
Buying reputation on eBay: Do recent changes help?

Federico Dini

Consip S.p.A.,
Via Isonzo, 19E, 00187 Rome, Italy
Fax: +390685449684
E-mail: federico.dini@tesoro.it
E-mail: f_dini@hotmail.com

Giancarlo Spagnolo*

Faculty of Economics,
University of Rome Tor Vergata,
Via Columbia 2, 00133 Rome, Italy
Fax: +39 06 2020500
E-mail: giancarlo.spagnolo@uniroma2.it
Website: www.gianca.org
*Corresponding author

Abstract: In this paper we use simple repeated field experiments to show how eBay's reputation system can be manipulated by purchasing cheap positive feedbacks. Our experiments confirm that 'feedback purchase' is still possible even under the new rules that eBay recently adopted to eliminate 'padding'. In discussing these rules we conclude that changes have strengthened the reliability of the feedback mechanism with respect to 'retaliatory' behaviours, but have weakened it with respect to 'feedback purchase'. Finally, we discuss the possible impact of feedback manipulation on eBay and analogous e-commerce platforms, and propose a simple alternative fee policy likely to improve the reliability of the mechanism.

Keywords: eBay; electronic platforms; feedback mechanisms; feedback manipulation; online reputation; purchasing feedback.

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Biographical notes: Federico Dini is Senior Economist at the R&D – Research Unit of Consip (the Italian Central Public Procurement Agency). He was a research assistant at the University of Rome Tor Vergata during 1999–2003. He visited the Centre for Financial and Management Studies (CEFIMS) at the School of Oriental and African Studies (SOAS) in London during 2002. He holds a PhD in Economics from University of Rome Tor Vergata. His current research interests and consultancy activity include procurement processes, auctions, industrial organisation, reputation and vendor rating systems. His work was published in the *Handbook of Procurement* (Cambridge University Press).

Giancarlo Spagnolo is Professor of Economics at the University of Rome 'Tor Vergata', and is affiliated to SITE – Stockholm School of Economics, E.I.E.F., C.E.P.R. and ENCORE. His research interests and practical expertise include auctions, banking, competition policy, corporate finance and governance, experiments, procurement design and reputation/vendor rating systems. His work was published in top field journals like the *RAND Journal of Economics*, the *Journal of Economic Theory* and the *Journal of Public Economics*.

1 Introduction

Online feedback (or 'reputation') systems have become an important component of e-business, helping to elicit honest behaviour and cooperation among anonymous and geographically dispersed economic agents (Dellarocas, 2003). Such systems allow trading partners to express a public rating on each other's performance after they transact. eBay and other electronic platforms consider online feedback mechanisms crucial in fostering honest behaviour and cooperation among anonymous trading partners. Reliability of the information produced by these systems, however, is both crucial and hard to guarantee. Several contributions appeared on the internet press and web communities in recent years raising concerns for possible feedback manipulations on eBay. For example, Steiner reports to AuctionBytes that

"... some feedback manipulation patterns were not covered by the existing feedback solicitation policy. For example, a member might sell ten items with a Buy It Now price of only ten cents each, and even offer free shipping. After accumulating positive feedback in this way, they might immediately begin selling more expensive items such as plasma televisions." (Steiner, 2005)¹

Perhaps as a reaction to these concerns, eBay recently changed several aspects of its reputation system (including the fee structure) in order to improve feedback reliability. Some of these changes caused a boycott by large sellers that led to a fall of 13% (a loss of over 13 million of transactions) in the period 18–25 February, 2008 (Swartz, 2008). The boycott was mainly driven by the change in the fee structure that made very small transactions even cheaper, but moderate/large transactions much more expensive. The novel rules also prevent sellers from rating buyers negatively. The change is directed at curbing concerns for "retaliatory negative feedbacks", i.e., sellers' strategy of discouraging negative feedbacks from buyers by threatening to reply to any negative feedback with a negative feedback in return, even if the buyer acted correctly.

Economists and computer scientists have recently studied, both theoretically and empirically, some issues related to various forms of electronic feedback manipulation such as 'reciprocation', 'retaliation' and 'identity changes', also suggesting possible solutions (see Dellarocas (2006a) for an extensive survey). Despite discussions in web communities, however, very little attention has been paid to new forms of manipulations

arising on eBay such as *feedback purchase*; that is, the practice of arranging for false transactions the only aim of which is to sell or exchange positive evaluations against (very little) money.

In this paper we approach this new issue experimentally, with the purpose of verifying whether, and at what price, positive feedback could effectively be purchased in the past years, and whether it can still be purchased after the recent changes in the structure of the eBay feedback mechanism.

We ran a first experiment in 2005 and showed that positive feedback could effectively be ‘bought’ on eBay against very little cash. Our last experiment, run in November 2008, confirmed that buying feedback is still easy under the new rules, and possibly even cheaper than before.

These results suggest that the recent changes in the feedback system implemented by eBay did not reduce agents’ incentives to purchase undeserved positive feedback. We discuss in detail the incentive effects of these changes and conclude, consistently with the experimental results, that the new rules are probably effective in limiting retaliatory behaviour but are, at best, ineffective in discouraging the purchase of feedback.

