

The Effects of User Reviews on Online Purchasing Behavior across Multiple Product Categories

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Definition of Terms

Expert Reviews

Reviews written by paid professionals. Movie critics and consumer reports are examples of expert reviews.

User Reviews

Reviews written by consumers for no monetary compensation. Reviews written for buyers or sellers on eBay or consumer recommendations on Amazon are examples of user reviews.

Product Categories

A collection of similar types of products. Household Products, experiential products, sellers, and services are all examples of different product categories.

Household Products

This product category includes tangible products typically found in a household. Items such as appliances, electronics, or equipment fit into this product category.

Experiential Products

Products that are consumed solely for the pleasure and experience that they provide. Items such as movies, music, or fine food fit into this product category.

Seller Reviews

A review given to a seller by a buyer after a purchase is completed. Seller reviews can be found on websites that offer products by several different sellers or stores (such as eBay or CNET).

Product Attributes

Elements associated with a typical product for sale online. Price, image, and average rating are all examples of a product attribute.

User Review Attributes

Elements associated with a typical user review found online. Average rating, number of reviews, and helpfulness score are all examples of a user review attribute.

WOM

Word-of-Mouth references the act of passing information, especially recommendations, in an informal person-to-person manner. This is traditionally done in a face-to-face situation.

eWOM

Electronic Word-of-Mouth references the traditional WOM practice conducted online, via email, text messages, or online forums.

1. Introduction

Before consumers decide on a specific item to purchase, they learn about others' past experiences through word-of-mouth (WOM). Today, the internet has replaced traditional face-to-face WOM and has created a new electronic WOM platform (eWOM). Consumers now have a breadth of information at their fingertips and can access thousands of user reviews online.

Online user reviews have become increasingly important as consumers continue to purchase products online. When consumers are not able to judge a product in person, they often rely on this eWOM transfer to mitigate risks regarding product quality and the truthfulness of the seller. A study conducted on the BizRate website (a popular user review website) found that 44% of respondents consulted an opinion site before making a purchase and 59% indicated that they considered user-generated reviews more valuable than expert reviews.¹ More recently, DoubleClick's yearly Touchpoints survey has shown that websites provide the single greatest influence to online consumers when making shopping decisions.²

Past research has focused on the effects of positive and negative reviews within specific purchasing situations. For example, extensive research has been performed on eBay's reputation system. This system relies on buyers and sellers to rate each other's performance and enables a low cost mechanism to enable trust among the virtually anonymous transactions. Additionally, significant research has been conducted on the effects of user and critic reviews for movies and books on purchases.

The present study investigates the impact of user reviews on purchasing decisions across multiple product categories. Specifically, participants were asked to make purchasing

¹ Piller, C. (1999), "Everyone is a Critic in Cyberspace," *Los Angeles Times* (Dec. 3)

² DoubleClick Touchpoint IV: How Digital Media Fit into Consumer Purchase Decisions. (2006)

decisions regarding sellers, household products, and experiential products, given the same set of user reviews. The results will reveal if consumers treat user reviews similarly, irrespective of the product type.

The paper is presented as follows. Section 2 presents an overview of published research regarding purchasing decisions across seller, experiential, and household products.

Section 3 presents research hypotheses followed by a description the research methodology (Section 4). The results of this study are presented in Section 5, followed by the conclusion and design considerations (Section 6).

2. Literature Review

A literature review that centered on user and expert reviews across three product categories: sellers, products, and experiential products was conducted. The research was found in economic journals, marketing texts, and human computer interaction studies. The majority of the research cited has attempted to draw conclusions on the effects of expert or user reviews on a product's price and probability of a sale. A synopsis of the research findings has been compiled and entered into a table found within each section below. These tables help illuminate the contradictory findings across the discrete research studies.

Seller Reviews

Online reputation systems are essential for online auction sites such as eBay. Buyers rely on seller feedback scores to mitigate the risks they face when conducting online transactions with unknown sellers. By providing detailed information on sellers' previous transactions, buyers can start to make informed decisions regarding how they project the sellers to behave during their own transactions.

Seller reputation systems are an unusual form of online reviews due to the fact that reciprocity is encouraged; as a part of the eBay purchasing process, buyers are encouraged to rate their sellers and in turn sellers are encouraged to rate their buyers. This feedback exchange can help account for the unusually high average ratings across the site: more than half of buyers rate sellers and over 60% of sellers rate buyers. While the actual number of reviews is high, 99% of all feedback left on eBay is positive and

only 1% is neutral or negative³. This overwhelmingly positive skew has been attributed to inflated feedback stemming from a fear of retribution. Buyers and sellers would rather give a positive review or leave no feedback than risk having the other party tarnish their own score in retaliation.

A majority of the research done on seller reviews is centered on seller reputation systems, specifically on the eBay platform, and many attempt to forecast the price of an item based on a seller's previous performance. Table 1 compares the findings from 15 studies on the effects of reputation on sales price.

