

UC Berkeley

Working Paper Series

Title

Apples to Oranges: How Category Overlap Facilitates Commensuration in an Online Market Environment

Permalink

<https://escholarship.org/uc/item/7156631b>

Author

Leung, Ming D.

Publication Date

2012-04-05

**APPLES TO ORANGES: HOW CATEGORY OVERLAP
FACILITATES COMMENSURATION IN AN ONLINE MARKET FOR SERVICES**

Ming D. Leung
Haas School of Business
University of California, Berkeley
2220 Piedmont Avenue
Berkeley, CA 94720
1-510-642-4952
mingdleung@haas.berkeley.edu

WORKING PAPER – PLEASE DO NOT CITE WITHOUT PERMISSION

April, 2012

**APPLES TO ORANGES: HOW CATEGORY OVERLAP
FACILITATES COMMENSURATION IN AN ONLINE MARKET FOR SERVICES**

ABSTRACT

This paper theorizes on how categorical distinctions affect market closure. Contrary to expectations that greater variation in choices allows a buyer to optimize their transactions, I find evidence in a labor market for freelancing services which suggests otherwise. In particular, the less categorical overlap of past experiences of freelancers bidding on a job, the less likely a buyer will choose any of them and the longer it takes the buyer to do so if they eventually do make a decision. Because categories serve to demarcate like-experiences, greater categorical overlap of the past experiences of freelancers makes them easier to compare, thereby facilitating a decision. However, more experienced buyers of services should be more attuned to what skills are valuable for their task. Therefore, I predict that this effect is moderated by increased experience. These hypotheses are tested with data from www.elance.com. Support is found for the two main effects and partial support is demonstrated for the moderation effect.

KEYWORDS

Labor market, Categories, Commensuration

INTRODUCTION

What factors facilitate exchange in markets? Harrison White's (1981:519) insight that a, "market is an "act" which can be "got together" only by a set of producers compatibly arrayed on the qualities which consumers see in them," would suggest that the likelihood of market closure is a function of how well consumers are able to compare producers. Consumers are better able to choose from producers that are self-ordered into distinct niches because they can identify their particular combination of price/quality. However, while White details the mechanisms as to how producers monitor and react to one another along a price/quality continuum, the consumer role of the two-sided market is left under-theorized leaving our understanding as to the mechanisms which aid buyers participation in markets unaddressed.

I turn to the recent research on categories (Zuckerman, 1999; Hannan, Polos, and Carroll, 2007), which examines the role of the "audience" as the resource holders that producers are beholden, to enlighten us. Buyers in markets can be considered a member of the "audience." This stream of work suggests that because individuals naturally lump and separate (Zerubavel, 1997) items into recognizable groupings, that buyers in markets attempt to identify sellers along understandable categorical identities. The assumption which underlies this theory is that because categorical boundaries circumscribe similar social actors, that identification and understanding of those categorized actors then becomes eased. In two-stage conceptions of markets (Shocker et al., 1991; Urban et al., 1996), buyers are conceptualized to first *identify* appropriate sellers and then to *evaluate* this abbreviated choice set. Economic sociologists have suggested that categorical membership acts as a sieve in the first phase of a market transaction by assisting buyers in eliminating those "candidates" who do not obviously fall into the prevailing categorical distinctions.

This paper instead examines how categorical distinctions affect the second stage of the market model, that of evaluation. In particular, I examine labor market transactions and hypothesize on how the prevailing norm to classify past experiences into recognizable clusters, as on ones CV, affects the process of commensuration (Espeland and Stevens, 1998). I suggest that in labor markets, when employers (or buyers) are faced with “candidates” (or sellers) that have little overlap in their past categorical experiences, that commensuration is made more difficult. This lies in contrast to beliefs that increased variation in choice should make a buyer better off because they are able to optimize the transaction by having a better opportunity to choose precisely what they are seeking. Instead, variation makes evaluation more difficult.

Because categories demarcate some observable skill or ability, buyers will be more likely to see experiences labeled in identical categories as comparable. Experiences in different categories are thereby more difficult to compare because they have been identified as such. While this theory should hold in markets more generally, this paper demonstrates that in labor markets, when employers are presented with a choice between candidates that have less overlap in categorically identified past experiences, that they will be less likely to hire anyone at all. This is because the comparisons among sellers with less categorical overlap in past experiences are increasingly more difficult to make, and that this difficulty dissuades a buyer from choosing any seller. If a buyer does choose a seller, then the less overlap between candidates’ past experiences, the longer time it will take them to reach such a decision. Again, because categorically mismatched past experiences will be hard to compare, it should require more time to do so. However, those buyers with more experience should have less trouble understanding what experiences would be relevant to their needs – therefore we should expect that buyer experience should mediate this effect.