The rest of the paper is organised as follows. In Section 2 we survey the recent related literature on feedback manipulation on eBay, and at the same time we describe the many existing forms of online feedback manipulation. In Section 3 we illustrate the methodology and results of our simple field experiments performed first in the fall of 2005. In Section 4 we discuss the changes eBay adopted to improve the functioning of its feedback system, other recent changes, and why these may further encourage the purchase of feedbacks. In Section 5 we present the results of the field experiment run in fall 2008 and compare them with those of 2005. In Section 6 we discuss the likely (short and long run) implications of the existence of a ‘market for feedback’ for the ‘real eBay market’, suggesting policies that may limit these problems. Section 7 briefly presents the conclusions.

2 eBay feedback manipulation: its many faces and the related literature

The essence of online feedback systems is the reliability of information produced regarding users’ past performance. Ratings (feedbacks) and the reputation indicators they generate (feedback scores) improve the efficiency of transactions only if they are believed to contain ‘truthful’ information, i.e., truthful judgements on counterpart’s performance. Since electronic transmission of information involves anonymous individuals (essentially strangers) it is hard for users to assess the reliability of information/feedback received by simply trusting the source of the information (Resnick and Zeckhauser, 2002). There is some direct evidence already that dishonest users attempt to acquire quick (and undeserved) reputation and to spoil that of competitors, facilitated by the low cost of submitting online feedbacks and by the anonymity of trading partners.²

2.1 Major issues: reciprocity and retaliation

Most positive feedbacks (also 'positives', henceforth) given on eBay are 'reciprocated', i.e., are met by a corresponding positive feedback from the trading partners. The moral obligation to reciprocate a positive may increase the number of positive feedbacks; the threat of cheap 'retaliation' of a negative feedback (also 'negatives', henceforth) with another negative, may induce parties to refrain from criticising the bad performance of a partner. Reciprocity and retaliation may, therefore, inflate positive feedbacks and reduce negative feedbacks. These concerns were raised, among others, by Dellarocas and Wood (2008), Klein et al. (2006) and Resnick and Zeckhauser (2002). Using a large database comprising eBay's transactions, Resnick and Zeckhauser (2002) show that more than 99.5% of the positives are reciprocated by the transacting party. The authors suggest that the two-way nature of eBay's feedback mechanism is at the root of the outcome. They propose that leaving a positive feedback is a dominant strategy in such two-way mechanisms. Dellarocas et al. (2004) argue that the expectation of feedback reciprocity increases the participation to reputation systems. Knowing that they will be reciprocated with high probability, users are encouraged to leave a positive feedback. Chwelos and Dhar (2005) confirm the results of Dellarocas et al. (2004) when comparing Amazon and the eBay's feedback mechanisms. They attribute to the nature of the mechanism (one-way of Amazon vs. two-way of eBay) the differences in the behaviour of feedback providers in the two systems.³ Resnick and Zeckhauser (2002), Klein et al. (2006), Dellarocas et al. (2006), and Dellarocas and Wood (2008) also highlight a concern for feedback retaliation, i.e., for the possibility that negative feedbacks are deterred by the possibility of the poorly rated party to retaliate with another negative, even when not deserved, after receiving a first negative feedback. Dellarocas and Wood (2008) even manage to quantify the likely negative effects of the threat of retaliation. Accounting for 'silence' (feedback not provided) they estimate that only 86% of eBay users are actually happy with their partners, even though positive ratings reach 98% of feedbacks.

2.2 Other forms of feedback manipulation

Flipshark.com provides internet users with information concerning online scams and reports details on the various forms of manipulations. Several pages (see <http://scams.flipshark.com/ebayindex.html>) focus on eBay. eBay itself recognised the concern for increasing novel forms of feedback manipulation, and added new pages to the feedback policy section: Feedback Manipulations, Extortion and Abuse (see <http://pages.ebay.com/help/feedback/allaboutfeedback.html>).

Well known forms of manipulations include unfair rating, identity changes, multiple accounts, feedback theft and shill auction.

Unfair ratings aim at inflating the reputation of partners and/or destroying one of the competitors. This occurs in eBay, but also in Amazon, Yahoo, and consumers report sites such as Epinions and Citysearch (Dellarocas, 2000, 2003). On eBay one seller can sign up with a secondary false account, bid for an item of a competing (partner) seller and post him a negative (positive) unfair feedback. He can then vanish without paying for the item and continue to sell his products with his primary account. Dellarocas (2000, 2003) defines unfair high ratings (also known as 'ballot stuffing') as when a seller colludes with a group of buyers in order to be given unfairly high ratings that may increase prices

of upcoming sales. Unfairly low ratings (also known as ‘bad-mouthing’) occur when one or more sellers collude with buyers in order to ‘bad-mouth’ other competing sellers. Unfair ratings overstate (understate) users’ reputation profiles since they do not reflect effective performances; rather, they reflect the intent to inflate or reduce the reputation of friends or competitors.

The internet gives users the possibility to easily ‘change’ identity. Manipulations of online feedback mechanisms may also take the form of pseudonymous changes. For instance, in eBay, one seller may cheat buyers first and in case he receives a negative feedback he can ‘clean’ his profile by re-entering the community with a new pseudonym. Discussions about this issue and possible solutions are available in Cheng and Friedman (2005), Friedman and Resnick (2001), Resnick and Zeckhauser (2002), Avery et al. (1999), Miller et al. (2005), Papaioannou and Stamoulis (2005), Jurca and Faltings (2004) and Dellarocas (2005, 2006a).

Other forms of manipulations include






- multiple accounts, i.e., users that setup multiple accounts on eBay to leave themselves positive feedbacks
- feedback theft, when users that take over the control of another user’s personal eBay account.

Then the user exploits the stolen reputation to trade it with other sellers and cheat on them.