Association between Positive or Negative Feedback and Product Price

Overall, research has shown that sellers who have a positive reputation can command a higher price for goods. However, several studies have found that reputation has no effect on sales price. These contradictory findings may be attributed to the large number of different items for sale on eBay and the associated variation in price and availability. For example, one study (which focused on gold coins that had an average selling price of \$33) found that positive feedback was associated with a higher overall price while negative feedback was associated with an overall lower price and a reduction in the probability of a sale. In contrast, another study (that tested the market of electric guitars on eBay, with an average selling price of \$1,621), found that the only association was between negative feedback and a higher price and reduction in the probability of a sale.

³ Resnick, P., and Zeckhauser, R. (2001), Trust among strangers in internet transactions: Empirical analysis of eBay's reputation system. Technical report, University of Michigan.

Table 1: Sellers – Association between Positive or Negative Feedback and Product Price

Author(s)	Item(s) for Sale	Average Selling Price	Positive Feedback	Negative Feedback
Ba, S., Pavlou, P.	CDs, Software, Video games Hardware, Electronics	\$15.00 - \$2000.00	↑ price	
Cabral, L., Hortacsu, A.	Gold Coins Coins Proof Set IBM Thinkpad 1998 Holiday Teddy Beanie Babies	\$50.00 \$78.00 \$580.00 \$10.70	↑ price	↓ price
Dewally, M., Ederington, L.	30 Silver Age Comic Books	\$357.00	↑ price	↓ price
Dewanw, S., Hsuz, V.	Stamps	\$33.07	↑ price	↓ price
Eaton, D.	Paul Reed Smith Guitars	\$1,621.00	No effect	↑ price
Houser, D., Wooders, J.	Intel Pentium III 500 Mhz	\$220.00	↑ price	↓ price
Jin, G.	Baseball Trading Cards	\$165.50	No Effect	No Effect
Kalyanam, K., McIntyre, S.	Palm Pilots	\$230.76	↑ price	↓ price
Livingston, J.	Golf Clubs	\$409.96	↑ price	No effect
Lucking-Reiley, D., Bryan, D., Prasad, N., Reeves, D.	Pennies	\$173.20	No Effect	↓ price
McDonald, C., Slawson, V. C.	Harley-Davidson Barbie Dolls	\$263.21	↑ price	↓ price
Melnik, M., Alm, J.	\$5 US gold coins	\$32.73	↑ price	↓ price
Melnik, M., Alm, J.	US Silver Morgan Dollars	\$93.39	↑ price	↓ price
Resnick, P., Zeckhauser, P.	Rio MP3 Britannia Beanie Babies	\$141.93 \$122.45	No Effect	No Effect
Resnick, P., Zeckhauser, R., Swanson, J., Lockwood, K.	Postcards	\$14.99	No effect (new sellers)	No effect (new sellers)

Association between Positive or Negative Feedback and the Probability of a Sale

Table 2 compares the findings from 6 studies of the association between Sellers' reputation and the probability of a sale. Again, there is an overall trend that a higher positive feedback score is associated with an increase in the probability of a sale and a lower feedback score is related to a decrease in the probability of a sale. However, a few studies have found that the feedback score has no effect on sales or bids.

Table 2: Sellers – Association between Feedback Score and the Probability of a Sale or Number of Bids

Author(s)	Item(s) for Sale	Average Selling Price	Positive Feedback	Negative Feedback
Cabral, L., Hortacsu, A.	Gold Coins	\$50.00	↑ sales	↓ sales
	Coins Proof Set	\$78.00		
	IBM Thinkpad	\$580.00		
	1998 Holiday Teddy	\$10.70		
	Beanie Babies			
Dewanw, S., Hsuz, V.	Stamps	\$33.07	↑ sales	↓ sales
Eaton, D.	Paul Reed Smith Guitars		No effect	↓ sales
Jin, G.	Baseball Trading Cards	\$165.50	↑ sales	↓ sales
Livingston, J.	Golf Clubs	\$409.96	↑ sales	No effect
McDonald, C., Slawson, V. C.	Harley-Davidson Barbie Dolls	\$263.21	↑ bids	↓ bids
Paul Resnick, P., Zeckhauser, P.	Rio MP3	\$141.93	↑ sales	↑ sales
	Britannia Beanie Babies	\$122.45		

Association between Duration of Sellers' Experience and Price

Buyers also seem to place considerable value in the duration of sellers' activity as they have been found to pay 8.1% more for sellers with a substantial history of previous

transactions (200+ transactions) compared to new sellers with no experience on eBay⁴.

Similarly, one study examining golf clubs on eBay found that sellers with more than 675 positive comments earned a premium of \$45.76 more than the average median price compared to sellers with no feedback⁵.

Table 3 compares the research findings from studies that investigate the effects of the number of reviews submitted by buyers on product prices. These studies showed a positive association between higher numbers of reviews and higher selling prices. These findings support the theory that buyers prefer established sellers rather than sellers who are new to the practice.