This paper usefully contributes to the literature on markets and more specifically, on how classificatory systems facilitates such transactions in several novel ways. First, an assumption of the seminal work by Zuckerman (1999) is that unfamiliar categorical combinations confuse finance analysts responsible for evaluating such firms. This paper attempts to further develop this assumption by testing it's particular mechanisms. Second, ...

This rest of this paper is organized as follows. I review some of the extant research on how categories have been shown to influence market functions. I then develop and proffer hypotheses as to how categories may facilitate comparison between sellers. I describe an online market for freelancing services, www.elance.com, which allows me to test this theory on freelancer's and the people that employ them. Results are presented and discussed and an additional analysis to corroborate my findings is reported. Concluding remarks are then made.

THEORY DEVELOPMENT

Labor Market Categories

Categories pervade social life by helping us lump and separate objects into discernable groups (Zerbuval, 1997). These classification systems usefully partition social objects into recognizable clusters, reducing the requirement that we see each instance anew. For example, firms are divided into industry groups (Zuckerman, 1999) and films are identified by genres (Hsu, 2006). Because categories usefully group like-objects, people become familiar with what to expect of an object that is categorized in a certain way. Identification with a category leads those expected characteristics to be applied to that object. So when faced with a choice as to what movie to watch, audiences can rely on default assumptions as to what characteristics a

movie will have given what genre it has identified itself with. If a moviegoer wants to see a funny movie, she will expect to find that in a film identified as a comedy.

In labor markets, one's past experiences are often identified and separated into categorical distinctions as well. Instead of experiences being described in detail, job applicants submit resumes or CVs which summarize past accomplishments. Past experiences that are classified helps us easily understand what a potential employee, or "candidate," is capable of. For example, in the labor market for feature films, the genres of films in which an actor has worked in serves to convey the breadth (or lack thereof) of their experiences (Zuckerman et al, 2003). Categorization, in this case, usefully solves the problem of comprehension because the alternative to using simple classifications would be for job candidates to include detailed descriptions of their past work experiences which would require extensive effort by a potential employer to understand. Instead, work experiences that are categorized by firm or industry (as a past employer's name would indicate), function or role (as past titles would imply), or even by particular skills (such as functions) makes it easier for an employer to understand what a candidate is capable of.

These classificatory distinctions are useful in labor markets because lay theories of skill would suggest that categorized experiences act as a proxy for understanding the abilities a candidate possesses. Because categories serve to circumscribe similar tasks and exclude dissimilar ones, as a first order approximation, ones experience in a particular category demonstrates facility with that category and also likely implies inability in another, possibly incompatible one. Zuckerman and his colleagues (2003) investigation of typecasting in the feature film industry showed that those actors who had worked previously in a particular genre were most likely to secure future work in that same genre. This was because lacking any other quantifiable measure of ability, the casting directors had to rely predominantly on an actor's past

experiences to evaluate their future ability. Therefore, the best guarantee of success in one film genre would be previously demonstrated success in that genre.

To the extent that categories serve to usefully partition “actual” differences in tasks they encompass (that acting in a horror movie requires different skills than acting in a comedy), then we should expect that comparisons of experiences across categories to be problematic. As is the case in the feature film industry, casting directors were seldom convinced that experience in one movie genre was easily transportable to another (Zuckerman et al, 2003). This was because they were unsure as to how the skills from one film would be able to satisfy the demands of a role in another genre. For example, in order to successfully act in a comedy, it is reasonable to assume that the actor needs to be funny. However, it would be unclear how the ability to be funny would help the actor succeed in a horror movie, where presumably, they would have to be skilled at acting frightened.

Categories and Commensuration

With this insight, we now turn to a discussion of the process as to how employers screen and choose applicants in a labor market context. Similar to the two-stage model of consumer decision making, (Shocker et al., 1991; Urban et al., 1996) and more general market models (Zuckerman, 1999); a labor market transaction can also be portrayed as consisting of two stages: identification and evaluation. The first stage consists of identifying the appropriate candidates for inclusion into a choice set. Literature to date has examined how categories affect ones attention in choosing which candidates warrant consideration in this stage. The focus of this paper is on how categories affect choice in the second stage of a market transaction, that of evaluation or commensuration.

Most of the prevailing literature on categorization has identified how categories influence the identification stage. This stream of thought suggests that categories act as a “short-cut,” with which a potential buyer can identify appropriate candidates to perform detailed considerations among. So the finance analysts in Zuckerman’s (1999) study choose only to cover firms that “fit” into prevailing norms of industry categories. Those firms which comprised of unfamiliar industry amalgamations were “confusing” and risked being “ignored” by the financial analyst community. Categories served as a preliminary proxy by which those candidates who are unable to demonstrate appropriate categorical affiliations are quickly screened out of consideration.