Finally, and getting to the objective of our experiments, dishonest users can sell feedback within ‘fake’ or ‘shill’ auctions. They auction off the feedback, saying “I sell positive feedback”. Then the winning buyer gives the seller positive feedback in exchange for a positive feedback from him. A less explicit way to auction the feedback is listing the words ‘positive feedback’ or ‘feedback exchange’ in the title of the auctioned item. In so doing the seller can disguise a feedback exchange with a real transaction. Titles are also of the type “free stickers for leaving positive feedback”, “new recipe gets positive feedback from all”, or “the most positive way to buy pre-written feedback”. Titles often contain the words ‘positive feedback’ to signal other users that positive feedback can be easily obtained in that auction. The buyer places his bid for the item, and both traders get positive feedback. Often, they complete the transaction at a very low price; sometimes they may agree not to complete the transaction at all. There is practically no previous work on this type of feedback manipulation. The only other analysis we found while revising this paper is the simultaneous and independent work by Brown and Morgan (2006) that, however, does not consider the impact of the recent changes in the eBay system, which is at the core of this paper. It also is nice to notice that their findings are pretty much consistent with those of our field experiment, just described.

Figure 1 lists some sellers using shill auctions for recipes to disguise the sale of positive feedback. As the reader can see, all of these sellers use both direct purchase and auction to sell the feedback. All items auctioned off are extremely cheap (ranging \$0.1–\$0.99).

Figure 1 Examples of shill auctions on eBay (18 November, 2008) (see online version for colours)

	Creative Feedback- (Create your own) JUST FOR FUN !!! Give yourself a GOOD feedback - JUST FOR FUN !!!	0 Bids Buy It Now	\$0.10 Free \$1.00	6d 7h 46m
	Apple Cranberry Crisp Recipe + 100% Positive Feedback	0 Bids Buy It Now	\$0.89 Free \$1.00	2d 9h 3m
	101 PoSiTive FeEdBaCk DeSiGnS! 100% GREAT DEAL!	Buy It Now	\$0.99 Free	5h 53m
	BEST EVER FUDGE RECIPE +QUICK POSITIVE FEEDBACK 100%	Buy It Now	\$0.99 Free	3d 11h 27m
	SWEET POTATO CASSEROLE HOLIDAY +100% POSITIVE FEEDBACK Sweet Potato Casserole	Buy It Now	\$0.99 Free	6d 15h 37m

Sometimes users purchase and re-auction intangible items such as recipes, e-books, wholesale lists, free information and information booklets. For instance, you can buy on eBay an e-book titled “get 100% positive feedback quick” for less than 1\$. Any user can buy and then resell the book as many times as he desires to collect positives. These last types of manipulation are the main target of our investigation.

3 eBay’s ‘market for feedback’: simple field experiments⁴

3.1 Methodology

In this section we briefly illustrate the methodology we have used to run the two field experiments on eBay, first in December 2005 and then in November 2008. A description of the experiment, phase by phase, and finally the results are reported below in Section 3.2.

The simple field experiments were aimed at testing the ease and cost of manipulating the eBay’s feedback system by purchasing, and possibly (re-)selling, positive feedback. The two experiments have both been performed after registering on eBay with nickname ‘Convettore100’.⁵ In the first experiment we checked two complementary ways to manipulate the feedback:

- buy and (re-)sell fake items, that is, buying a low value item with the right to resell it to as many users as we wish
- shill auction, i.e., simply selling a fake item.

We started browsing on eBay the items with the title ‘positive’ or ‘+ feedback’ (some of the results were displayed in Figure 1). We identified one seller and placed our bid. We communicated payment execution by e-mail, and asked the seller to post his feedback with the promise to reciprocate it. We then tried to re-sell the item. This is the same as setting-up a shill auction, the only difference being that in the former case we re-sell something that others sold us first to exchange feedback. So we e-sold the ‘item’ with auction title “How to earn up to 100 Feedbacks”. To maximise the chances to collect the positive feedback we e-mailed the buyer that the ‘object’ was for free, in practice,

directly proposing to him to exchange the positive feedback without transacting. The same methodology applied to the second experiment.

3.2 The first experiment: results

This section illustrates the results from the first experiment we made in the period October–December 2005. The results are summarised in Table 1.

Buying and re-selling. On 16 October, 2005 we bought on eBay the e-book “How to earn up to 100 Feedbacks” for a price of €0.80. The very short book (just 2, 5 pages!) tells why users should quickly get positive feedback and describes some methods to collect many feedbacks in a short time and at low cost. Some hours later we paid the book and the seller immediately gave us a positive feedback, leaving the comment “Quick payment, Thanks”. Two days later we posted our positive feedback to the seller leaving the comment ‘Fast shipment, thanks’. Since the book was directly e-mailed to us, we were charged no shipping costs. Therefore, the cost for collecting this positive feedback was just the price of the book: **€0.80**.

Table 1 Summary of results of the first experiments

<i>Cost of collecting artificial feedback (values are in €)</i>					
<i>Method</i>	<i>Auction data</i>			<i>Cost data</i>	
	<i>Reserve price</i>	<i>Awarding price</i>	<i>Fixed fees</i>	<i>Transaction fees</i>	<i>Actual cost</i>
Shill auction	0.1	0.51	0.10	0.02	0.12
Buy and resell					
<i>Buy</i>	–	0.80	0.00	–	0.80
<i>(Re)sell</i>	0.01	0.01	0.30	–	0.60

Fee structure of eBay: €0.1 of fixed fee for items up to €1.99 of reserve price.