Table 3: Sellers – Association between Number of Reviews Submitted and Selling Price

Author(s)	Item(s) for Sale	Average Selling Price	Large number of Reviews	Small number of Reviews
Dewally, M., Ederington, L.	30 Silver Age Comic Books	\$357.00	↑ price	↓ price
Kalyanam, K., McIntyre, S.	Palm Pilots	\$230.76	↑ price	↓ price
Resnick, P., Zeckhauser, R., Swanson, J., Lockwood, K.	Postcards	\$14.99	↑ price	↓ price

⁴ Resnick, P., Zeckhauser, R., Swanson, J., Lockwood, K. (2002), The value of reputation on eBay: A controlled experiment. Working paper, University of Michigan.

⁵ Livingston, J. (2002), How valuable is a good reputation? A sample selection model of internet auctions. Working paper, University of Maryland.

Product Reviews

There is an overall lack of research that focuses solely on product reviews, which can be attributed to several factors. Firstly, 'product reviews' is a very large category which includes most non-experiential tangible products (such as household goods and electronics). Secondly, most researchers tend to look at products within another domain. For example, studies on the eBay platform usually center on a specific product such as golf clubs or gold coins.

This small body of research suggests that consumers depend on online user reviews to research products before purchasing. This is especially true when consumers stray from known brands⁶ or are considering buying products outside their expertise. One study notes that consumers give more credence to negative information that is received via WOM⁷ but that consumers want to understand the negative reviews in order to decide if the reviews align with their own concerns.

There has been a breadth of research conducted on a variety of different product types within eBay. After reviewing Table 1 and 2 which assembles the research done on the eBay reputation system, one can see the variation in product types range from inexpensive collectibles to high-end consumer electronics. It is possible that some of the

⁶ Chatterjee, P. (2001) Online reviews: do consumers use them? In M.C. Gilly and J. Meyers-Levy (eds), *Advances in Consumer Research*, Vol. 28. Ann Arbor, MI: Association for Consumer Research, pp. 129-33.

⁷ Mizerski, Richard W. (1982), "An Attribution Explanation of the Disproportionate Influence of Unfavorable Information," *Journal of Consumer Research*, 9 (December), 301-310

contradictions found within Seller's Reviews literature could be due to the products that were listed.

One of the fifteen eBay items, the electric guitars, for sale in Table 1 exhibited an unusual result when compared to the rest of the products for sale. The Paul Reed Smith Guitars are high-end musical instruments which are relatively expensive and harder to find than other products in similar studies. One explanation for this finding is that buyers are willing to give seller's more benefit of the doubt when they purchase rare high-end items or that perhaps the items were so specific and hard to find that the buyers were willing to lower their expectations of the seller in return for purchasing the ideal item. One can hypothesize, that these findings may extend to product reviews as well; buyers consider a product's reputation only as part of their overall purchasing decision and are not bound to a perfectly rated product if other factors make the item more attractive.

Experiential Products

Experiential products differ from traditional consumer products insofar as they are consumed solely for the pleasure and experience they provide. While traditional consumer products tend to be chosen on the basis of utilitarian needs, experiential products like movies, books, or music, are consumed for hedonistic purposes (Holbrook and Hirshman, 1982). For this reason, online reviews are very important when consumers are choosing products they do not have first-hand experience with. Other consumers or experts can provide their own impressions after having experienced the products and the purchaser can begin to make more informed decisions. In fact, one study found that nearly half of young internet users rely on user review systems to make experiential product purchases like CDs and DVDs.⁸ Similarly, Senecal and Nantel (2004)⁹ conducted a study across multiple product categories and found that consumers relied on recommendations for experiential products significantly more than other types of products.

Expert/Critic Reviews

A majority of the research regarding experiential products focuses on the movie industry. This research examines the predictive value of expert reviews on future box office sales; as such, movie critics are depicted as either influencers or predictors. Elisahberg and Shugan (1997) found that positive critic reviews were associated with long-term, but not

⁸ Godes, D. and Mayzlin, D. (2003) "Using Online Conversations to Study Word of mouth Communication," Yale SOM working paper.

⁹ Senecal, S. and Nantel, J. (2004) The Influence of Online Product Recommendations on Consumers' Online Choices. *Journal of Retailing* 80, 159-69

immediate, box office success; these findings suggest that critics are predictors, but not influencers, of box office revenue. This result can be explained by the nature of the experiential product. While reviews help consumers make experiential product decisions, consumers do not solely rely upon these reviews unless they have confidence that the reviewer is enough 'like them'. Although a consumer currently has access to many expert reviews online, he or she only accepts reviews written by critics who are most similar to that consumer.

In general, positive critic reviews are associated with higher sales and negative reviews are seen to hurt sales of experiential products (Chevalier and Mayzlin 2006). However, a study based on New York Times book reviews conducted by Sorensen and Rasussen (2004), found that while positive reviews were positively associated with sales, even negative reviews were associated with increased book sales. The authors suggested that publication of a review, regardless of its content, creates general awareness (i.e. "any publicity is good publicity"). Sorensen and Rasussen's findings appear to extend to critic reviews for movies. For example, the widely panned movie *Wild Hogs* brought in revenue of nearly \$40 million dollars during its opening weekend compared to the critically acclaimed movie, *Zodiac*, which brought in slightly over \$13 million dollars.¹⁰ Moreover, in some cases, negative reviews may in fact create controversy which fuels the reader's interest. Table 4 displays the overall results of a literature review focusing on the association between critics' reviews and box office revenue.