This paper orients the discussion to how categories influence the second stage of a market process – that of commensuration. In this stage of a market transaction, buyers are engaged in a purposeful evaluation of potential candidates who have moved beyond the identification stage. Zuckerman (1999) suggests that potential candidates are best served in this stage by attempts to differentiate themselves vis-à-vis each other. In other words, while candidates initially expend effort to “fit in” and display recognizable characteristics to be considered in the identification stage – in the evaluation stage, individual seller advantage is theorized to be procured through their ability to differentiate themselves. Paradoxically, I suggest that from a buyer’s point of view, too much differentiation between sellers actually reduces market efficiency by making buying decisions more difficult.

Decisions on employment are often less well-defined than perhaps a purchase of a commodity or product. For example, in shopping for something that may be more commodity-like, say laundry detergent, a buyer may be able to hone in on a single attribute they desire in such a product, such as cleaning efficiency. If this were the case, a buyer should be able to find precisely what they are looking for despite the fact that there are a myriad of laundry detergents available. In fact, given this premise, one could also expect that the more variation in choice the

greater likelihood all buyers will be able to find exactly what they need. That variation can improve market outcomes.

However, skills that are required for success at a job may not be as clear or easily discernable. Take the hiring of a new junior faculty colleague. Often there is very little guidance beyond a general preference for a particular discipline or area of study that would qualify a candidate. In addition, there are a myriad of skills that may determine success of a junior faculty – be it research ability, teaching acumen, or their camaraderie. In situations such as these, I suggest that employers will be less likely to have a pre-conceived notion as to what they will be looking for in a candidate and more likely to be influenced by the candidate pool itself. That is, instead of knowing what they want a priori, a buyer will rely on the choice set presented to them and attempt to discern which candidate is best among this group. In short, when presented with an increasingly divergent candidate pool, it may become more difficult to simply look to maximize on a single attribute because there are likely more dimensions to consider.

HYPOTHESES

The decision one faces in labor markets is to understand which candidate would be best for the job. As described above, casting directors preferred actors who have successfully demonstrated that they can work in the relevant genre. But in many conditions, the experiences of candidates will vary in how similar they are to one another. I suggest that when choosing among a set of candidates who share very little past categorical experiences, comparisons will become more difficult. To the extent that buyers are influenced by the candidate pool itself and have little a priori notions as to what precise skill they are seeking, it will be harder to identify which candidate will be best for the job. That is, when faced with candidates with less overlap in

their past experiences, buyers are forced to compare and evaluate candidates along dimensions which do not match up. Experiences that are categorized differently lead audience members to believe that they are likely incompatible. Disparate experiences make it hard for an ideal candidate to be identified because their attributes do not line up. Offerings that are more clearly structured are more appealing because their comparison sets are better defined (Iyengar and Lepper, 2000). This difficulty in evaluation should dissuade a buyer from entering into the transaction at all because a clearly superior choice is hard to identify. More formally,

Hypothesis 1: The less category overlap in experiences there is between candidates in a labor market decision set, the less likely an employer will be able to choose one of them.

However, if a buyer were to make a decision on a candidate, the time they would need to evaluate the candidates should vary as a function of the amount of their categorical overlap as well. To the extent that a decision is made at all, it is likely that the effort it took to evaluate candidates who differ more in their past categorical experiences should be greater. Deliberations will take longer, justification for such a choice will be harder to come by or require more detailed explanation. Given the additional effort that is expected to be expended in situations like this, we should expect that it would take more time for such a decision to be arrived at, therefore:

Hypothesis 2: The less category overlap in experiences there is between candidates in a labor market decision set, the longer it will take an employer to make a choice.

The above implications of the theory identify the mechanisms which affect commensuration. That is, comparison between candidates with less overlap of categorical experiences is more difficult because a buyer will find it hard to understand how to evaluate disparate experiences. However, this effect should be moderated by the experience a buyer has. If a buyer has extensive experience in hiring in a certain domain, then this problem should be mitigated. This is because buyers who are more familiar with what it entails to be successful for what they are hiring for will have a better understanding as to what skills may or may not be applicable across categories and what would or wouldn't be useful to a particular situation. In short, they will have stronger priors as to which experiences will lead to success. If this were the case, then their ability to comprehend and evaluate candidates with varying backgrounds will be improved. Therefore,

Hypothesis 3: Both of these above effects will be moderated by the experience an employer has in such hiring.

EMPERICAL CONTEXT

I test this theory with data from an online market for freelancing services, www.elance.com. Elance.com is a marketplace where buyers of services find and hire independent professionals and small businesses on a contract basis. Elance.com was founded in 1999 and as of November, 2009, there were over 27,000 jobs posted each month and over 100,000 providers of service located worldwide. Since founding, there has been over \$225 Million worth of business transacted on the website with a recent average job size over \$600.