An additional fee of €0.2 is charged if the seller wishing to insert further details on the object listed. Transaction fees are 4.5% up to €50.

On 30 October we re-auctioned the book for a price of €1 but no bid was placed for it. However, on 15 December a user contacted us, proposing to exchange a feedback without completing the transaction for the book.⁶ Since we received the message after the closing time of the auction, we had to re-auction the item to allow the user to place his bid. Once the bid was placed, we immediately sent our positive feedback to him with the comment “All perfect, reliable eBuyer”. He returned the positive feedback on 30 December with the comment ‘+ ok +’. The cost of collecting the feedback by re-selling was **€0.6**. This cost included €0.1 for listing the item and €0.2 for special advertisement. Since we auctioned the item twice, the total fixed cost was €0.6 (€0.2 could have even been saved by renouncing to advertisement). Buying and reselling entailed us an average cost per positive feedback of $(€0.6 + €0.8)/2 = €0.7$.

Multiple accounts. On 12 December we again auctioned off the object bought on 16 October. We then placed a bid in our own auction with another false account. However, the bid was declared invalid by eBay. Therefore, that account became unavailable to continue our experiment.

Shill auction. On 26 December we collected another positive with a shill auction. Once the object 'positive feedback' was listed on eBay, we contacted the same user with whom we exchanged the feedback on 15 December and proposed to him an additional transaction. The user accepted. After he placed his bid we immediately closed the auction and awarded the object (this was on 28 December). Once we closed the auction we sent our positive feedback to him with the comment 'Fast and reliable'. He returned a positive to us on 30 December with the comment 'Great seller'. Auctioning the feedback cost us **€0.12**. The cost includes €0.1 of listing fee and €0.02 of transaction fee.⁷

Our experimental results do not imply that any low-value transaction on eBay hides an attempt to manipulate the feedback system, nor that any time one wishes to purchase (or sell) a feedback she will effectively succeed. However, they provide some evidence of the concerns for such a form of feedback manipulation, and also that feedback purchase can contribute to explaining the high correlation between positive feedbacks.

4 The likely effects of recent changes in eBay's feedback system

In the previous section we have seen how easy it was for a user to manipulate eBay's feedback system in 2005. Purchasing positive feedbacks may be even less than €0.1.

In this section we describe the recent changes implemented to the eBay feedback system and fees structure and discuss whether or not they are likely to improve the performance of the system (changes are summarised in Tables 2 and 3). In doing so with focus the attention to the less studied problem of the 'market for feedback' created by the practices of shill auctions and of buying and re-selling 'fake items'. As we will see, only the changes in the fee structure impact the 'market for feedback'. Unfortunately, changes appear to have occurred in the opposite direction to the one that would contrast the phenomenon.

Table 2 Recent changes in the eBay's feedback system

<i>Summary of changes between May 2007–May 2008</i>		
<i>List of changes</i>	<i>ebay motivation*</i>	<i>Effective from</i>
Detailed ratings	Help buyers make more informed decisions and are providing eBay with valuable data to help distinguish sellers. The upcoming changes should make DSRs more valuable as buyers leave more candid Feedback without the threat of retaliation	May 2007
Transaction fees	Lower your up-front cost to sell on eBay	February 2008
Repeat feedback credit (week basis)	Encourage repeat transactions and reward good service	February 2008
sellers can rate buyers only with '+'	Eliminate potential suppliers' retaliation	May 2008
Removal of '-' and '0' left by suspended members	Avoid bad sellers to harm reputation of other traders	May 2008

Table 2 Recent changes in the eBay’s feedback system (continued)

<i>Summary of changes between May 2007–May 2008</i>		
<i>List of changes</i>	<i>ebay motivation*</i>	<i>Effective from</i>
Positive feedback percentage will be based on the past 12 months transactions	Indicative of more recent seller’s performance	May 2008
Buyers must wait three days before leaving negative or neutral Feedback for sellers with an established track record	Encourage communication, drive members to leave positive Feedback and limit Feedback extortion (most negative or neutral Feedback left in the first few days is due to lack of communication between the buyer and the seller)	May 2008
Instead of 90 days members will be able to leave Feedback for 60	Today less than 5% of all Feedback left is between day 60 and day 90. With electronic payment (PayPal) transaction times have decreased since the Feedback system was created almost 12 years ago. Further, members should leave Feedback early in order to let other members know whether their experience was positive or negative	May 2008

*See: <http://pages.ebay.com/sell/update08/overview/index.html>

Table 3 Changes in eBay’s fee structure

<i>Summary of fee changes in eBay (as of February 2008)*</i>			
<i>Type of transaction</i>	<i>Reserve price</i>	<i>Current fee</i>	<i>New fee from 20/02/2008</i>
Insertion fees for auction-style listings	\$0.01–\$0.99	\$0.2	\$0.15
	\$1.00–\$9.99	\$0.4	\$0.35
Insertion fees for fixed price listings	\$0.01–\$0.99	\$0.2	Free
	\$1.00–\$9.99	\$0.4	\$0.35
Insertion fees for store inventory listings	\$0.01–\$0.99	\$0.05	No fee
	\$1.00–\$24.99	\$0.05	\$0.03
Gallery feature fees	Fixed price listing	\$0.35	Free
	Auction style listing	\$0.35	Free
	Store inventory	\$0.01	Free
Final value fees for auction-style and fixed price listings	Closing price \$0.01–\$25	5.25%	8.75%