¹⁰ Boxofficemojo.com (weekend box office for 3/2/07)
<http://www.boxofficemojo.com/weekend/chart/?view=&yr=2007&wknd=09&p=.htm>

Table 4: Experiential Products – Association between Expert/Critic Reviews and Effects on Sales

Author(s)	Item	Positive Feedback	Negative Feedback
Basuroy, S., Chatterjee, S., Ravid, S.A.	Movies	↑ sales	↓ sales
Elberse, A., Eliashberg, J.,	Movies	↑ sales	↓ sales
Eliashberg, J., Shugan, S.	Movies	↑ sales	No Effect
Reddy, S., Swaminathan, V., Motley, C.	Theater	↑ sales	↓ sales
Reinstein, D., Snyder, C.M.	Movies	↑ sales	No Effect
Sorensen, A., Rasussen, S.	Books	↑ sales	↑ sales

User Reviews

More recently, research has focused on electronic word-of-mouth (eWoM). As such, online ratings are representative of the larger national opinion,¹¹ and thus online user reviews serve as an ideal mechanism to study the effects of positive and negative word-of-mouth; they offer a large sample size, due to a breadth of review websites, and products can receive numerous reviews soon after launch. This is especially the case for movies, which are known to receive hundreds of reviews within hours of a movie's release.¹²

¹¹ Dellarocas, C., N. F. Awad and X. Zhang. (2004), Exploring the Value of Online Reviews to Organizations: Implications for Revenue Forecasting and Planning. Proceedings of the International Conference on Information Systems. Washington D.C.

¹² Dellarocas, C., N. F. Awad, et al. (2004). Using Online Reviews as a Proxy of Word-of-Mouth for Motion Picture Revenue Forecasting.

Some eWOM findings have shown that it is not merely the average rating that influences sales but the intensity in which the rating is conveyed. One study conducted on the craft beer industry showed that highly rated items generated more sales only if the rating was extreme in its intensity. “Customers who hate your product will not buy it, but customers who merely like your product will not buy it either.”¹³ Interestingly, another study found that reviewers are compelled to write reviews for products that they feel very strongly about (either for very good or very bad experiences, not average ones) and products that other reviewers disagree over.

Several other studies have found that it is not the average rating that drives sales, but instead the number of reviews.^{14 15} For example, buyers seem to find movies and books that have generated a lot of comments more interesting which potentially drives more sales than those that have not received many comments, regardless of whether the WOM is positive or negative. One study found that reviewers focus on movies that are not widely released and that reviewers are enticed into writing reviews for movies that have already received a large number of reviews.¹⁶ Table 5 displays the aggregate findings of a literature review regarding the association among average review rating, number of reviews, and product revenue. .

¹³ Clemons, E.K. Gao, G., and Hitt, L.M. (2006), When Online Reviews Meet Hyperdifferentiation: A Study of Craft Beer Industry. Proceedings of the 2006 HICCS Conference, Hawaii.

¹⁴ Duan, W., Gu, B., and Whinston, A.B. (2005), Do Online Reviews Matter? - An Empirical Investigation of Panel Data. Working Paper, University of Texas at Austin.

¹⁵ Liu, Y. (2004) Word-of-Mouth for Movies: Its Dynamics and Impact on Box Office Receipts. Working Paper.

¹⁶ Dellarocas, C. and Narayan, R. (2005), What motivates people to review a product online? A study of the productspecific antecedents of online movie ratings. Working paper.

Table 5: Experiential products – Association among Feedback, Number of Reviews, and Revenue

Author(s)	Item	Positive Feedback	Negative Feedback	Large Number of Reviews	Small Number of Reviews
Bournie, D., Bourreau, M., Gensollen, M., Waelbroeck, P.	Video Games	↑ sales	↓ sales	-	-
Chen, P., Wu, S., Yoon, J.	Books	No Effect	No Effect	-	-
Chevalier, J.A., Mayzlin, D.	Books	↑ sales	↓ sales	-	-
Clemons, E., Gao, G., Hitt, L.	Beer	↑ sales	↓ sales	-	-
Dellarocas, C., Awady, N., Zhang, X.	Movies	↑ sales	↓ sales	↑ sales	↓ sales
Dellarocas, C., Awady, N., Zhang, X.	Movies	↑ sales	↓ sales	-	-
Duan, W., Gu, B., Whinston, A.	Movies	No Effect	No Effect	-	-
Godes, D., Mayzlin, D.	TV shows	-	-	No Effect	No Effect
Liu, Y.	Movies	No Effect	No Effect	↑ sales	↓ sales
Zhang, X., Dellarocas, C., Awad, N.	Movies	↑ sales	↓ sales	-	-

3. Hypotheses

Seller Reviews

Based upon research cited in the literature review, reciprocal buyer/seller feedback systems such as the one found on eBay, drive a very high percentage of positive reviews. Since there are so many highly rated sellers in the marketplace, buyers have become very sensitive to any negative feedback. For this reason, I have formulated Hypothesis One. Specifically, I expect that participants will predominantly select products only from sellers who have “excellent” ratings.

