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ADDITIONAL LISTING OPTIONS ON eBAY: ARE THEY WORTH THE MONEY

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ABSTRACT

eBay is by far the world's largest online auction site. Millions of people are doing transactions through it. eBay offers the sellers several additional listing options ("ALO" for short) at certain prices for them to enhance the visibility or attractiveness of their auction listings. In this paper we tried to find out how much these ALO can help to improve the outcome of an online auction, focusing mainly on the multi-unit auctions of a certain brand of diet pill. The 116 data records were collected within a period of one month from the eBay's "Diet and Weight loss" sub-category. In general, our idea can be applied to any other specific good sold on eBay. Our results provide important implications to eBay sellers in terms of deciding which ALO to use when listing his particular item for sale on eBay. Based on our findings, eBay or any auction sites could also apply our approach to estimate the optimal level of pricing of these ALO through computing the average value of the ALO for all transactions.

1. INTRODUCTION

eBay is hot. It calls itself "the world's online market". Millions of dollars worth of goods are being transacted on it every day. eBay charges the seller a listing fee (ranging from $0.30 to $3.30) for every item listed. And if the item is sold eventually, eBay will also charge a final value fee based on the closing value (1.25% to 5% of closing value).

eBay auction is unlike traditional brick-and-mortar auction, where at most tens of items are sold during a period and bidders can see *all* the items for auction. There are millions of items listed on eBay and no one can browse them all. What the potential bidders do is just search a keyword for what he wants or just browse the "Featured section" or browse in his interested category. In any case, a potential bidder will first see a listing of item titles, and then he clicks the title of the item that appeals to him and reach the item details at the other end of the link. He then reads the item details and decides whether to bid on it.

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In this "eyeball economy" and given the huge number of items listed on eBay, catching the bidders' attention is surely one of the most important factors for an auction to be successful, since potential buyers must spot a wanted item first *before* they actually continue to read descriptions of the item details. eBay noticed this fact and offers sellers several additional listing options (ALO) at certain prices for them to enhance the visibility or attractiveness of their auctions. These ALO vary from the 25-cents "Put in Gallery" to the $5 "Highlight title" to the $99.95 "Featured in Home page" (See Table 1). It is very clear that these ALO play an important role in catching potential bidders' attention and in generating a successful transaction for the sellers.

Table 1. The Five Additional Listing Options

Additional Listing Options	Description	Fee
Home Page Featured	Receive the highest level of visibility on eBay! Your item will be listed in a Special Featured section and will **most likely** be rotated for display on eBay's Home page. Your item may also appear on the main Browse page and in your category index page Featured items section.	$99.95
Featured Plus!	Appear in your category's Featured Item section and in bidder's search results. Plus, your item may be selected for display in another area — your category index page Featured Items section.	$19.95
Highlight	Emphasize your listing with an eye-catching yellow colored band.	$5.00
Bold	Add instant emphasis to your listing by putting your item title in bold.	$2.00
Gallery	A small picture of your item will appear in our Gallery, eBay's miniature picture showcase. Remember, you need a picture in a JPEG (.jpg file) format to use the Gallery.	$0.25

Adopted from "eBay Help: Seller Guide: List it: Fees"

A natural question arising from the table would be "Are these ALO worth the money?" Common sense tells us that if an auction has a high expected profit, it would likely warrant the use of expensive ALO. To answer the question more precisely, we conducted this quantitative research.

There are basically two types of auctions on eBay, namely, single item auction and multi-unit auction. For single item auctions on eBay, a seller's profit comes from just *one* single item. For the multi-unit auctions on eBay, most of them are online retailing in essence. In these "retail-in-essence" auctions, a seller lists hundreds or even thousands units of same items (under one item title) and the auction price never changes as the demand never exceed supply. And a seller's expected profit can be very high if he can sell a large quantity of his items.

In this research, we focus only on the latter type. The reason why we focus only on "retail-in-essence" multi-unit auctions is that these auctions have a high expected profit. Because of the high costs of using the ALO, only auctions with high expected profit would likely warrant the use of the ALO. Although some single item auctions may also have high profit such as "antique auctions", they are very different and unique in nature and are hence not amenable to comparison. Moreover, such auctions do not normally have enough data points upon which we could base our analyses.

