are accessed online, through web browsers, via private software companies known as "market makers" [4].

According to the Institute for Supply Management, in the procurement context, reverse auctions are: "A type of E-auction that is conducted online, in real-time, between a single buying organization and pre-qualified suppliers. Suppliers compete in presenting bids to the buyer for the supply of goods or services whose specifications for design, quantity, quality, delivery, and related terms and conditions have been clearly defined" [5].

E-auction was introduced into European public procurement legislation in 2004 in the Directive 2004/18/EC [6], while the institute was introduced in Croatia in 2011 [7]. The preamble (14) of the Directive states: "Since use of the technique of electronic auctions is likely to increase, such auctions should be given a Community definition and governed by specific rules in order to ensure that they operate in full accordance with the principles of equal treatment, non-discrimination and transparency. To that end, provision should be made for such electronic auctions to deal only with contracts for works, supplies or services for which the specifications can be determined with precision. Such may in particular be the case for recurring supplies, works and service contracts. With the same objective, it must also to be possible to establish the respective ranking of the tenderers at any stage of the electronic auction. Recourse to electronic auctions enables contracting authorities to ask tenderers to submit new prices, revised downwards, and when the contract is awarded to the most economically advantageous tender, also to improve elements of the tenders other than prices" [6].

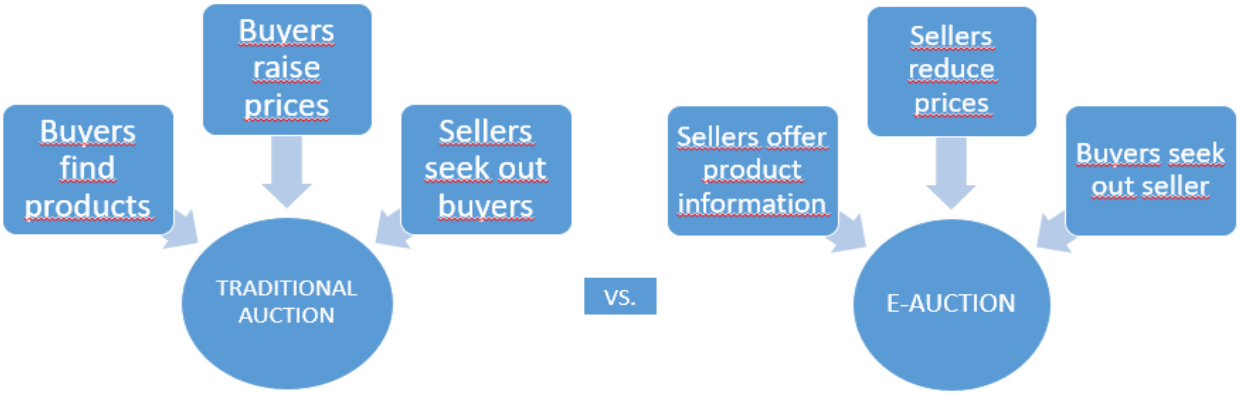

Figure 1. Traditional auction versus E-auction.

The European Union continued to promote E-auctions in other documents: "The Contracting Authorities may decide that the award of a public contract shall be preceded by an electronic auction provided the contract specifications can be established with precision. This allows Contracting Authorities to achieve better offers by suppliers before awarding the contract, while allows suppliers to improve aspects of their tenders. Tenders from all qualified suppliers are already evaluated at this stage, so the purpose of E-auction is to seek for better prices, quality, quantity or other quantifiable aspects of the suppliers' tenders" [8].

The reason why Directive 2004/18/EC introduced E-auction, and why it was actively promoted by the EU in the later period; was due to the early good practice by some of the Member States who launched the E-auction even before 2004, which resulted in visible savings. Table I. shows few positive examples.

What is not mentioned in the table (probably because it would be difficult to compare) which part of the savings is for the electronic application of the electronic public procurement system, which is an E-auction (the right research with the control group would be very difficult to implement). However, one cannot deny that E-auction yields significant savings in the public procurement system.