H1a. Participants will be very sensitive to seller ratings and will exclusively choose to purchase products from the highest rated sellers.

H1b: Assuming that participants prefer to purchase from the highest rated sellers - participants will be very sensitive to negative ratings. They will prefer to purchase products from sellers who have a positively skewed continuous distribution (indicating higher ratings) compared to more controversial sellers with a bimodal distribution.

Studies have shown that eBay buyers are responsive to sellers who have established a history on eBay as opposed to new sellers. This finding is the basis for Hypothesis Two.

H2. Participants will prefer to purchase products from sellers who have a large number of reviews.

Product Reviews

The third hypothesis is formed from the little research that has been written and gleaned from findings conducted on the eBay platform. The hypothesis is based on the fact that when all else is equal (i.e., no price or product specifications are offered), participants will prefer to purchase the best, or highest rated, products.

H3: Buyers will choose the highest rated items as the best products and will choose the poorly rated items as the worst products to purchase.

Experiential Reviews

Based on the previous research done on the movie and book industries, I hypothesize that participants will treat experiential products differently than sellers or household products. Since it has been shown that some buyers seek out controversy when evaluating experiential products, I propose my fifth hypotheses:

H4: Participants will accept a larger proportion of bimodally distributed reviews than they would when considering Sellers or Products.

Research has also found that moviegoers respond to movies that have generated the most amount of “buzz,” which has formed my fifth hypothesis:

H5: Participants will prefer a large number of movie reviews.

4. Methodology

An initial online survey was sent out by email (see appendix 1). This survey served as a screener; each respondent was asked about their prior experience with a seller rating system (i.e. eBay or CNET), an experiential rating system (IMDB, Netflix, Rotten Tomatoes, Yahoo! Movies) and a product rating system (Amazon, Shopping.com, Froogle, Target.com). Additionally, the survey collected general information about the participant which was used to counterbalance the follow-up in-person study. Of the 53 respondents, roughly 25 respondents qualified and the first 18 participants were chosen to take part in the in-person study.

The in-person study required approximately 30 minutes, and each of the 18 participants was presented with three hypothetical purchasing scenarios in which they were asked to choose a movie, a coffee maker, and a seller (see appendix 2). The participants were presented with a website (see appendix 3) which listed 18 different products, movies, and sellers respectively and they were asked to choose their three favorite and three worst entries.

Within each purchasing scenario, the 18 items only displayed information pertaining to user reviews. The user reviews were comprised of three attributes: average rating (excellent, fair, poor), number of reviews (large, medium, small), and the review distribution (continuous, bimodal). Each entry was a unique permutation of the three user review attributes (see appendix 4).

After the participants completed each of the three purchasing scenarios, they were asked to review a list of common product attributes. The participants were asked to rank the list in regards to how important the information was on their real-life purchasing decisions.

Table 6: Product attributes in three categories

Sellers	Movies	Products
Scores	Image	Image
Rating over Time	Title	Title
Membership length	Genre	Price
Number of	Plot Summary	Professional
Reviews/Ratings	MPAA Rating	Reviews
Seller's Location	Length	User Reviews
Buyer Reviews	Director	Shipping
Seller Reviews	Cast	Specifications
	Critic Reviews	Brand
	User Reviews	
	Box Office	
	Revenue	

5. Results

Participant Demographics

There was roughly a 50/50 ratio of men to women and all of the participants were between the ages of 18 to 44; the majority were aged 25-34 years. All of the participants were heavy internet users, 100% indicated that they were online at least 10 hours per week and 77% were online more than 20 hours weekly.

All of the participants had prior experience with online user review in the three product categories: products, sellers, and movies (see appendix 5). Amazon and Epinions were considered traditional product review websites, Ebay and CNET were seller focused sites, since they contain an aggregation of many sellers, and Yahoo! Movies, IMDB, and Rotten Tomatoes were considered movie review websites.

Table 7: Descriptive Statistics of Participants

Gender		
	Frequency	Percent
Male	10	55.6%
Female	8	44.4%

Age Range		
	Frequency	Percent
18-24	3	16.7%
25-34	10	55.6%
35-44	5	27.8%

Internet Use (hours per week)		
	Frequency	Percent
10 to 20	4	22.2%
20+	14	77.8%

Importance of User Reviews

Given a list of common review attributes, participants indicated that user reviews were important when making real-life purchasing decisions. Overall, user reviews were noted to be the most important aspect of a seller review. User reviews were ranked below critic reviews and plot summary for movies, and several participants (P3, P5, and P17) noted that they read the user reviews but did not always think these opinions reflected their own beliefs, and therefore would not preclude them from selecting a particular movie.

