Reputation on eBay and its Impact on Sales Prices

Moritz Mink and Stefan Seifert

University of Karlsruhe (TH), Information Management and Systems, Englerstr. 14, 76131 Karlsruhe, Germany
m-mink@gmx.de
stefan.seifert@iism.uni-karlsruhe.de

On the internet marketplace eBay, customers trade items and are thereby oftentimes unknown to each other. Since typically the buyer first transfers the money to the seller before the item is shipped, he faces the risk that upon receipt of the money the seller sends either products of minor quality or even nothing at all. In order to reduce this risk, eBay runs a reputation mechanism which allows both parties to evaluate the respective opponent party by both text comments and feedback points ($-1, 0, +1$) after the closing of an auction. Each auction description prominently displays the cumulated feedback score that the seller has collected in prior transactions.

It seems obvious to consider a seller’s feedback score as an indicator for her reliability and trustworthiness and one would expect that the final price of an auction and the feedback score of the seller are positively correlated. However, findings of authors, who have investigated the effect of a seller’s reputation on the closing price of an auction on eBay, are ambiguous. \footnote{An overview of empirical studies on the value of reputation on eBay is given by Resnick et al. (forthcoming) and Bajari and Hortaçsu (2004).} Whilst some authors claim that the feedback score has a significant positive impact on the sales price, others do not find such a correlation. \footnote{Studies unanimously report, though, that individual negative feedback points burden revenue much stronger than individual positive points increase revenue.}

Moreover, Bajari and Hortaçsu (2004) point out that the feedback score is rather an indicator for a seller’s experience than her trustworthiness. Since sellers might learn from experience (e.g. setting up auctions more attractively or choosing parameters such as the auction format more appropriately), interpreting a correlation of the feedback score with the auction revenue as a positive effect of reputation, might be misleading.

In an empirical study using field data from auctions on eBay (http://www.ebay.de), we investigate the impact of (a) the accumulated feedback score, (b) the cost of shipping, (c) the start price, (d) the duration, and (e) the format of an auction on its closing price. With respect to the format, we differentiate between standard auctions and auctions with a so-called buy-it-now price. The data for our research has been collected by a computer robot, which monitors given eBay categories and downloads the details of every new auction as well as its results once the auction has closed. This study is based on a set of 1,274 auctions of Chanel “Coco Mademoiselle Eau de Perfume
100 ml” conducted between December 20, 2005 and March 09, 2006. Only auctions in which the item was sold are included. All items were labeled “new”, “originally wrapped”, or “sealed” and are thus considered homogeneous. Note, however, that the surveyed type of eau de perfume has a store price of about 100 euros; on eBay it sells for an average of €27.57 (plus shipping costs which average about €5.61). Since the authenticity of eau de perfume is difficult to verify, the risk of acquiring a forged item might be substantial and therefore the trustworthiness of the seller is crucial.

It turns out that both the duration and the start price are ordinal categories: eBay only allows for auctions that run for 1, 3, 5, 7, or 10 days. We also find that more than 97% of all auctions have a start price of €1.00, 1.99, or 24.99. Most likely, this is also due to the rules of eBay, as €1.00 is the lowest feasible start price and listing fees increase at €2.00 and €25.00. A pre-test on both the impact of the duration and the start price shows, that in neither of the two dimensions, the average revenue per category can be ranked consistently with the order of the independent variable and testing against trend indicates no significant coherence. We conclude that neither the duration nor the start price has a significant impact on the final closing price of an auction.

With respect to the cumulative feedback score $f$, the shipping costs $s$, and the auction format $t$, we do find a significant correlation with the revenues $R$: revenues rise with the feedback score, decrease with the charges for shipping, and in auctions in which a buy-it-now price is offered ($t = 1$) revenues are significantly higher than in standard auctions ($t = 0$). Moreover, we find that sellers with a higher feedback score tend to charge lower shipping costs and that on average the seller’s feedback is higher in auctions with a buy-it-now price than in standard auctions.

In order to shed more light on the impact of the above parameters, we run a multiple linear regression according to the model

$$ R = \beta_0 + \beta_f \left(1 - \frac{1}{\ln(f + \epsilon)}\right) + \beta_s s + \beta_t t + \epsilon . \quad (1) $$

The regression parameter $\beta_0$ relates to the value of the item and $\beta_f$ yields the premium, a seller with a “perfect” feedback score ($f \to \infty$) gains compared to a new seller ($f = 0$). Finally, the parameters $\beta_s$ and $\beta_t$, respectively, give the price deduction for shipping costs and the difference in average revenue between the two auction formats.

Consistent with the results of the pre-test, the regression parameter $\beta_t = 3.63$ shows that auctions with a buy-it-now-offer generate higher revenues than standard auctions ($p$-value < 0.1%). Moreover, shipping costs clearly decrease revenue: in our data set $\beta_s$ equals $-1.29$ and is thus even smaller than $-1$ as one would expect with rational buyers ($p$-value = 6.5%). Finally, the regression yields $\beta_f = 1.93$, indicating that a

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3 All descriptions were manually verified in order to avoid labels such as “almost new” in the data set.
4 Note that the function $1 - \frac{1}{\ln(f + \epsilon)}$ monotonically transforms the feedback score from a non-negative integer to a value in $[0, 1)$. 

seller with a very high feedback score can realize revenues up to €1.93 higher than a seller with no feedback history.

Interestingly, the premium of a seller with a “perfect” feedback score is lower according to the multiple linear regression ($\beta_f = 1.93$) than the corresponding parameter in the single linear regression ($\hat{\beta}_f = 2.50$). Taking into account that sellers with a higher feedback score charge lower shipping costs and choose a more promising auction format, the result supports the mentioned hypothesis by Bajari and Hortaçsu (2004), that the feedback score also represents the experience of a seller and has not only to do with her trustworthiness.

The above findings raise the question whether the apparent positive impact of a high reputation score is even lower if one considers still more parameters. To investigate this issue, we auctioned 24 perfumes “Jil Sander Sun Eau de Perfume 75ml” in a field experiment on eBay (http://www.ebay.de) using different seller accounts. Twelve accounts were newly set up and had no feedback points (group ‘low’) whereas the other twelve accounts had feedback scores between 7 and 24 (group ‘high’). Besides the sellers’ feedback scores, all auctions were setup in the same way (shipping costs, format, start price, duration, ending time, description, design of web site, . . . ). The auctions were conducted in March/April 2006 and one auction was started per day with group ‘high’ and group ‘low’ sellers taking turns. With this setup we controlled for as many auction parameters as possible and pursuing the above argumentation we therefore hypothesize, that in our experiment the impact of feedback is smaller than $\beta_f = 1.93$.

In the field experiment, the perfume on average sold for €18.58 in the group ‘high’ and for €18.61 in the group ‘low’. Thus, a positive impact of feedback points can no longer be found. To test our hypothesis, we transform the revenues $R$ of the group ‘high’ according to $\tilde{R}(f) = R - \beta_f \left(1 - \frac{1}{\ln(f+1)}\right)$ with $\beta_f = 1.93$ and $f$ denoting the respective seller’s feedback score. We then test whether the transformed revenues of the group ‘high’ are lower than the ones of group ‘low’. Applying the adjusted $t$-test for unequal variances rejects the corresponding null hypothesis at a $p$-value of 10.9% (one-sided). Even though not being significant, this also supports our argument that the explanatory power of the feedback score taken as a measure of reputation decreases as more parameters are taken into consideration. Rather, the correlation between a seller’s revenues and her feedback score can be attributed to a large part to the fact that highly experienced sellers both have a higher feedback score and design the auction more favorably.

References