TABLE I. SAVINGS FROM E-AUCTIONS ON PURCHASING PRICES AND ADMINISTRATIVE COST [9]

DOPI, Denmark (e-auctions)	18% realised savings
National e-Procurement Program, Portugal (e-auction)	25% savings in the purchase of paper supplies for a month
Essex Marketplace (e-auction)	53 % realised savings on goods 26% saving on IT consumables 25% saving on stationery
NHS Purchasing and Supply Agency (e-auction)	31% savings from IT hardware
Wales Health Supplies (e-auction)	10% lower price – projected savings of £600,000 over three years

III. WHY E-AUCTION?

An electronic auction is a repetitive process involving an electronic device for the presentation of new prices, revised downwards, or new values concerning certain elements of tenders, which occurs after an initial full evaluation of the tenders, enabling them to be ranked using automatic evaluation methods. Consequently, certain service contracts and certain works contracts having as their subject-matter intellectual performances, such as the design of works, may not be the object of electronic auctions [10].

E-auction is optimal for the purchase of clearly-defined types of goods, works and services (especially conducted in the construction sector and for procurement of simple goods, such as police cars, firefighting equipment etc.) [11], and where price plays a key role. For example, it may involve the purchase of office or any other consumable material (e.g. hospital supplies, toilet paper), where quality preparation is very important in terms of making the relevant bidding documentation. Tender documentation must be precise, but of course not in a way that promotes a particular producer, or selection criteria or technical specifications include absolutely irrelevant elements.

Specifically, in Croatia, it was noted that in the case of public procurement of toilet paper the technical specifications included the color of the packaging! After this condition was excluded from the tender documentation, the price fell sharply, and in respect to this specific case, the hospital director who discovered this irregularity said: "The most important person for the hospital business is that person or group of people who write technical specifications for public procurement" [12].

E-auction is not optimal for the procurement of very complex goods or services, the type of procurement of a complex machine or very complex works, there are other forms of public procurement [13]. This limitation has long been known: "Electronic auctions can be used under most procedures but because they include automatic evaluation, they cannot be used for certain service contracts and certain works contracts having as their subject-matter intellectual performances (…)" [14]. According to the Art. 35 (1) of the 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 (further: Directive 2014/24EU) certain public service contracts and certain public works contracts having as their

subject-matter intellectual performances, such as the design of works, which cannot be ranked using automatic evaluation methods, shall not be the object of electronic auctions [15]. And the recital 67 states that ''it should be clarified that electronic auctions are typically not suitable for certain public works contracts and certain public service contracts having as their subject-matter intellectual performances, such as the design of works, because only the elements suitable for automatic evaluation by electronic means, without any intervention or appreciation by the contracting authority, namely elements which are quantifiable so that they can be expressed in figures or percentages, may be the object of electronic auctions" [15].

A. Benefits

Why is E-auction a convenient way to purchase typical goods and services for a contracting authority? (Typical services could be easily defined as services with an easily determinable price, e.g. washing per piece or per square meter).

Business entities which have accessed the E-auction and thus become bidders are able to see the prices offered by the other bidders in the application and determine their relative ranking at any stage of the auction, though without a possibility of seeing the identities of the other bidder participating in the search [13, 16]. As a tender gets a bidder who has offered the lowest bid at the given end of the E-auction, in that way other bidders are encouraged to lower their prices, e.g. work with minimal profit margins.

In the countries where the public procurement system is similar to the one in Croatia, the question of the applicability of an E-auction may be raised, and the criterion of the most economically advantageous tender is applied, and it's not any longer only the lowest price. For example, other important criteria which may be negotiated during the E-auction include maintenance, warranties, quality, location, delivery conditions etc. [17]. The theory has long ago solved this question: "The e-auction can be based either solely on prices (whether award criteria is the lowest price or the most advantageous tender) or on prices and/or new values for other features that are indicated in the specification. The features have to be quantifiable and expressed in figures" [14]. The above is provided in the current Croatian Public Procurement Act, in the Art. 174: "(1) The contracting authority is obliged to submit a full initial score of the relevant bid of the individual bidder with the invitation to the E-auction. (2) An E-auction call contains a mathematical formula used in an E-auction to determine automatic change in ranking on the basis of new prices, or new values offered. (3) The mathematical formula contains a weight of all the criteria of the most economically advantageous tender as indicated in the notice used as a means of calling for competition or in other procurement documents, except where the most economically advantageous offer is identified on the basis of price alone'' [18].