Participants ranked user reviews as relatively unimportant for products, indicating that this element is part of their decision process but is not a critical aspect. Attributes such as price, specifications, and brand reportedly play a greater role in participants' decision making processes and professional reviews ranked as slightly more important than user reviews. One participant noted that professional reviews were more trustworthy since professional reviewers often try several different products in the same category and can therefore make comparison judgments (P16).

Table 8: Average Attribute Ratings across Product Categories

Movies		Sellers		Products		
Avg Rating	Attribute	Avg Rating	Attribute	Avg Rating	Attribute	
2.82	Critic Reviews	1.17	User Review Score	2.56	Price	
3.65	Plot Summary		2.83	# Reviews	2.78	Specs
3.94	User Reviews		3.25	Buyer's Review	3.53	Brand
4.12	Genre		3.71	Rate/Time	3.83	Prof. Review
4.13	Cast		4.61	Membership	4.11	User Review
4.36	Title		5.67	Location	4.60	Image
4.50	Director		6.38	Seller's Review	6.44	Shipping
7.14	Length				6.73	Title
7.44	Image					
7.60	MPAA Rating					
9.20	Box Office \$					

High Level Findings

An examination of the variability (standard deviations) across products and review attributes (see appendix 6) reveal noteworthy results. First, there is no variability among the product and seller average ratings: all of the participants required an ‘excellent’ rating for their three favorite products and sellers and the products and sellers who received ‘Poor’ ratings were relegated to the “worst” category. Participants seemed to use different criteria when choosing movies as there was some variability between the participants’ choices in this category. Overall, participants seemed to accept more negative reviews for movies than in the seller and product categories.

Among the three review attributes, (average rating, number of reviews, and distribution), the most variability in responses lies in the number of reviews. There is a larger variation within this attribute across movies, products, and sellers.

Seller Reviews

Overall, participants seemed to primarily make their purchasing decisions based on the average seller rating. Additionally, there is evidence that participants were very sensitive to negative reviews and sought to minimize them entirely.

H1a. Supported

Participants will be very sensitive to seller ratings and will exclusively choose to purchase products from the highest rated sellers.

When asked to select their favorite sellers, participants exclusively chose sellers who had ‘excellent’ ratings. Similarly, all of the participants unilaterally selected the ‘poor’ rating when asked to choose the three worst sellers. We can reject the null hypothesis and informally accept H1 since the unanimous response indicates that participants are very sensitive to a seller’s rating.

Table 9: Frequency of Ratings (Best and Worst Sellers)

		Frequency	Percent			Frequency	Percent
1 st Best	Excellent	18	100%	1 st Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%
2 nd Best	Excellent	18	100%	2 nd Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%
3 rd Best	Excellent	18	100%	3 rd Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%

H1b: Supported

Assuming that participants prefer to purchase from the highest rated sellers - participants will be very sensitive to negative ratings. They will prefer to purchase products from sellers who have a positively skewed continuous distribution (indicating higher ratings) compared to more controversial sellers with a bimodal distribution.

Since all of the participants required an ‘excellent’ rating, the continuous distribution is skewed towards the positive reviews. The bimodal distribution introduces more negative reviews and signals that while the overall

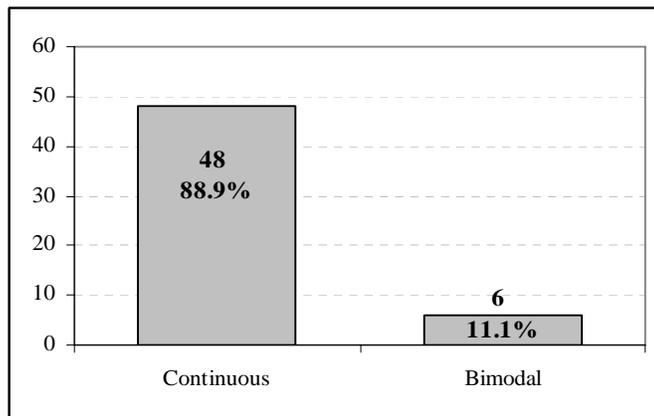


Figure 1: Frequency of Responses for Distribution (Sellers)

rating was ‘excellent’ there was some controversy. When participants were asked to choose the top three sellers, nearly 89% of the participants chose sellers with a continuous distribution and avoided the controversial sellers.

Each of the participants chose a seller that had a continuous distribution as their top seller (as shown in *figure 3*). Over 75% of the respondents chose a seller with a continuous distribution as their number two and number three top sellers. We can therefore reject the null hypothesis and informally accept the hypothesis.