*See: <http://pages.ebay.com/sell/update08/basic/index.html>

4.1 Changes affecting the “the market for feedback”

The changes most relevant to our analysis are those relative to the fee structure. eBay adopts a two part tariff system: a fixed insertion (or listing) fee, and a variable fee proportional to the final awarding value. Table 3 shows the recent changes applied to the fees. The changes reduced the fixed part of the fee and increased the variable fee in percentage of transacted value. These changes are clearly reducing the cost of small value

transactions and substantially increasing that of high value ones. What is more interesting for our analysis is that these changes are likely to aggravate the problem of feedback purchase, as transactions in the ‘market for feedback’ take place at very low prices (typically less than \$1) and therefore become relatively cheaper. In particular, fixed insertion fees were reduced for all forms of transaction. For instance, ‘buy-it-now’ (i.e., fixed price listing) is now free. For auction style listings, the fixed fee fell of 25%, to \$0.15. Although the variable transaction fee has increased from 5.25% to 8.75%, low-value transaction pay overall substantially lower fees. Buy-it-now listings with a reserve price of \$1 pays a total fee of [$\$0 + 0.087 \times \$1 = \0.087] vs. [$0.2 \times \$1 + 0.052 \times \$1 = \$0.252$] i.e., 65% less than the previous total fee. An auction-style listing with reserve price of \$0.5 and awarding price \$0.9 pays a total fee of [$\$0.15 \times \$1 + \$0.9 \times \$0.0875 = \$0.228$] vs. [$0.2 \times \$1 + \$0.9 \times \$0.0525 = \0.2475], i.e., 8% less than before.

To limit the problem of the market for feedback eBay should instead have increased the fixed component of the fee, that weights more on lower-value exchanges, possibly compensating with a smaller variable fee.

4.2 *Other changes*

Sellers can no more rate buyers negatively: eBay recognises that the threat of retaliation is a serious concern that induces buyers to avoid rating negatively poorly performing sellers (see eBay’s comments on feedback system changes at <http://pages.ebay.com/services/forum/new.html>). To cope with the problem eBay decided to restrict sellers to rate buyers only, with positive or neutral feedback. This should increase trust in eBay’s feedback system and may thus encourage buyers be more honest when posting feedback as well as to bid more and higher. This change should indeed considerably limit the problem of retaliation (‘negative reciprocity’), although it may correspondingly increase the exposure of sellers to the threat of negatives in case they do not accommodate buyers ‘claims’. This change will not however affect the market for feedback, as both buyer and seller can still rate each other positively in a ‘fake transaction’.

Detailed ratings. In addition to the ‘classic’ feedback, since February 2007 buyers can also leave detailed ratings on a seller on four specific criteria: item as described, communication, shipping time, and shipping and handling charges. A buyer can rate the seller 1–5 stars on each of these aspects. Detailed seller ratings are optional, and if a buyer wants to leave any of them he or she must do so at the same time as that he or she leaves the classic ‘overall’ feedback with textual comment. Classic feedback can be left without providing detailed ratings, but not the other way around, though these feedbacks need not be related in any way; the buyer could leave a positive classic feedback, and at the same time give only one star to each of the four criteria. For the sake of our analysis, the most important characteristic of detailed seller ratings is anonymity; since, for each specific criterion only the average of all ratings is made public, eBay stresses that “sellers will not be able to see the detailed seller ratings you’ve given them;”⁸ and when leaving detailed ratings buyers are notified that “sellers will not see your individual ratings” and that “only the average of all buyer ratings can be seen by the seller”. This change should not have consequences for the ‘market for feedback’,

but it should reduce the negative effects of reciprocity, because specific feedbacks are unilateral and anonymous.⁹

Repeat credit feedback. eBay argues that sellers who repeat business should be rewarded when they receive repeat feedback, and changed the system accordingly. In the previous system only one feedback per trading partner was counted in the reputation score. The new system relaxes this, factoring in sellers' reputation score up to a maximum of 1 feedback per week from the same trading partner. This rewards sellers who deliver repeatedly good performance. However, repeated bilateral transaction by itself moderates the scope for opportunism. As Dellarocas et al. (2006) point out, online feedback systems – as the one on eBay – aim mostly at deterring opportunistic behaviour arising in occasional transactions. eBay should be aware that rewarding repeated good performance comes at the cost of increasing the weight of positive feedback collected in low risk transactions, and thereby lowering that of positive feedback received in high risk transactions which may, instead, be more informative.

Feedback removals of suspended users. eBay argues that members who are suspended for unpaid items or other offences should not be permitted to harm the reputation of members in good standing. This means that eBay considers negative feedback, provided by those members proven to have behaved dishonestly, as unreliable. Since some traders may acquire positive feedback in the market for feedback planning to exploit it in a fraudulent way, this change is likely to erase some of the feedback exchanged on the market when the fraudulent trader is caught and expelled. This change should, therefore, increase the informativeness of the overall system.

Positive feedback percentage based on recent 12 months. For a long time the reputation score of a trader has been based on all the feedback he or she received before that date. However, people and firms change and learn,; therefore, recent feedback is likely to be relatively more representative of what a buyer should expect from a seller. This is why eBay is now starting to base reputation scores only on feedback received in the last 12 months. eBay considers such a time span long enough to show trends and patterns and, at the same time, to prevent a single bad transaction from having an overly negative impact (though this depends on the frequency with which each agent trades). Members, however, will still be able to view the complete history and all comments given to sellers.