Electronic reverse auctions can decrease contracting costs, increase transparency and achieve better economic outcomes as a result of increased competition. It follows that the electronic tendering procedure should be preferred to the traditional tendering procedure due to its clear advantages with respect to transparency. This stems from the fact that under the electronic auction procedure, the danger of having the procuring entity favouring a particular firm by providing it information on other tenders is limited. Under the electronic auction procedure, information on other bids is available to all tenderers in an open and equal manner. Moreover, all bidders are allowed to amend their tender at any time within the limits of the time period. Thus, the electronic auction increases transparency in two levels: (1) information available on other tenders; and (2) the availability of the procedure phases and its outcome to all interested tenderers [19]. Volk also indicates that reverse auctions improve transparency [20].

Like buyers, suppliers can benefit from online auctions in various ways. For example, in traditional auctions, bids are sealed. By contrast, suppliers can alter their bids during an online auction, increasing their chances of winning the contract. They also can bow out of the process at any time. *De facto*, there are many advantages which will enhance the legal principles of fairness, transparency, competitiveness, and cost-effectiveness. The correct use of the aforementioned can lead to substantial savings both in costs and in time. What is also very significant is: E-auction could limit fraud and corruption, only if properly used, it eliminates the possibility for human misuse [21].

B. E-auction challenges

In fact, it is not surprising that suppliers may feel endangered by reverse auctions. Many established suppliers have problems adjusting to on-line arrangements due to the personal nature of the relationship and negotiating tactics they have created with customers over the years. In this way, their relationship is also distanced. Knowledge and fear of technology can also play a role in decision making. By forcing bidders to gradually lower their bids, reverse auctions can reduce profit margins of suppliers and even endanger business sustainability. Some authors claim that E-auctions may harm the buyer-supplier relationship [22] and that it is important to specify qualitative requirements for the E-auction to be successful [23].

Despite the positive reduction of purchasing price for the contracting authority, some unexpected costs may appear: For example, if the selected contractor agreed on performing the public procurement contract after the price was reduced by the E-auction, the contractor may start losing money and have no other choice but to cut quality, as a way to compensate his narrow profit margins. It may be argued that such risks in quality may be secured in the awarded contract (with contractual penalties or judicial remedies). However, such security instruments are not always the optimal approach to enforce quality, especially if the contractor has issues to afford to keep high quality for the agreed price [24].

It might be argued that E-auctions are suitable almost exclusively for the much simpler types of procurement that can be precisely specified. Criteria other than price are not given attention. There is always a potential risk which is present that value for money may be reduced because non-economic factors may also not be taken into account.

IV. BENEFICIAL EFFECTS OF E-AUCTIONS

Despite the fact that the Government of Croatia announced E-auctions will be promoted and adopted in procurement processes [25], E-auctions have not been used and are not used in public procurement purchasing. The use of E-auctions in the European Union is less than 1% in terms of number and volume of contracts awarded [26], and a Portuguese study reveals that E-auctions had a use rate of 0.7% in the period of January 2013 to April 2014 [27]. According to the Croatian statistical report on public procurement, in 2017 E-auctions have not been used at all [2]. Author's research found only two Croatian public procurement procedures that used the E-auction in 2018: one city used the E-auction technique for the procurement of natural gas while another city for electric energy. This statistic is alarming, considering the *supra* mentioned benefits of E-auctions. In order to facilitate the usage of the purchasing technique, this section will analyze positive practices of using E-auction for public (and private) procurement.

E-auction is an objective procedure which should be used in order to attain the best value for money offers cost less, and as such some authors argue that they represent full competition in the market [28].

In particular, during the review of recent publications from different countries, a conclusion has imposed: practical cases have shown possible savings in millions of euros from the state budget/s while using E-auction. On the aforementioned, the work of Singer *et al.* [29] found that estimated benefits (in terms of a reduction in tendered prices) related to the introduction of e-procurement in Chile are slightly below 3%. Similar reduction of prices due to digitalization and electronic auctions are found in the study by Metty *et al*. [30], which has been carried out with data of the Motorola company and reached 3.75%.

Experience in the UK demonstrates that the projected savings can be considerable. A specific case was an online auction for IT hardware (desktop PCs and laptops) for a group of National Health Service Trusts. According to the Office of Government of Commerce, the achieved projected savings were worth around 30% of purchasing costs. On the one hand, electronic auctions are a useful tool for bringing prices down and delivering significant financial benefits, on the other hand, they may only be suitable for the procurement of certain types of products and services [31].

