



A 2020 perspective on “Optimistic overconfidence in electronic reverse auctions: A research commentary on behavioral OR methods”

Ayşegül Engin^{*}, Rudolf Vetschera

Department of Business Decisions and Analytics, University of Vienna, Oskar Morgenstern Platz 1, Vienna 1090, Austria

ARTICLE INFO

Keywords:

Reverse auctions
Overconfidence
Information representation
Experiment
Behavioral OR

ABSTRACT

This paper revisits the paper “Optimistic overconfidence in electronic reverse auctions” published in this journal in 2019 and discusses its contributions and possible impact. The paper established a connection between individual characteristics of decision makers (bidders in auctions), and biases such as overconfidence. One conclusion that can be drawn from its results is that online systems such as electronic auction systems should provide a flexible user interface that allows to adapt the form in which information is presented to the cognitive style of users.

In the recent years, the increased internet usage has led many businesses to conduct transactions online and transfer some of their business processes to various online platforms. Purchasing processes are thus increasingly conducted as reverse auctions which are run on an online platform. Like most software, such platforms are created by software architects according to best practices and to the platform owner’s needs. This orientation is often also reflected in the user interface design of the platforms. This emphasis on the auctioneer’s perspective is also present in literature, which frequently views electronic auctions mainly from the perspective of the auctioneer. Yet, the bidders who participate in an auction are actually those who use the platform most. Since their perspective is less frequently taken into account, such platforms have been surprisingly unpopular among bidders, although they are expected to provide resource saving processes. Individuals prefer to continue with their business processes if possible, on a traditional personal face to face basis, instead of using the resource efficient online alternative.

Our 2019 paper therefore deliberately focused on the perspective of bidders in an electronic auction system. The major criticism of the suppliers is that these types of platforms are only designed for the auctioneers, leaving bidders disadvantaged even from the start. In our article, we focus our attention on another possible reason leading to the unpopularity of electronic auctions among bidders, the fact that the platforms do not take the individualities of the decision makers into account. A platform for electronic auctions is to be used by many bidders, which can be very different in their decision making style and the way they process information. Bidding in a reverse auction is a cognitively demanding task, and the design and user interface of the platform

should support bidders in this difficult task. While there is considerable literature that relates user interface design (such as the use of graphs vs. tables) to characteristics of the problem, individual characteristics of users are less often considered.

Like any other decision makers, bidders who have to make decision in an auction might suffer from cognitive biases that impede the rationality of their decision making. Biases in decision making are also a frequent topic in research on electronic commerce, as is clearly demonstrated in many papers published in ECRA. One bias that is particularly important in auctions is overconfidence, the tendency of decision makers to overestimate their own abilities and their chances of success. In auctions, overconfidence is often mentioned as a cause of the “Winner’s curse”, the phenomenon that the winner of an auction only wins the auction by bidding more than the true value of the object that is auctioned. This well-known phenomenon might also contribute to the lack of popularity of reverse auctions among suppliers, who might fear that a winner’s curse will eventually lead to a situation in which they have to sell their products at a loss.

A major contribution of our paper is to connect overconfident behavior of bidders and the occurrence of a winner’s curse to underlying psychometrics such as decision making styles and rational vs. intuitive orientation of decision makers on the one hand, and with the type and presentation form of information provided by the platform on the other hand.

Both connections have important consequences. The paper was one of the first studies that include multiple decision maker characteristics in an experimental decision making environment to investigate underlying

^{*} Corresponding author.

E-mail addresses: ayseguel.engin@univie.ac.at (A. Engin), rudolf.vetschera@univie.ac.at (R. Vetschera).

psychometrics that have effect on the different magnitude of a decision bias such as overconfidence. Since then, there is an increasing academic interest in investigating decision making behavior in combination with characteristics of the individual decision maker. This interest is revealed in the increasing number of conference contributions and entries in handbooks that have attracted even more researchers to that perspective.

Our research also provided insights on the interactions between decision maker characteristics and the way information is presented by an electronic auction platform. Differences in the way information is provided will not have uniform effects on all decision makers, but its effects will depend on individual characteristics of the decision maker. Thus, there is no unique best way of presenting information, not even for a given task or a given environment. While we might still be far from a situation in which the user interface, and even the type and amount of information presented to bidders can be tailored to the needs of individual bidders, their cognitive capabilities and their individual decision making style, we hope that our paper will make these relationships at least a bit more salient and lead to more flexible and adaptable systems. Software designers should be aware that even seemingly unimportant

design choices might have different effects on different groups of users. In the particular context of auctions, this could mean that some bidders are inherently disadvantaged by a certain design of the system; this counteracts the very idea of an auction, in which all bidders are treated equally and are equally able to make rational, informed bids.

Since the article was published in 2019, it is still too early to judge its impact or to take stock of other research that this paper might have triggered. Still, we see that more researchers have started to include decision maker characteristics in their studies, acknowledging the effect that they have on the decision. This perspective has become another element in the growing literature on behavioral operations research, which in general will contribute to developing not only more efficient, but also more usable systems for electronic commerce.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.