

USE OF REVERSE AUCTIONS BY COMPANIES IN THE CONSTRUCTION INDUSTRY MARKET

Tomáš Hanák^{1*}, Pavla Dosedělová¹

¹Brno University of Technology, Faculty of Civil Engineering, Veveří 95, 602 00, Brno, Czech Republic

Abstract

The aim of the article is to analyse the use of electronic reverse auctions among private subjects operating on the construction market of the Czech Republic. A questionnaire survey was carried out for conducting an analysis and evaluation of the research hypothesis. The obtained data shows that the companies usually take part in reverse auctions in the position of bidders. Moreover it shows that private companies above all notice the barriers connected to the auction use but on the other hand the informants stated that the auctions have a positive effect on transparency and lucidity of the supplier selection. The used chi-squared test did not prove the significant correlation between the size of the company and the rate of the auction use. To conclude the authors suggest that construction companies from the position of bidders notice the reverse auctions rather negatively despite the proof of their positive influence in various aspects.

Key words

Bidders; construction industry market; questionnaire survey; reverse auctions

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*Corresponding author: Tel.: +420-541-148-131, Fax: +420-541-148-632
E-mail address: hanak.t@fce.vutbr.cz

1 INTRODUCTION

Reverse auctions represent an effective way of selection of the supplier. Their use rate depends on the whole scale of aspects for example on the branch of the industry in which the auction is used (industry, services), on the character of the requested product or on the fact whether the buyer is a public institution or a private subject. Especially the last point of view is worse noticing because the reasons and the ways how the auctions are used by public and private subjects may be different.

The aim of this paper is to analyse the use of reverse auctions among private subjects operating on the construction market of the Czech Republic. The article structure is as follows: in the first place the review of literary sources concerning the reverse auction area is carried out. Then the methodology of the processing is introduced followed by the results which are presented and discussed. Finally the conclusions are drawn and the future directions of the research are suggested.

2 BACKGROUND

Reverse auction is defined as [1] *online, real-time dynamic auction between a buying organization and a group of prequalified suppliers who compete against each other to win the business to supply goods or services*. In spite of the fact that auctions bring certain benefits both for the buyer and the supplier, some authors [2] consider them to be a controversial tool. The main argument is the fact that the auctions are heavily criticised for damaging cooperative buyer–supplier relationship [2].

The decision about using reverse auction for purchasing goods and services is made by the buyer for whom the benefits are more important than for the supplier. The crucial benefit is achieving savings (e.g. lower price) which is discussed in detail in [3]. Other benefits are the transparency of the process, time savings [4], or removing geographical barriers [5]. The fundamental barriers related to reverse auctions are represented by bidding the inappropriate commodity [6], insufficiently specified product [1] or the reluctance of the suppliers to take part in the auction [2].

The positive effect of the reverse auction can be expected in case it is used correctly and with sufficient experience. In opposite case it can result in failure. The list of the most common causes of auction failure comprise following situations:

- unclear item, specifications, and ambiguous auction rules,
- insufficient training,
- participation of unqualified bidders,
- awarding contract to a supplier at a price so low that it cannot deliver as specified,
- auctioning wrong commodity
- holding repeated e-RA events for the sole purpose [1, abridged].

Resulted from the context of the above mentioned benefits and barriers are the facts that the deep reluctance of suppliers to take part in the auction can appear because auctions generate high pressure on reducing prices and the suppliers get contract under less favourable conditions than during the traditional way of tender.

Therefore finding out the reasons why suppliers do not want to take part in auctions and analyse their attitude to auctions as well as identifying their present experience with taking parts in electronic shopping auctions seems to be interesting.

3 METHODOLOGY AND QUESTIONNAIRE SURVEY

A questionnaire survey was carried out for the purpose of evaluation of the use of reverse auctions among private subjects operating on the construction market. The informants were the employees of the sales departments, technical departments or the management representatives of construction companies within the scope of the whole Czech Republic.

The questionnaire contains closed format, semi-closed format and open format questions. The closed format questions are formulated in a way requiring just one possible answer (unique choice) or a combination of answers (multi-choice) from the pre-prepared list of options. To be able to find out own opinions of the informants, open format questions were used too. These were marked optional in the questionnaire (without the obligation to be filled in) in case the informant will not know the answer. The last type of the questions are the semi-closed format questions in which besides the choice from the list of answers, the informant can also add his own unique answer. These questions are used in the cases where the incidence of various answers was expected.

The first part of the questionnaire concentrates on getting general information about the researched company (scope, number of employees, place of residence). The second part of the questionnaire investigates the present experience of the informants with reverse auctions, their opinions and experience concerning the fact that the informants participated as supplier, investor or if they have not met reverse auctions yet. The third part of the questionnaire contains questions dealing with benefits and barriers concerning the use of auctions.

The questionnaire was first tested on a small sample of informants and taking into account the consultation with the representatives of the auction system it was adapted into the final version. Data collection was carried out by means of the electronic mail and the telephone interviews. The informants were introduced into the purpose of the survey and instructed about the anonymity of the survey before its beginning.