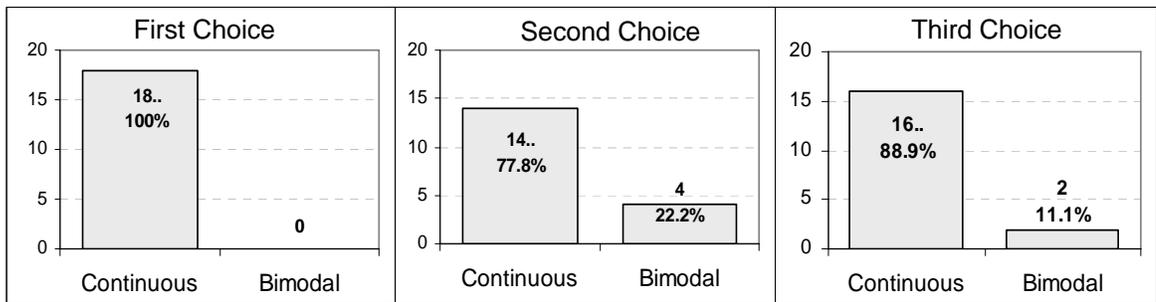


Figure 2: Frequency of 1st, 2nd, and 3rd Choices for Distribution (Seller)

Seven participants noted during the testing that they were trying to select excellent sellers with the least amount of negative feedback (P3, P9, P10, P13, P15, P15, P17)

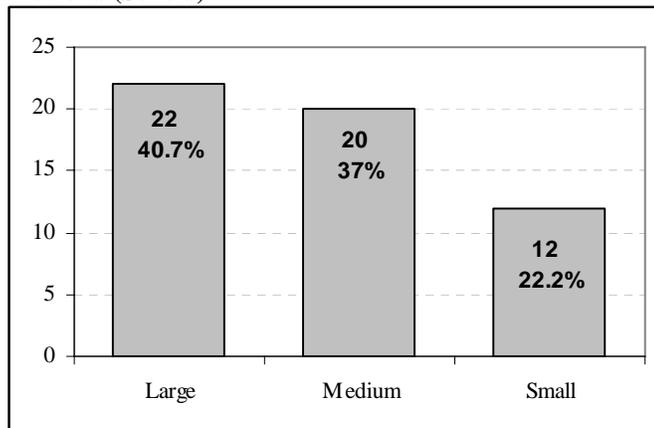
“I am trying to avoid any negative reviews and I want to read the negatives to see what went wrong.” -P16

H2. Not Supported

Participants will prefer to purchase products from Sellers who have a large number of reviews.

Participants seemed to regard the number of reviews as the least important attribute of a seller’s review. While many participants showed a preference for a larger number of reviews, overall this attribute is outweighed by the

Figure 3: Distribution of Responses for Number of Reviews (Sellers)



participants’ need to maximize the seller’s rating and minimize the negative reviews.

Table 10: Summary Statistics (Best Sellers)

As show in Table 10, the number of reviews a seller has contains the most variation when compared to

	Avg Rating	Number of Reviews	Distribution
Mean	1.000	1.815	1.111
Median	1.000	2.000	1.000
Std. Deviation	0.000	.779	.3172

the two other factors, average rating and distribution. The results suggests that participants were more tolerant towards the number of reviews a seller had received and were willing to accept a lower number in exchange for a better average rating or distribution. Consequently, the null hypothesis cannot be rejected.

Product Reviews

Overall, the data gathered on product reviews is very similar to that of the seller reviews. Participants unilaterally required an ‘excellent’ rating for products as they had with sellers. Both sellers and products have a fairly high variation in regards to the number of reviews. The variation in distribution is smaller for both sellers and products, and this seemed to be an important attribute for both as over 90% of the participants chose a skewed continuous distribution over the more controversial bimodal products and sellers.

These findings suggest that participants went about selecting a product in the same manner as they did a seller; they required that the product had an ‘excellent’ rating and then they sought to minimize the controversial products (ones that had a bimodal distribution).

Table 11: Summary statistics (Best Products and Sellers)

	Average Rating		Number of Reviews		Distribution	
	Products	Sellers	Products	Sellers	Products	Sellers
Mean	1.000	1.000	1.852	1.815	1.074	1.111
Median	1.000	1.000	2.000	2.000	1.000	1.000
Std. Deviation	.0000	.0000	.8105	.7788	.2644	.3172

Table 12: Cross Tabulation between Best Seller Distribution & Best Product Distribution

		PFD		Total
		Normal	Bimodal	
Normal	Count	45	3	48
	% within SD	93.8%	6.3%	100.0%
	% within PD	90.0%	75.0%	88.9%
Bimodal	Count	5	1	6
	% within SD	83.3%	16.7%	100.0%
	% within PD	10.0%	25.0%	11.1%
Total	Count	50	4	54
	% within SD	92.6%	7.4%	100.0%
	% within PD	100.0%	100.0%	100.0%

SD = Seller Distribution

PD = Product Distribution

H3: Supported

Buyers will choose the highest rated items as the best products and will choose the poorly rated items as the worst products to purchase.

When the participants were asked to select their top three products, all of the participants exclusively chose a coffee maker that had received an excellent rating. Conversely, all of the participants selected the “Poor” rating when asked to choose the three worst sellers and therefore, we can reject the null hypothesis. Similar to the findings from H1a, this data supports H3 by showing that participants are very sensitive to product ratings.