As a necessity, given the volume of transactions, Elance.com job listings are organized into job categories that attempted to represent conventionally recognized divisions of labor. Some examples include Website Programming, Administrative Assistance, Translation Services, and Logo Design. Each job is required to be classified into one, and only one, job category. These categories determine how jobs are listed by buyers, how they are searched for and bid on by freelancers, and how they are represented in the past histories of freelancers. See Appendix A for a full list of the categories.

Once a job is listed, freelancers bid on it. Bids include the stated price but the lowest bidder is not automatically chosen. A buyer can choose to hire whomever they wish. In making a decision, buyers have access to the freelancer's online profile. This includes their complete history of all their past jobs, organized chronologically and identified by their job categories. Freelancers are able to work in any job category they wish, so they can accumulate disparate experiences. See Figure 1 for an example listing of a bidder's past jobs viewable by a buyer. The bidding concludes within a timeframe established by the buyer, generally within a week, whereupon a buyer may decide to choose a winning bidder to perform the task.

[Insert Figure 1 about here]

DATA AND METHODS

I examine all job postings and the bids associated with them for the years 2000-2002. In this timeframe, there were 7,737 job postings and 64,396 bids in 73 different job categories.

Dependent Variables

For hypothesis 1, the likelihood of a job posting closing with a winner being picked by the buyer is my dependent variable of interest. Once a pre-determined number of days is up, a buyer much choose a freelancer to complete the project. However, approximately 15% of transactions end without a bidder being chosen. Exchange does not occur in these instances. I coded those posting which closed with a winner =1, otherwise 0. For hypothesis 2, the dependent variable of interest is the amount of time it took for the buyer to eventually make a decision, as measured in days. This is a count variable which is calculated by subtracting the day a listing was posted on the website to the eventual day a winner was picked.

Independent Variables

My independent variable of interest is the amount of overlap between past job categories of all the bidders for a particular posting. This is calculated using the Jaccard index as a measure of job category overlap between all bidders for a job. Specifically, overlap between bidders is calculated as the size of the intersection of their categorical past experiences divided by the size of the union of their past experiences. For example, if freelancer 1 worked in categories A, B, C, and D while freelancer 2 worked in categories A, C, and E – then the measure of their overlap in past experiences would be $2/5$, or .4. Overlap measures were calculated between all (pairs of) bidders for each job and then averaged. This average represented the average overlap of past bidder experiences of that job. This measure can range from 0 to 1, with 0 meaning none of the bidders had any past experiences in common and 1 meaning all bidders had the exact same past experiences.

Control Variables

Several control variables are included in the models. How complex the job may be could affect both the diversity of bidders as well as the difficulty in choosing a bidder. In order to

control for this potential endogeneity problem I include two control variables. First, I included the average cost of the bids with the intuition that the greater the average cost of the bids should serve to indicate how complex the job was. Second, I also included a count of the words in the job description which was my attempt at capturing how much explanation was necessary to describe the task, another measure of how complex the task was. I also included the average experience of all the bidders in that job category, the experience the buyer had in that category and the number of different categories the buyer has purchased jobs in. Finally, I included the total number of bids the job received, as that may also delay a decision. Summary statistics and correlations are presented in Tables 1 and 2 below.

[Insert Tables 1 and 2 about here]

MODELS AND RESULTS

For hypothesis 1, because the dependent variable of interest, whether a winner was picked or not, was dichotomous in nature, I modeled it using a logistic regression. More specifically, I modeled a Fixed-Effects Logistic regression clustered on buyer. This is likely to be a more conservative test, as I am estimating the effects within buyer, thereby eliminating much of the possible time-invariant heterogeneity that may bias the results.

Table 3 below reports the results. Model 1 includes only the control variables which generally behave as expected. The greater the average amount of the bids and the greater number of bids, the less likely a buyer will choose any winner. However, the greater the average experience of all the bidders, the more likely a winner will be chosen. The more experience a buyer has and the greater breadth of experiences they have, the more likely they will pick a winner. Finally, the greater number of words in the job description, the more likely they are to

pick a winner – perhaps this is because more words in a job description may signal that the buyer is a more serious one.

Model 2 includes the independent variable of interest. Results support the hypothesis that the greater overlap in job experiences all bidders have, the more likely a buyer will pick a winner among them. Specifically, a one standard deviation increase in bidder experience overlap will increase the likelihood a buyer will pick a winner by 79% ($\exp^{(0.19*3.07)} = 1.79$). Model 3 tests hypothesis 3 by including an interaction between the buyer's experience in the category with the category overlap of the bidders. Results support my contention that as a buyer gains greater experience, the increasing overlap of bidders further increases their likelihood of choosing a winning bidder.