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In those "retail-in-essence" multi-unit auctions, we can use the "number of units sold" to determine whether ALO are worth the money by calculating a seller's profit in those "retail-in-essence" multi-unit auctions:

(1)   Profit = Quantity * (Price – Cost) – ALO fee – other fees, where

"Price" is the selling price of each unit set by the seller, "Cost" is the price per unit at which the seller get his items, and "Quantity" is number of units sold, which could be predicted by the model we build in the rest of the paper.

We collected one month's data (October 24 to November 23, 2001) of multi-unit auction transaction records of a certain brand of diet pill to determine the effect of these ALO on the quantity sold. Our results have important implications in helping sellers decide whether the ALO are worth the money for their auctions. Based on these findings, eBay or any auction sites could also estimate the optimal level of pricing for these ALO through computing the average effect of the ALO for all transactions. Although we concentrated our data collection only on a certain brand of diet pill, our approach can be applied to any product category in general.

2. LITERATURE REVIEW

Previous researches on eBay auctions did not consider the effect of ALO [Lucking-Reiley, 2000; Wan and Teo, 2001]. Although Bajari and Hortacsu [2001] did mention about the "feature" and the "category feature" (which is the predecessor of the new "feature plus" in my research), he was not able to study their effects. None of the auctions in his data set used either of these two ALO because the average value of the auctions he studied was only about $47.

However, the use of ALO is one of the most important factors differentiating online auctions and brick-and-mortar auctions. Where and how a seller choose to display his item in eBay is critical because he would like the item to be spotted out of thousands of similar items. The presentation of items changes the nature of the proximal cues (e.g. graphic) buyers use to infer the distal content (e.g. Item details) [Chi, 2000].

To help us understand the effect of the ALO on auction success in eBay, we draw upon research done in the area of online marketplace design. Hahn (2001) proposed a framework of online marketplace design consisting of three major classes of design variables: market techno-structure, market navigation, and item display. Applying this framework on eBay, the former two belong to the eBay designer's job while the latter is at the discretion of the eBay seller. Regarding the options of "highlight", "bold", and "gallery", Hahn (2001, p319) suggested "in order to accentuate the scent of an item, the seller may buy visual decorations to catch the attention of potential buyers." How an item is presented is important because it affects the information seeking behaviors of the potential buyers.

As for the more expensive "feature" and "featured plus" options, it can be understood from a different point of view. It is no longer merely "how the item is presented" but also "where the item is presented" that is important. A potential buyer must first spot an item before any transaction can take place. In their paper on the impact of user interfaces on web traffic and sales, Lohse and Spiller drew an analogy between online retail stores and real stores: the "homepage" of an online retail store is akin to the "store window displays" of a real store; and the "featured products on hierarchical levels of the store" is similar to the "Aisle products" [Lohse and Spiller, 1999]. In this regard, eBay has exactly two corresponding ALO: the "Home Page Featured" and the "Featured Plus" options to let seller enjoy a higher exposure of the item.

Both Hahn (2001) and Lohse and Spiller (1999) studies were qualitative and they did not attempt to quantify the effects of the ALO. In this research, we tried to quantitatively study the effect of ALO on the number of units sold in multi-unit auctions by using a multiple regression model. To our

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knowledge, there are no existing papers that have quantitatively examined the effect of the ALO. We believe our study can contribute to existing research on the auction marketplace as well as to research on the importance of user interface design issues on the web.

3. THE MODEL

In this section, we present the regression model we established to predict the "Quantity" (number of units sold) in equation (1) in the introduction. As is known to all, number of units sold has strong inverse relationship with the price of the item. So we included the item price as one independent variable. In addition to the price, ALO are the most important factors affecting the quantity sold. So we included ALO as independent variables.

The five ALO we considered in this paper are the "Home Page Featured" ("Featured" for short in our regression model), "Featured Plus", "Highlight", "Bold", and "Gallery" options. On eBay, all these five ALO *can* be used concurrently in an auction listing. Usually a seller chooses a combination of some of them. Some may choose to use all of these ALO for his item if he thinks they might provide a higher return for their auction item. These five ALO are set up as dummy variables in our model. That is, if a seller only chooses to use "Featured Plus" and "Highlight" options for his item, the values of the two dummy variables "Featured Plus" and "Highlight" will be 1 and the values of the other three dummy variables "Featured", "Bold", and "gallery" will be 0.