Buyers waiting 3 days before rating negatively or neutral. eBay will now prevent buyers from leaving negative or neutral feedback within three days of the end of a listing. Most negative or neutral feedback left in the first few days is given by inexperienced buyers and is due to lack of communication between the buyer and the seller. eBay believes that this restriction, generating a 'cool down' period and encouraging communication before the buyer decides to leave feedback, should limit 'wrong negatives'. This change, however, is unlikely to affect reciprocity, retaliation, or the market for feedback.

Feedback can be left within 60 days from the transaction. According to eBay, less than 5% of all feedback is left between day 60 and day 90. Electronic payment methods like PayPal and other options for distant shipment have considerably decreased transaction time, and eBay considers it important that members leave feedback early in order to

disseminate performance information. Given that sellers cannot anymore threaten buyers to retaliate negatives with negatives, this change is unlikely to affect feedback manipulation.

5 Purchasing feedback: the second experiment

Using our account ‘Convettore100’ we performed another experiment in the period 11–14 November 2008. On 14 November we bought for \$0.99 (€0.77) the recipe “Eggnog Pancakes Recipe + 100% Positive Feedback”. Figures 2–5 report the details of this new experiment. Figure 2 shows the transaction, while Figure 3 reports the feedback we obtained in this and the previous experiments.

Figure 2 Purchase of a positive feedback (shill auction by the seller) (see online version for colours)

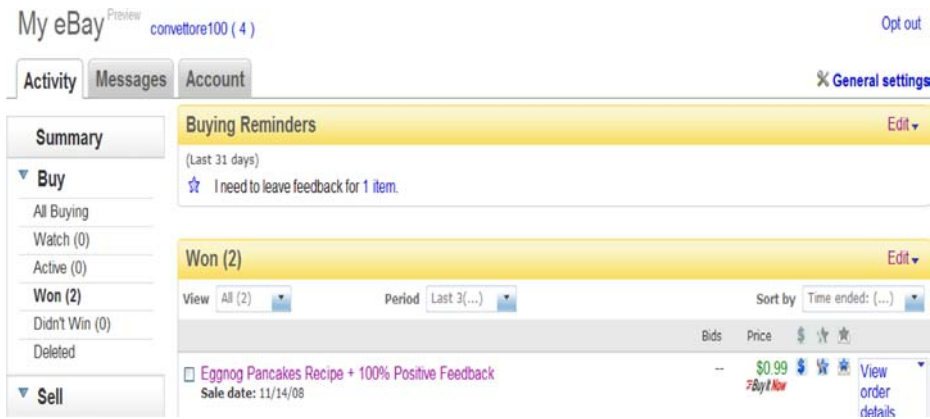


Figure 3 List of feedbacks we obtained (see online version for colours)

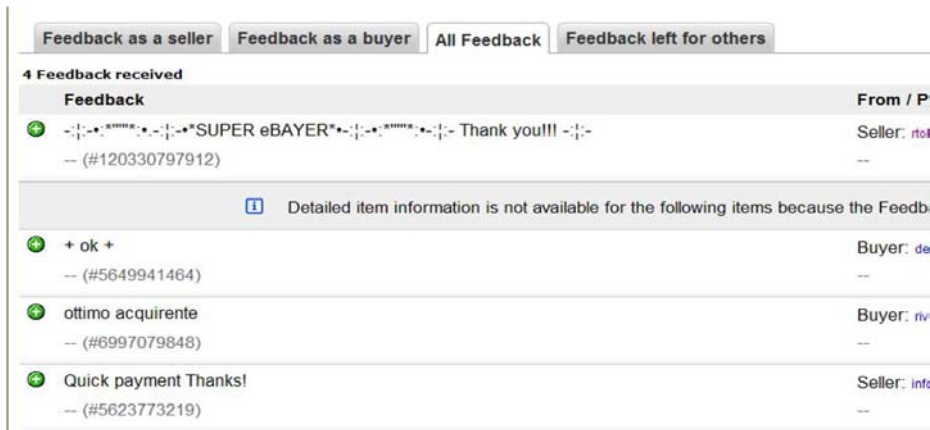


Figure 4 Message from the seller with the promise to leave a positive feedback (see online version for colours)

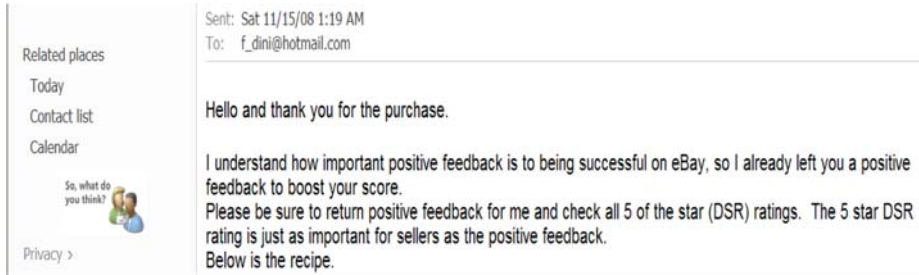


Figure 5 Some feedbacks of our trading partner (see online version for colours)