[Insert Table 3 about here]

Because the dependent variable for hypothesis 2 is a count variable with a mean of 11.7 and a standard deviation of 25.5, there's over-dispersion in the variable, which suggests the use of a negative-binomial over a Poisson to model the effects. Again, I model this as a fixed-effects regression. Table 4 below reports the results and Model 1 estimates effects of control variables only. The greater the average bid for the job the longer it takes for a winner to be ultimately picked. On the other hand, the greater number of bids, the average experience a bidder has in the category, the more experience a buyer has, and the greater breadth of experiences a buyer has – the quicker it was for a winner to be chosen. In line with my expectations, the greater number of words in a listing's description, the longer it took for a winner to be picked.

Model 2 includes the independent variable of interest. As expected, the greater the overlap in past experiences between bidders, the quicker it was for the buyer to choose a winner. More specifically, a one standard deviation increase in overlap in similarity between bidders'

past experiences led to a winner being chosen ~3.4 hours faster ($0.19 * -0.74 = -0.14$ days). Model 3 tests the second prediction from Hypothesis 3, which stated that this effect of overlap on time to choice would be mediated by buyer experience. The interaction in this model is not statistically significant. Therefore, hypothesis 3 is only partially supported.

Additional Analysis

As an additional analysis to triangulate my story, I investigated the effect of bidder category overlap on the price a buyer eventually chose to pay for the service. If my contention that increased overlap makes comparison between bidders easier, then we should expect to see that the price paid for such a listing would be lower as well. To the extent that increased overlap between bidders makes it easier for a buyer to choose among them because they are less differentiated, then their basis of competition should orient on price. Lower differentiation between bidders should reduce competition to one over price. This suggests that I should find that increased overlap between bidders to decrease the price a buyer pays for their services.

To test this, I rank ordered all bids for each job by price from 1 to 'n', where 'n' equaled the total number of bids received for that job. The lower the rank, the lower priced the bid. For each job, I then noted the eventual rank of the winning bid – i.e. if the winning bid picked was the lowest priced one, then it would be recorded as a 1, the second lowest price bid picked was coded a 2, etc. (Note, I didn't use the actual mean deviated price paid because there is tremendous heterogeneity between the costs of the jobs on the website, ranging from \$50 for a logo design to several thousand for website programming services.) I then estimated the effect of overlap in bidder experiences on this outcome. Because the dependent variable here is basically a count variable (1, 2, 3 etc), I utilized a negative binomial model (fixed-effects on buyer). Results are reported below in Table 5.

[Insert Table 5 about here]

Results demonstrate a negative and significant result for the effect of the overlap of bidders' past experiences on the eventual rank of the price paid for the job. That is as overlap of experience between bidders for a job increases, the buyer is more likely to choose bids that are lower priced. This is consistent with my contention that increased overlap between bidders makes them seem more similar and therefore easier to compare. As these dimensions of differences are eliminated (i.e. experiences) competition seems to then hinge on price.

DISCUSSION

Because the ultimate purpose for markets is exchange, a valuable contribution that economic sociologists can make is to further our understanding as to how structural features of markets inhibit or facilitate it. The focus of prior research has been to identify the disadvantages of poor classificatory membership on individual social actors, but has left unanswered how these processes affect market transactions. This paper wields a cognitive lens to this subject by demonstrating how categorical overlap of freelancer's experiences facilitates comparison, thereby encouraging exchange. In particular, the aim of this paper was to contribute to our understanding as to what factors influence whether buyers choose to enter into market transactions at all. Because labor market categorizations of past work may or may not map perfectly onto future needs of employers, disconnects between them may lead to difficulty in labor market transactions being consummated. I identified how classificatory schema ease comparisons between potential sellers – the greater amount of overlap between sellers in categorically identified past experiences, the more likely exchange would be consummated and the quicker decisions are made.

This paper also re-addresses the literature on niche overlap (Dobrev, Kim, and Hannan, 2001; Podolny, Stuart, and Hannan, 1996; Hannan and Freeman, 1989) by focusing the discussion on the audience. While past scholarly research examined the effect of niche crowding on organizational mortality, this paper instead suggests how niche crowding can ironically increase market functioning by easing comparison processes. The past literature on niche overlap identified the increased competitive pressure that is felt by organizations when they enter a niche in increasing numbers. Quite simply put, increased entry into a niche means there are more firms that compete against each other for limited resources in that niche. Interestingly, this paper would suggest that having firms with more niche (or categorical) overlap would actually facilitate transactions. While not an outcome which favors an individual organization, increased niche overlap may benefit market functioning overall.

There are at least two potential extensions initiated by this study. First, an interesting extension could be to understand just how the use of categories evolves and is learned over time. For example, future work could examine how the effect of being faced with a divergent labor pool results in a feedback loop to the buyer. If a job posting for a position garnered widely divergent applicants, we could expect that a buyer learn from this a perhaps re-evaluate either how they worded the job posting, or whether they have been myopic in past job searches. This learning process should eventually increase the overall efficiency of labor market functioning – to the extent that job categories and needed skills remain fixed.