In addition to the above five ALO, the eBay official payment mode named "Billpoint" can also be identified easily on the auction listing (an icon of a lock after the item title) and may attract more potential buyers. Table 2 summarizes the advantages of Billpoint for both buyers and sellers. Hence, we include it as another ALO in the regression model. Similar to the other five ALO, "Billpoint" is also a dummy variable and will take the value 1 if a seller chooses to use "Billpoint" option and 0 otherwise.

Table 2. The eBay payments – "Billpoint"

Why eBay Payments (Billpoint)?

Discover the best way to pay and get paid on eBay! FAST. EASY. SECURE.

Buyer Benefits	**Seller Benefits**
• FREE!	• Get paid faster!
• No registration required	• Low, competitive fees
• Full purchase protection*	• Convenient
• Safer than checks	• No hassles — save time, less paperwork
• Get your item faster	• Accept international payments
• Easily track your purchases & receipts	• Easily track your sales & payments

Adopted from "eBay Help: Buyer Guide: eBay payments overview"

We did not include the seller rating as an independent variable because previous eBay research results showed no significant effect of seller rating. [Bajari and Hortacsu, 2001; Wan and Teo, 2001]. Perhaps

the seller rating does not truthfully reflect the seller's reputation, as "feedback shilling is very common on eBay." [Schwartz and Dobrynski, 2001]

We did not consider the reserve price in our model too, as none of the "retail-in-essence" multi-unit auctions that we focused on uses the reserve price. Also the duration variable was excluded because all auctions we focused had durations of 10 days (maximum duration allowed). Actually the "10-day duration" is another ALO on eBay, at a fee of 10 cents. It allows an auction to last 40% longer (7 days is maximum duration without this "10-day" ALO) and hence attracts 40% more buyers in multi-unit auction. Given its highly cost-effective nature, all sellers of multi-unit auctions are willing to use it.

Taking into account the nature of multi-unit auctions and the ALO, we established the following model to estimate the effects of price and all the ALO on the quantity sold:

(2)   Ln (Quantity +1) = b0*(constant) + b1* Ln (Price) + b2*Featured + b3*Featured plus + b4*highlight + b5*bold + b6*gallery + b7*Billpoint + error variance

We used the log-linear model instead of the linear model because the scatter plot of logged variables appears more linear. We used Ln (Quantity + 1) to make the log always well defined, as the quantity sold is sometimes 0 because of no bids.

4. DATA AND REGRESSION ANALYSIS

As stated in the previous section, we focus on multi-unit auctions in this research. Still not all sellers in these auctions tend to use many of these ALO, especially those expensive listing options such as "Home page Featured" or "Featured Plus" options. After thorough investigation, we found that diet pill represents a desirable source of data points for our study. Many sellers of diet pill are doing "retail in essence" multi-unit auctions and they tend to use ALO to enhance the exposure of their items. We therefore selected diet pill as our focus of this research.

Prior to actual data collection, we examined many kinds of diet pills on eBay and found that "Metabo-ultra Max" is one of the brands that have many transactions and brisk turnover. Hence we decided to only collect the transaction data of this brand. Despite just collecting only one particular brand, we still had to form a small work group to collect data. The small work group traced every transaction from the beginning to the end for the period from October 24 to November 23, 2001. The data collection for this research is particularly difficult because information about "highlight", "bold" and "Gallery" options cannot be obtained in the eBay's "completed auctions" listing. Unlike previous researchers who used ready information in "completed auctions" section, we had to observe current auctions to see which ALO were being used and waited till the auction completed in order to obtain the final auction result. Notwithstanding the difficulty, the small work group ensured high data accuracy by painstakingly cross-validating each other's work.

Beginning October 24, we used the "title search" on eBay home page daily to search for the key word "diet pill". We did not search by the brand name "Metabo-ultra Max" because we might miss out many transactions, reason being the brand name itself is nothing special and most sellers do not normally include it in the title. For example, a frequently used item title would be something like "Lose 80 pounds in one month! Guaranteed!"