In the scope of the research also falls the activity of finding out if the size of the company has influence on the rate of the use of auctions. The following hypothesis was formulated: *The size of the company has no influence on the rate of use of the auctions by the construction companies.*

For this purpose the size of the company was established according to the number of the employees (surveyed in the first part of the questionnaire) and the rate of use of auctions by the companies was surveyed in the second part of the questionnaire. Verification of the hypothesis was made by the chi-squared test.

200 informants were surveyed by the questionnaire. The rate of return of the questionnaire was satisfactory at 27%, the total number of informants was then 54. Data was collected by means of the server vyplnuto.cz [7].

4 RESULTS AND DISCUSSION

The scope of business of the informants was most frequently building construction and design activities. The small number of the informants stated that they deal with other field of business activity. Informants could choose more answers to this question (see Tab. 1).

Tab. 1: The scope of business of the informants [7]

The scope of business	Number of informants in %
Building construction	83
Design activities	35
Real estate activities, management and maintenance of buildings	11
Production of building materials	7
Sale	4

During the survey small, medium and big companies were interviewed. The biggest number of informants fell within the category of small companies which were willing to submit information anonymously and where it was easier to get in contact with the competent person. Structure of the informants according to the size of the company can be seen from Tab. 2.

Tab. 2: Structure of informants according to the size of the company [7]

Size of the company	Number of employees	Number of informants
small	< 50	34
medium	50 - 100	17
big	> 100	3

The distribution of informants in the sample does not enable to evaluate these three categories separately because big companies are represented only by 3 informants. For the verification of the research hypothesis there was one common category created out of the medium and big company categories. In the context of the research hypothesis also the use of electronic auctions was surveyed. The input data for the verification of the research hypothesis can be seen from Tab. 3.

Tab. 3: Use of auctions depending on the size of the company

Number of employees	Use auctions	Do not use auctions	Total
<50	23	11	34
≥50	16	4	20
Total	39	15	54

The correlation between the variables was found out using the chi-squared test. Results can be seen from Tab. 4

Tab. 4: Parameters and output data of the chi-squared test

Level of significance	0,05
Chi Square	0,958
Degrees of freedom	1
Critical value	3,84

Because the critical value is higher than chi square ($3.84 > 0.958$), it is possible to state that no significant correlation between the tested variables exist. There is not enough evidence for rejecting the research hypothesis (The size of the company has no influence on the rate of use of the auctions by the construction companies). The question is whether the same result would be achieved in case of the sufficient number of informants from companies with more than 300 employees.

The most frequently bought commodities were construction work (87%) and building materials (13%). These results suggest that the use of reverse auctions in construction industry can be varied. There were no design activities or architectural studies among the answers. In the context of this finding it seems to be likely that the use of reverse auctions in the

construction industry is not fully universal e.g. there are commodities or services for which auctions are not suitable.

Furthermore the informants stated that they prefer the traditional way of tender (80%). As the informants are mainly in the position of a supplier (in the surveyed sample only one informant stated that he participated in the auction as a buyer and 3 were in both positions e.g. as a supplier as well as buyer), the most frequently mentioned reason for the preference of the traditional way of tender is the decrease in the offer prices in the auction (this verifies the benefit of savings on the side of a buyer). Moreover the fact that the employee of the company has to adapt his working day to auction so he would be able to alter the offer was mentioned.

On the other hand 80% of informants stated that the tender through auction is more lucid. Some of the informants also said that there is more work connected to the auction process. This is directly connected to answers to the question about the time savings. Most of informants (71%) state that the reverse auctions are slower than the traditional way of tender. This is caused by the process when the participant has to prepare the offer, insert it into the system and what is more take active part in it if he wants to win the tender. The achievement of the time savings on the side of suppliers was not proved. The assumption about the time savings can be expected rather on the side of a buyer.

Concerning the transparency, 63% of informants stated that reverse auction have positive influence on suppressing the corruption, only 6% of informants state the opposite. This verifies the benefit of the higher transparency of the tender realised by the use of auction.

Last 2 questions dealt with the noticed benefits and barriers. 72% of informants stated that use of auctions has no benefits for them, on the other hand 59% of informants stated that the use of electronic auctions is associated with some disadvantages (mainly with the significant decrease in prices and nontransparency which is in interesting contrast with the commonly perceived connection of auctions and the suppression of corruption). Concerning benefits on the side of suppliers, the informants mentioned the possibility to win the tender which would not be possible to win without the auction.

5 CONCLUSION

This article dealt with the use of reverse auctions in the construction industry on the side of the private sector. Presented results verify some statements about the use of reverse auctions in the construction industry (achieving savings, higher transparency). On the other hand they do not verify the fact that the participation in the auction brings time savings to the suppliers. Moreover the correlation between the use rate of auctions and the size of the company was not proved. In relation to that it is necessary to extent the number of informants in the category of big companies.

Generally it is possible to conclude that construction companies in the position of the supplier perceive the reverse auctions rather negatively even if they bring the more lucid tender process and higher transparency.

Future research directions should compare the attitudes to auctions in the construction industry on the side of the buyer as well as the supplier. Although the majority of informants evaluated the transparency of the process positively, lower number of informants states the nontransparency as one of the barriers to auction use. Therefore the detailed research into this aspect could bring interesting findings which will help to explain the attitudes of the subjects interested in on-line tenders.

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