Second, a closer examination as to how market transactions are further influenced because of categorical divisions in reporting of past experiences could be fruitful as well. For example, are there systematic differences in which buyer eventually gets picked given a divergent pool of applicants? Past research would suggest that specialist freelancers would be more attractive, as they are likely to possess the abilities to successfully perform a task.

However, perhaps those freelancers with more variation in their past experiences (generalists) will seem more attractive to a buyer if they are faced with widely divergent bidders. To the extent that a buyer faced with a disparate group of bidders may re-evaluate what they originally thought they needed, they may be less sure of a precise skill and instead prefer someone with broader experiences.

REFERENCES

- Dobrev, S., Kim, T., and Hannan, M.T. 2001. "Dynamics of Niche Width and Resource Partitioning." *American Journal of Sociology* 106: 1299–1337.
- Espeland, W. N. and Stevens, M. 1998. "Commensuration as a Social Process." *Annual Review of Sociology*, 24: 312-43.
- Hannan, M.T. and Freeman, J. 1989. *Organizational Ecology*. Cambridge, Mass: Harvard University Press.
- Hannan, M.T., Pólos, L., and Carroll, G.R. 2007. *Logics of Organization Theory: Audiences, Codes, and Ecologies*. Princeton: Princeton University Press.
- Hsu, G. 2006 "Jacks of all trades and masters of none: Audiences' reactions to spanning genres in feature film production." *Administrative Science Quarterly*, 51: 420–50.
- Iyengar, S. S. and Lepper, M. 2000. "When Choice is Demotivating: Can One Desire Too Much of a Good Thing?" *Journal of Personality and Social Psychology*. 76: 995-1006.
- Podolny, J., Stuart, T., and Hannan, M.T. 1996. "Networks, Knowledge, and Niches: Competition in the Worldwide Semiconductor Industry, 1984-1991" *American Journal of Sociology*, Vol. 102, 3: 659-89.
- Shocker, A.D., Akiva, M.B., Boccara, B., and Nedungadi, P. 1991. "Consideration Set Influences on Customer Decision Making and Choice Issues, Models, and Suggestions." *Marketing Letters*, 2: 181-98.
- Urban, G.L., Weinberg, B.D., and Hauser, J.R. 1996. "Premarket Forecasting of Really-New Products." *Journal of Marketing*, 60: 47-60.
- White, H. 1981. "Where do markets come from?" *American Journal of Sociology*, 87: 517-547.
- Zerubavel E. 1997. *Social Mindscales*. Cambridge, Massachusetts: Harvard University Press.
- Zuckerman, E.W., Kim, T., Ukanwa, V., and Rittmann, J. 2003. "Robust Identities or Nonentities? Typecasting in the Feature-Film Labor Market." *American Journal of Sociology*, 108 (5): 1018-1074.
- Zuckerman, E.W. 1999. "The Categorical Imperative: Securities Analysts and the Legitimacy Discount." *American Journal of Sociology*, 104: 1398–1438.

FIGURE 1
SELLER HISTORY PAGE

Avenir Technologies

Comprehensive Solution Provider

[Get a Proposal »](#)

[Interview Me \(online\)](#)

Profile
 Portfolio
 Feedback

Feedback for: Web & Programming ▾

Feedback for Web & Programming

	6 Months	Lifetime
Feedback:	96% positive	98% positive
Total Reviews:	23	88
Positive:	22	86
Neutral:	1	2
Negative:	0	0
Total Projects:	47	190
Earnings:	\$84,858	\$328,630

[Help](#)

Overall Elance Activity

Member Since: February 2004

Last Customer Feedback: January 21, 2009

Repeat Customers: 36 out of 117 (31%)

Repeat Earnings: \$164,951 (50%)

[Help](#)

Job History (88) 1 2 3 4 5 Next »

Expand All
Web & Programming ▾
All Subcategories ▾
Lifetime ▾
All Feedback ▾

Project	Category	Amount	Date ▾	Feedback Received
	osCommerce Add-ons and Migration	\$1,000.00	01/21/2009	Overall: 5.0
⊕	Category: Web & Programming > Web Programming This is the second time I have worked with this provider and nothing but...			
	Server side script, new features	\$650.00	01/15/2009	Overall: 4.1
⊕	Category: Web & Programming > Web Programming n/a			
	Incorporate Code and Customize osCommerce	\$2,000.00	12/30/2008	Overall: 5.0
⊕	Category: Web & Programming > Ecommerce Website I am very satisfied with this provider. We had some requests along the...			
	High Quality Professional Website Needed...	\$1,100.00	12/28/2008	Overall: 5.0
⊕	Category: Web & Programming > Other Web & Programming			