+	GREAT SELLER A++++	Buyer: desmond_hype (34 ★)	Nov-17-08 19:37
	--	--	Private
+	Good Ebayer PB Chocolate Cookie Recipe + 100% Positive Feedback (#120330798414)	Buyer: partsponsor (3) US \$0.99	Nov-17-08 16:38 View Item
+	A+ Ebayer Excellent Fast Super Lightning Payment Thanks	Buyer: smithstopshop (7)	Nov-17-08 12:17
	--	--	Private
+	Grate buyer, A+++++ PB Chocolate Cookie Recipe + 100% Positive Feedback (#120330798414)	Buyer: szayork2001 (527 ★)	Nov-17-08 05:20 View Item
+	Prompt shipment, reliable seller!!! +++++ Eggnog Pancakes Recipe + 100% Positive Feedback (#120330797912)	Buyer: convettore100 (4) US \$0.99	Nov-17-08 04:30 View Item
+	Great Seller!! Excellent Service Teddy Bear Christmas Card + 100% Positive Feedback (#120330949538)	Buyer: eurogensel-power-solutions (8) US \$0.99	Nov-17-08 02:24 View Item
+	THANKS PB Chocolate Cookie Recipe + 100% Positive Feedback (#120330798414)	Buyer: psiephotodesigns (75 ★)	Nov-16-08 20:08 View Item
+	smooth tracion! hope do businesse again! PB Chocolate Cookie Recipe + 100% Positive Feedback (#120330798414)	Buyer: fang123452008 (24 ★)	Nov-16-08 07:01 View Item

After payment, we sent an e-mail to the seller to solicit his positive feedback. The seller replied by posting his positive, and underlying in the message was the importance of reciprocally boosting reputation (see Figure 4). Figure 5 (raw 5) shows our feedback posted on 17 November, as well as some other feedbacks previously obtained by our trading partner.

6 Discussion and policy indications

While some of the changes adopted by eBay are able to soften the problem of retaliation, others are likely to worsen the problem of the feedback purchase, thus ‘fuelling’ the market for feedback. Our simple field experiments confirm that it is still easy and cheap to manipulate the feedback record buying positives, even after the recent changes.

One relevant issue to address now is the possible implications of such market for positive feedbacks. In other words: can the ‘market for feedback’ make the feedback system valueless in the long run? Mayzlin’s (2006) and Dellarocas (2006a) analyses of false feedbacks and the informativeness of online forums may shed some light ‘by analogy’ on our question. Mayzlin (2006) is the first to look at the likely effects

of false messages posted on electronic opinion forums. In particular, the author investigates whether recommendations remain credible when firms can post fake recommendations for their products. Despite fake promotions, Mayzlin finds that consumers correctly follow the online advice, benefiting from the interactivity of discussions, so that online forums do tend (under certain conditions) to remain informative. Dellarocas (2006a) extends Mayzlin's (2006) work finding the counterintuitive result that manipulations may either increase or decrease the informativeness of the forum. When the number of users posting honest recommendations is small enough, then manipulations even become beneficial to the forum. To some extent, the effect of false messages in promotional chats may be the same of that produced by the market for feedback on eBay: they both bias the informativeness of the system. These papers suggest that it is not clear that false messages aimed at altering buyers' perception are always detrimental to the informativeness of the forum. This conclusion, of course, cannot be extended *tout court* to eBay, but it is suggestive. Replicating the approach in an environment closer to the eBay feedback system might be a good objective for future research.

From a more general point of view, understanding the implications of the market for feedback in eBay involves addressing another related question: who is more likely to buy feedback? That is, what type of seller is more likely to pay to purchase reputation? Those wishing to sell poor quality items (low quality sellers) or rather those wishing to sell high quality items (high quality sellers)? The existing theoretical literature does not have a clear prediction about who is more likely to buy reputation. For instance, in a general setting, Tadelis (1999) shows that any (level of) reputation can be bought by any type of firms. A similar issue is explored by Mailath and Samuelson (2001) who identify one level of reputation, the average reputation, that induces one type of firm (good firms) to buy it.

Empirically, Cabral and Hortacsu (2008) show that traders typically start off as buyers and then gradually turn into sellers. It is easier and cheaper to create a good reputation as a buyer than as a seller. The idea of our experiment is that users may start either by purchasing feedback or (re-)selling very low-value items. We expect this process of selling/buying feedback to end when the trader has acquired the reputation 'necessary' to be considered reliable by potential trading partners, or when the reputation is sufficient to accede to more sophisticated selling tools. In eBay, for instance, the minimum feedback score required for listing multiple items at a fixed price is 15 (30 for users not paying through PayPal – the eBay electronic payment system).¹⁰ Traders are thus encouraged to purchase feedback to achieve at least this minimum score.

Dellarocas and Wood (2008) provide a positive answer to the question of whether feedback manipulation may harm the reliability of the system. They argue that feedback reporting bias producing a mismatch between posted feedback and underlying transaction performance may severely distort the distribution of feedbacks relative to the distribution of transactions that feedbacks are supposed to reflect and, thus, may compromise the reliability and trustworthiness of feedback mechanisms. Feedback purchase generates reporting bias in the sense that improved sellers' reputation is not due to good behaviour in real transactions, rather, it is to manipulations. This line of reasoning can be appropriate to provide some answers to the initial question. We conjecture that, since good reputation tends to increase the probabilities to trade and also increase selling prices in the future, one consequence of the market for feedback, at least as long as it remains at a small scale level, is that it allows sellers to trade more (or more easily) and

at higher prices. Empirical evidence shows that positive feedbacks tend to increase selling prices in several markets, suggesting that most buyers are not aware of feedback manipulations, or consider them a ‘marginal’ phenomenon. Such evidence is found, for instance, in the case of IT equipments (Ba and Pavlou, 2002) and chips (Houser and Wooders, 2006).¹¹ When facing a seller with a good reputation, buyers are expected to bid higher, i.e., to ‘reward’ sellers more than if their reputation was lower. This is likely to occur in the short, as well as in the long, term. In fact, one rule on eBay is that detailed information about transactions, e.g., the selling price, is no longer displayed after 90 days. Buyers are thus prevented from using the key information that will enable them to monitor the reliability of feedback collected by sellers. As a result, they are left unable to bid accordingly.