We viewed item details to see if the item was actually "Metabo-ultra Max". If it was, we then included it in our data set. (We also checked the number of capsules in each bottle and found that there is only one size of 30 capsules per bottle for this particular brand of diet pill). For an included item, we first recorded its price. We then recorded its ALO condition by looking at its listing title. For example, an item can either have a plain title, a highlighted title, or a bold title or both a highlighted and bold title. Whether the Gallery option was chosen was performed by checking whether the item has a picture beside the title. If there is an icon of a lock after the item title, it means the seller has chosen the "Billpoint" option. Finally, we clicked on the title link to continue to the "item details" page to see if

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this auction item uses the options of "Home page Featured" or "Featured Plus" or both (this information is provided in the item details page instead of the listing page of item titles).

Following the recording of these relevant information of a particular auction, we waited till the auction conclude and visited the item's "bid history" page to obtain the auction result, i.e. got the units of items sold by simply adding up each buyers' units ordered. Similar steps were performed for all transactions that occurred from October 24 to November 23, 2001. A total of 116 records were obtained.

All data records were useable because we did the collection manually. Data records that were not listed in US dollars and not listed in the correct "Diet and Weight Loss" sub-category were excluded at once. While some may argue that these items could be included, we believe that they may distort our results. For non US dollars listed items, these sellers may be foreigners and it may affect the auction outcome differently compared to a seller who is a local and use the US$. For items listed in other categories, the auction outcome may also be unpredictable. For example, a listing of a diet pill with "Featured Plus" option in the "Clothing and Accessories" category may generate different auction outcomes as compared to a listing in the correct "Diet and Weight Loss" sub-category. It may attract more bids because such a bottle of diet pill will be more outstanding in a collection of clothing and accessories or it may attract less bids because a well planned buyer browsing the "Clothing and Accessories" category will not consider buying a bottle of diet pill. This effect is too complicated to be captured in our research model.

5. RESULTS AND DISCUSSION

Statistical analyses were performed using the SPSS Software (version 10.0). The five percent significance was used for all statistical tests.

Table 3. Regression Results

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.698	0.924		5.087	0.000**
Ln (Price)	-2.057	0.461	-0.282	-4.459	0.000**
Featured	1.788	0.201	0.610	8.902	0.000**
Featured Plus	0.360	0.238	0.119	1.510	0.134
Highlight	0.181	0.227	0.063	0.798	0.427
Bold	0.523	0.227	0.157	2.306	0.023*
Gallery	0.500	0.255	0.138	1.958	0.053
Billpoint	-0.352	0.175	-0.102	-2.008	0.047*

Dependent Variable: Ln (Number of units sold + 1)
* Significant at the 5% level
** Significant at the 1% level

5.1 Model Fitness

Judging from the regression results, the model specified was satisfactory. The R-square of the model is as high as 0.745 and the adjusted R-square is 0.728. The model has the F-value of 45.1 and is significant at one percent level. All except one independent variable were in the expected directions

and four out of seven variables were significant at the five percent level. We present and discuss the detailed results below.

5.2 Price

The coefficient of Ln (Price) is negative, showing the inverse relationship between demand quantity and price. When no ALO is used, the deterministic part of our regression equation becomes:

Ln (Number of units sold + 1) = 4.698 – 2.057 * Ln (Price)

5.3 "Home Page Featured"

This ALO has a positive effect on number of units sold in the multi-unit auctions of "Metabo-ultra Max" diet pill. The significance of this result is at one percent level. We observe that items using this option often result in them becoming hot items on eBay. Hence, it is not surprising to see such a highly significant result. The estimated coefficient, 1.788, is much larger than other ALO's, which is expected. The meaning of the coefficient is that when the dummy variable "Featured" takes value 1 instead of 0, the dependent variable Ln (Quantity +1) will increase by 1.788. This means the quantity sold when using "Featured" is roughly six times the quantity when without "Featured". (e^1.788=6) However, a seller has to pay $99.95 fee to achieve this. The seller can determine whether this ALO is worth the high cost by calculating the profit. We will describe it in section 5.9.

5.4 "Featured Plus"

This ALO has no significant effect on the number of units sold in the multi-unit auctions of "Metabo-ultra Max" diet pill. The estimated coefficient, 0.360 is not as large as that of "Home Page Featured" but is in the right direction. The non-significance might be attributed to the fact many sellers who used the "Home Page Featured" option also used this "Featured Plus" option, and the effect of this feature might have been subsumed by the "Home Page Featured" option (Sellers are allowed to use both of them at the same time. The fee is just the sum of the two fees). Perhaps there may be some positive interactive effects of these variables. Moreover, only 4 sellers in our 116 records used "Home Page Featured" alone.