TABLE 1
SUMMARY STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
Winner Picked.....	773 7	0.640	0.480	0	1
Days to Pick Winner.....	505 6	11.690	25.498	0	457
Rank of Bid (by Amount).....	773 7	4.640	5.346	1	40
Average of All Bids (logged).....	772 7	5.693	1.250	- 5.704	12.61 2
Total Number of Bids.....	773 7	8.323	8.323	2	43
Average Number of Jobs in Category.....	773 7	7.364	12.401	0	203
Buyer's Category Experience.....	773 7	1.110	3.554	0	62
Word Count of Listing Description (logged).....	773 7	4.447	0.874	0	6.489
Category Overlap of Bidders.....	773 7	0.438	0.192	0.065	1

TABLE 2
CORRELATIONS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Winner Picked.....	1							
(2) Days to Pick Winner.....	-0.003	1						
(3) Rank of Bid (by Amount).....	-0.029	-0.038	1					
(4) Average of All Bids (logged).....	-0.101	0.062	0.162	1				
(5) Total Number of Bids.....	-0.038	-0.045	0.799	0.214	1			
(6) Average Number of Jobs in Category.....	0.014	-0.017	-0.048	0.068	-0.064	1		
(7) Buyer's Category Experience.....	0.032	-0.037	-0.028	-0.068	-0.040	0	1	
(8) Word Count of Listing Description (logged).....	-0.020	0.055	0.014	0.086	0.016	-0.047	-0.024	1
(9) Category Overlap of Bidders.....	-0.024	-0.057	-0.165	0.100	-0.213	0.138	0.026	-0.123

TABLE 3
LOGGED-ODDS OF LISTING RESULTING IN A WINNER BEING PICKED
(Fixed-Effects Logistic Regressions, Grouped by Buyer)

	(1)	(2)	(3)
Average of All Bids (logged)	-0.5892*** (0.0320)	-0.6661*** (0.0341)	-0.6542*** (0.0338)
Total Number of Bids	-0.0620*** (0.0042)	-0.0529*** (0.0042)	-0.0522*** (0.0042)
Average Number of Jobs in Category	0.0516*** (0.0045)	0.0441*** (0.0044)	0.0443*** (0.0044)
Buyer's Category Experience	0.1721*** (0.0233)	0.1565*** (0.0229)	0.1506*** (0.0226)
Number of Different Category Purchases	0.7715*** (0.0555)	0.7605*** (0.0561)	0.1849 (0.1302)
Word Count of Listing Description (logged)	0.1738*** (0.0386)	0.2129*** (0.0401)	0.2138*** (0.0399)
Category Overlap of Bidders		3.0715*** (0.2396)	2.2727*** (0.2825)
Buyer Experience X Category Overlap of Bidders....			1.5729*** (0.3361)
Constant	3.1231*** (0.2394)	2.0930*** (0.2487)	2.3160*** (0.2523)
<i>Observations</i>	7727	7727	7727
<i>Groups</i>	5310	5310	5310
Min:	1	1	1
Mean:	1.5	1.5	1.5
Max:	33	33	33
<i>Log-Likelihood</i>	-3979.27	-3875.87	-3864.42
<i>Chi</i> ²	866.87	866.55	874.23

*Notes: Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001*

TABLE 4
NUMBER OF DAYS FOR A WINNER TO BE CHOSEN
(Fixed-Effects Negative Binomial Estimates Grouped by Buyer)

	(1)	(2)	(3)
Average of All Bids (logged)	0.1077*** (0.0135)	0.1307*** (0.0136)	0.1308*** (0.0136)
Total Number of Bids	-0.0065** (0.0022)	-0.0117*** (0.0023)	-0.0117*** (0.0023)
Average Number of Jobs in Category	-0.0036** (0.0011)	-0.0024* (0.0011)	-0.0023* (0.0011)
Buyer's Category Experience	-0.0030 (0.0045)	-0.0016 (0.0044)	-0.0016 (0.0044)
Number of Different Category Purchases	-0.0342* (0.0163)	-0.0326* (0.0162)	-0.0072 (0.0328)
Word Count of Listing Description (logged)	0.2304*** (0.0175)	0.2122*** (0.0178)	0.2113*** (0.0178)
Category Overlap of Bidders		-0.7394*** (0.0759)	-0.6773*** (0.1031)
Buyer Experience X Category Overlap of Bidders....			-0.0620 (0.0701)
Constant	-1.6411*** (0.1076)	-1.3074*** (0.1127)	-1.3304*** (0.1156)
<i>Observations</i>	5046	5046	5046
<i>Groups</i>	3612	3612	3612
	Min: 1	1	1
	Mean: 1.4	1.4	1.4
	Max: 30	30	30
<i>Log-Likelihood</i>	-16424.25	-16374.40	-16374.01
<i>Chi²</i>	271.82	361.68	361.54