In the short run, feedback purchase may, therefore, artificially boost trust in the marketplace, and thereby induce equilibria in which users trade more often or more intensively and at higher prices.

A potential long run negative consequence of the market for feedback and of other forms of manipulation is that buyers may no longer trust the system; this, in turn, could induce more prudent bidding and/or to reduce trade in the marketplace. Emblematic is what Miller reports to Internetnews.com on:

“There are ways to artificially inflate and deflate those all important numbers and even an eBay underground whose members trade positive feedback for an investment of less than a dollar.” (Miller, 2006)

Miller also reports parts of an interview made to David Fairley, owner of Flipshark.com: “There are definitely ways of manipulating the system ... Never assume that someone is trustworthy because they have good feedback”.

In summary, both sellers and eBay may (directly) gain from inflations of positives in the short term: the sellers via higher expected revenue from trade, eBay via increased revenues from fees. However, both the marketplace and users may (indirectly) be harmed in the long run. The direct effect impacts the buyers’ perception of lower trading risks that boosts trade. The latter indirect effect influences trust in the feedback mechanism that may reduce participation and bidding if users start doubting the reliability of the system.

eBay’s feedback system, therefore, is likely to maintain substantial value as long as:

- Buying positive feedback is made costly for low-value items, i.e., price + transaction costs do not shrink to zero. Therefore, fee policies could be directed in the opposite direction to the one chosen by eBay, that is, towards *increasing fixed fees, so that selling very low value ‘items’ becomes more costly*.
- The value of transactions is displayed without limits of time, enabling suspicious buyers to monitor sellers beyond the short term. This policy becomes even more important if fees for low value items are not increased sufficiently.

7 Concluding remarks

The recent changes in the structure of eBay’s reputation system aimed at limiting feedback manipulations, in particular, retaliatory behaviour, may have well improved the reliability of information produced by posted feedback. However, in this paper we

provided experimental evidence that purchasing feedback, a new form of manipulation, can be another factor explaining the substantial positive reciprocation. We run a repeated field experiment on the eBay's reputation system showing that positive feedback can easily be bought on eBay against very little cash. This was still possible even after the recent changes implemented by eBay to eliminate 'padding'. We argued that recent changes have most likely strengthened the reliability of the feedback system with respect to the important problem of retaliation, but that they have likely weakened it with respect to the new issue of feedback purchase. In examining the various changes implemented, we showed that the fee structure has been changed in a direction opposite to the one that would discourage the phenomenon of feedback purchase: the reduction of the fixed fee component has the clear effects of reducing the cost of trading low value items, and thus of strengthening incentives to purchase feedbacks. One potential long term consequence of feedback purchase (and more generally of manipulation) is to compromise the reliability of information produced by, and trust in, the feedback mechanisms. Our policy suggestions for eBay are to increase the fixed fee component to make extremely low value exchanges more costly, possibly reducing the proportional fee component, and to display the transactions' value with no limits on time.

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Notes

¹More recently, Shawver reported to www.bizcovering.com that

“Some members who are trying to build their reputation on eBay by acquiring the different levels of stars will specifically look for transactions that are easy and cheap to complete. A cheaply priced item, with free shipping, or greatly reduced shipping will be very attractive to them. They can easily score another positive feedback rating without having to spend too much to do so.” (Shawver, 2008)

eBay itself introduced a new section within its Feedback Policy called 'Feedback Manipulation' with the aim of listing the uses of feedback that violate the rules of the marketplace. See <http://pages.ebay.com/help/policies/feedback-manipulation.html>

²Harmon (2004) reports that when in February 2004, because of an error, Amazon.com's Canadian site revealed the identities of some book reviewers, it turned out that many ratings were written by the books' publishers, authors, and competitors.

³This literature suggests that one-way feedback mechanisms would greatly reduce reciprocation. This is also proposed by Dellarocas *et al.* (2006) for feedback systems of public e-platforms.

⁴The only aim of the experiment presented hereafter is to show how manipulations practices can, and are, effectively performed on eBay. We asked eBay to cancel the account.

⁵Nicknames of our experimental partners are not reported. When reported they are truncated to keep anonymity.

⁶On eBay, transactions can be made fully artificially. Traders may agree to exchange the feedback without performing the trade (money for the item). However, as mentioned before, the transaction is not completely 'neutral' for the seller since he pays eBay a fixed fee proportional to the awarding value of the item.

⁷Purchases and sales were performed by credit card. Cost estimation does not include credit card fees (which is usually €1). However, since sellers willing to acquire a reputation by purchasing or (re-)selling feedback are expected to trade much in the market, the impact of credit card fees should become negligible. Notice also that (re-)selling the feedback costs more than buying it, since any (re-)sell implies a fixed listing fee.

⁸<http://pages.ebay.com/help/feedback/detailed-seller-ratings.html> (September 2007).

⁹A recent empirical work by Klein *et al.* (2007) shows however that there is a good congruence between overall feedbacks and specific feedbacks, confirming our conclusions that problems of retaliation may have been somewhat overestimated.

¹⁰See <http://pages.ebay.com/help/sell/fix-price.html>

¹¹Cabral and Hortacsu (2008) also show that negatives have a significant impact on exit probabilities. See also Bajari and Hortacsu (2004) for a more complete survey on empirical evidence on the functioning of feedback mechanisms.