Impact of the electronic auction on the winning price seems to be very indirect. The hypothesis that implies the positive impact of more intense competition; which gives the opportunity to bid during the auction; may be discarded. However, the use of the electronic auctions is connected with an increase of the number of the submitted bids by 0.7, which would mean, if we calculate it roughly, an average decrease of the winning price by approximately 2.4% of the expected price. Therefore, it could be concluded that a proper application of the electronic auction brings an impact on the winning price [19].

Hackney *et al.* also indicate that products in E-auctions tend to be of lower complexity and that E-auctions, when used, drive down the costs of public procurement [32].

One research shows that in Kuwait the reverse auction process, which included five suppliers, generated a 19.9% saving from the lowest initial bid price for 29 power generators prior to the start of the auction [33].

Some authors indicate that potential savings by using the E-auctions for the private sector range from 5% to 30% [34, 35, 36], and that they significantly reduce procurement costs and delivery times [37].

V. PROPOSALS FOR FUTURE REGULATION

This study suggests that usage of E-auctions in the public procurement process should be the next obligatory condition in public purchasing in all Member States. As discussed above, there are many positive benefits provided by the E-auction purchasing technique:

- It enhances financial savings
- It limits corruption and fraud if properly used
- It may encourage competition and tenderer participation in public procurement processes

The paper also discussed several setbacks and risks that are indirectly possible with using the E- auction. However, the evidence above shows that using E-auctions for public purchasing (and private as well) correlates with lower purchasing costs and more transparency of the complete procurement process. E-auctions should, ultimately, encourage more bidders to participate in public procurement processes. Having in mind that the total sum of purchased goods, services and works is 40,451,227,766 kunas without VAT in Croatia and around €2 trillion per year in EU Member States, saving of at least 5% annually is reason enough to further implement the usage of E-auctions.

It should be mandatory in the Public Procurement Act (refers to Croatia and the recommendations should apply to the other Member States too), *semper in omnium casibus*, to apply the E-auction process in open, restricted or negotiated procedures with three (3) or more tenderers who have submitted admissible tenders in cases of:

1. procurement of standardised, simple, and generally available goods (e.g. printing paper, simple medical equipment like syringes or gloves, light bulbs and other high volume standardised mass-produced goods where near-perfect market competition exists) or;
2. procurement of standardised, simple and generally available services (e.g. transport, cleaning or maintenance services).

Reasoning: In the contract notice or in the invitation to confirm interest it should be specified that in all tenders involving three (3) or more tenderers (for procurement of aforementioned "simple" goods and services which could be defined in the Public Procurement Act annex and the Directive via CPV nomenclature), it would be obligatory to use the E-auction purchasing technique and, accordingly, the Directive 2014/24EU should be amended; whereas the Art. 35 (1) and (4) should be modified in according to this principle.

VI. CONCLUSION

This research paper is set out to explore the development and implementation of E-auctions, to determine its benefits and as well as the best practices for their successful application, and to propose *de lege ferenda* solutions to enhance the use of the E-auction technique.

The findings of this study suggest that E-auction is an excellent model of implementation of public procurement procedures. Although it is hard to visualize its usage for procurement of highly complicated technical goods, such as a complex construction machine, the E-auction procedure stands out as an optimal technique for public purchasing of common, "simple" goods and services. In cases of such procurement purchases, the E-auction enables lower prices, competition between tenderers and transparency of the procedure. It is especially suitable for framework agreements when several contracting authorities acquire the same goods or services.

Despite the analysed positives, the E-auction is underused in the Republic of Croatia, as well as in other EU Member States. It is difficult to obtain an accurate and honest conclusion as to why this trend is visible within the EU. It can be assumed that the reason is insufficient knowledge of this purchasing technique (in a typical educational training program in the field of public procurement, electronic auction is being studied for only one school lesson) [38] or some contracting authorities are unwilling to alter their well-known suppliers and relations with them. The statistics indicate that E-auctions are still underused and avoided by contracting authorities. Therefore, we suggest that legislative bodies support the above explained *de lege ferenda* and that the E-auction technique becomes obligatory by the law for public procurement of "simple" goods and services, especially considering the positives of this purchasing technique. E-procurement, to conclude, should be considered as the main tool for reducing corruption and costs while also increasing transparency and thus the efficiency when using public funds.

The legal solution proposed in this paper should not be, however, regarded as final, but as an initial observation and a proposal, which is susceptible to further development.

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