5.5 "Highlight"

This ALO has no significant effect on the number of units sold in the multi-unit auctions of "Metabo-ultra Max" diet pill. The coefficient is not significant at the five percent level but is in the expected direction. We observed the eBay auction listings page carefully and found a tentative explanation. There may exist a kind of "negative effect" for highlighted titles in a particular listing page. In certain pages, almost all listings are highlighted. It would then appear that those that are not highlighted would stand out. We suggest that sellers examine the percentage of "highlight" in the item listing before they decide whether to use this ALO or not.

5.6 "Bold"

This ALO has a significant influence on number of units sold. Seller only has to pay $2 for an item to have boldface title, and the effect is surprisingly good. Boldface accentuates the wordings and makes the item title more readable than those that were not boldfaced. This finding suggests that this particular ALO is extremely cost-effective in enhancing seller revenue. Specifically, the coefficient of this dummy variable is 0.523, which means the use of this ALO can increase the units of item sold by

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70%. ($e^{0.523}=1.7$) Usually the gain in the increased sale is greater than the cost of merely two dollars.

5.7 "Gallery"

This ALO has no significant influence in the multi-unit auctions of "Metabo-ultra Max" diet pill at 5 percent level. This is expected because the fee of listing an item in "Gallery" is only 25 cents. Since majority of the sellers are willing to use it, a seller cannot make his item more eye-catching by putting his item in gallery.

5.8 "Billpoint"

"Billpoint" is a facilitating eBay payment for buyers. It may make buyers want to buy the item because of the convenience and speed it affords (see Table 2). However, the "Billpoint" is significant at five percent level in the *opposite* direction. To understand this counter-intuitive finding, we posted questions on the eBay forum discussion board to ask for help. The explanation was that eBay experiences technical problem related to "Billpoint" payments! A common complaint was that buyers actually paid TWICE for the items they bought and could not obtain any refund. It is no wonder that this ALO has a significant negative effect on the auction outcome.

5.9 Are the ALO worth the money?

The answer to this question depends on the expected profit that should be calculated by equation (1) for *each individual seller*.

As our purpose of this paper is only to decide whether *ALO* are worth the money to the seller, we assume that seller has already chosen a price. Hence, in equation (1), "Price", "cost" and "ALO fees" are known and *all* the seller wants to know is just the "Quantity", which can be predicted by our regression equation (2). After calculation of equation (1), the seller can make decision whether he should use a particular ALO, i.e. whether this ALO worth the money.

6. CONTRIBUTIONS AND FUTURE RESEARCH

Our paper is novel to the extent that it represents the first effort to quantify the effect of ALO. Prior research on online auctions has ignored the importance of these effects on auction outcomes. Apparently in a congested online market, such assumptions can be dangerously erroneous. Our research shows that ALO such as Homepage Feature and Boldface have significant large effect on the outcome of "retail-in-essence" multi-unit auction items. Our findings suggest that sellers of "Metabo-ultra Max" diet pills can use the coefficients in our research model to compute the expected number of units sold for different combinations of ALO, and choose the most cost-effective ALO. However, our approach can be applied to any kind of product sold on eBay. Our method can even be adopted to study the ALO counterparts in other auctions such as Yahoo auctions.

This paper represents an initial step in our series of empirical studies of ALO. Our result suffers from a few limitations. We had only examined multi-unit auction here and selected only one brand of diet pill as our research focus. In future research, we would look at multi-unit auction of different items in different categories. The coefficients should vary among different types of items, according to whether they are "browse item" (such as diet pill or jewelry, which cannot be effectively searched and can only seen by browsing through category) or "search item" (such as music CD or book, which can easily be searched by title).

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We would also look at single item auctions at a later stage. This is much more exciting because it represents the bulk of auction listings. However, this is much more complex because data are much harder to collect (less sellers want to use ALO for single item if it's not a big business). Moreover in single item auctions, other variables such as starting price and reserve price may have a significant influence on auction outcome.

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