*Notes: Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001*

TABLE 5
ORDINAL RANK (BY COST) OF THE BID EVENTUALLY CHOSEN
(Fixed-Effects Negative Binomial Estimation Grouped by Buyer)
(lower rank means lower priced bid)

	(1)	(2)
Average of All Bids (logged).....	0.0064	0.0122
	(0.0121)	(0.0120)
Total Number of Bids.....	0.0682***	0.0674***
	(0.0015)	(0.0015)
Average Number of Jobs in Category.....	-0.0021	-0.0009
	(0.0014)	(0.0014)
Buyer's Category Experience.....	0.0027	0.0035
	(0.0027)	(0.0027)
Word Count of Listing Description (logged).	0.0213	0.0133
	(0.0168)	(0.0168)
Category Overlap of Bidders.....		-0.4258***
		(0.0838)
Constant.....	1.4902***	1.7349***
	(0.1347)	(0.1445)
<i>Observations</i>	3623	3623
<i>Groups</i>	1206	1206
Min:	2	2
Mean:	3	3
Max:	33	33
<i>Log-Likelihood</i>	-4533.97	-4520.81
<i>Chi</i> ²	2253.08	2277.61

*Notes: Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001*

APPENDIX A

ADMIN SUPPORT

Bulk Mailing
Customer Response
Data Entry
Event Planning
Fact Checking
Mailing List Development
Office Management
Other - Administrative Support
Presentation Formatting
Research
Transcription
Travel Planning
Virtual Assistant
Word Processing

DESIGN AND MULTIMEDIA

3D Graphics
Animation
Banner Ads
Brochures
Card Design
Cartoons and Comics
Catalogs
CD and DVD Covers
Commercials
Corporate Identity Kit
Digital Image Editing
Direct Mail
Displays and Signage
Emails and Newsletters
Embedded Video/Audio
Graphic Design
Illustration
Label and Package Design
Logos
Menu Design
Music
Other - Design
Other - Multimedia Services
Page and Book Design
Photography and Editing
Podcasts
Presentation Design
Print Ads
Radio Ads and Jingles
Report Design
Sketch Art
Stationery Design
Videography and Editing
Viral Videos
Voice Talent

ENGINEERING AND MANUFACTURING

Architecture
CAD
Civil and Structural
Contract Manufacturing
Electrical
Industrial Design
Interior Design
Mechanical

Other - Architecture and Engineering

FINANCE AND MANAGEMENT

Accounting and Bookkeeping

Billing and Collections

Budgeting and Forecasting

Cost Analysis and Reduction

Financial Planning

Financial Reporting

HR Policies and Plans

Management Consulting

Other - Management and Finance

Outsourcing Consulting

Process Improvement

Stock Option Plans

Supply Chain Management

Tax

LEGAL

Bankruptcy

Business and Corporate

Contracts

Criminal

Family

Immigration

Incorporation

Landlord and Tenant

Litigation

Negligence

Other - Legal

Patent, Copyright and Trademarks

Personal Injury

Real Estate

Tax Law

Wills, Trusts and Estates

SALES AND MARKETING

Advertising

Branding

Business Plans

Business Skills

Business Software

Competitive Analysis

Corporate Training

Diversity Training

Email and Direct Marketing

Grassroots Marketing

Lead Generation

Management Training

Market Research and Surveys

Marketing and Sales Consulting

Marketing Collateral

Marketing Plans

Media Buying and Planning

Media Training

Other - Sales and Marketing

Other - Training and Development

Policies and Manuals

Pricing

Product Research

Programming Languages

Project Management

Promotions

Public Relations

Retailing

Sales Presentations

Sales Training
Search and Online Marketing
Technical Training
Telemarketing
Tradeshows and Events

WEB AND PROGRAMMING

Application Development
Blogs
Database Development
Ecommerce Website
Enterprise Systems
Flash Animation
Handhelds and PDAs
HTML Emails
Network Administration
Online Forms
Other - Programming
Other - Website Development
Project Management
Quality Assurance
Scripts and Utilities
Security
SEO and SEM
Simple Website
System Administration
Technical Support
Usability Design
Web Design
Web Programming
Website QA
Wireless

WRITING AND TRANSLATION

Test Writing
Academic Writing
Article Writing
Children's Writing
Copywriting
Creative Writing
E-books and Blogs
Editing and Proofreading
Ghost Writing
Grant Writing
Newsletters
Other - Writing Services
Press Releases
Report Writing
Resumes and Cover Letters
Sales Writing
Speeches
Technical Writing
Translation
User Guides and Manuals
Web Content