Table 13: Frequency of Responses (Best and Worst Products)

		Frequency	Percent			Frequency	Percent
1 st Best	Excellent	18	100%	1 st Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%
2 nd Best	Excellent	18	100%	2 nd Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%
3 rd Best	Excellent	18	100%	3 rd Worst	Excellent	0	0%
	Fair	0	0%		Fair	0	0%
	Poor	0	0%		Poor	18	100%

Experiential Reviews

The overall data points to a difference in how participants judged experiential products compared to sellers and products. In general, participants seemed somewhat tolerant of negative reviews. In fact, this was the only product category where participants sought out controversy or neutral ratings, hoping to find movies that were not blockbusters and would be more interesting to them.

[insert quotes]

H4: Partially Supported

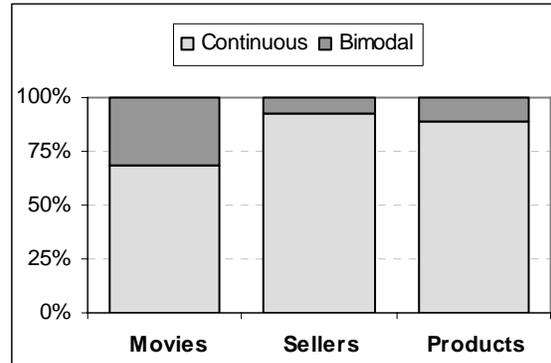
Participants will accept a larger proportion of bimodally distributed reviews than they would when considering Sellers or Products.

Overall, participants did not seem deterred by movies that had a substantial amount of negative reviews, as long as the movie received at least an equal amount of positive

reviews. Comparing the distribution attribute across movies, sellers, and product groups highlights this finding (see table 14).

Table 14: Frequency of Responses for Distribution (Movies, Sellers, and Products)

	Continuous		Bimodal	
	Freq.	Percent	Freq.	Percent
Movies	37	68.5%	17	31.5%
Sellers	50	92.6%	4	7.4%
Products	48	88.9%	6	11.1%



While there appears to be a difference between the three groups, no significant difference is found after performing a cross tabulation and a Pearson correlation and we can not reject the null hypothesis. The lack of significance could be due to the small sample size (the test involved only 18 participants) and should be considered again after obtaining a larger sample.

Table 15: Cross Tabulation between Best Movies Distribution & Best Sellers Distribution

		Distribution		Total
		Normal	Bimodal	
Normal	Count	33	4	37
	% within MD	89.2%	10.8%	100%
	% within SD	68.8%	66.7%	68.5%
Bimodal	Count	15	2	17
	% within MD	88.2%	11.8%	100%
	% within SD	31.3%	33.3%	31.5%
Total	Count	48	6	54
	% within MD	88.9%	11.1%	100%
	% within SD	100%	100%	100%

MD = Movie Distribution

SD = Seller Distribution

Table 16: Pearson Correlation between Best Movie Distribution and Best Seller Distribution

		Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
Interval by Interval	Pearson's R	.014	.138	.102	.919(c)
Ordinal by Ordinal	Spearman Correlation	.014	.138	.102	.919(c)
N of Valid Cases		54			

a Not assuming the null hypothesis.

b Using the asymptotic standard error assuming the null hypothesis.

c Based on normal approximation.

H5: Not Supported

Participants will prefer a large number of movie reviews.

As seen in table 17, participants seem to slightly favor movies that have a large number of reviews. However this slight inflation is not substantial when compared alongside the other two attributes (average rating and distribution) and it appears that and this factor actually has the most deviation. We can therefore not reject the null hypothesis.

Table 17: Frequency of Responses for Number of Reviews

	Frequency	Percent
Large	28	51.9%
Medium	15	27.8%
Small	11	20.4%
Total	54	100%

This finding suggests that the participants did not place a lot of value on the number of reviews, but instead judged a movie based on the average rating, and to a lesser extend, the distribution of reviews.

Table 18: Summary Statistics for Average Rating, Number of Reviews, and Distribution (Movies)

		Avg Rating	# of Reviews	Distribution
N	Valid	54	54	54
	Missing	0	0	0
Mean		1.0370	1.6852	1.3148
Median		1.0000	1.0000	1.0000
Std. Deviation		.19063	.79679	.46880

6. Conclusions and Design Recommendations

In the past, consumers relied on expert reviews, such as consumer reports, to guide their purchasing decisions. Today consumers are able to access a breadth of information via online user reviews. Consumers have become reliant on this information to mitigate the risks that are associated with buying in a virtual environment. Buyers utilize user reviews to assure themselves that the product they see online is reflective of the product that will be shipped to them, and that the sellers are not deceitful or negligent. Systems such as eBay are successful because of the reputation system they have developed and the transparency it provides. Buyers are able to overcome uncertainty by choosing sellers based on their past performances.

Research has shown that the content of the user reviews can affect the probability of a sale and the product's selling price. However, past research is usually restricted to a single product category, be it sellers on eBay or experiential products such as movies. This study has investigated the role of user reviews across product categories and has shown that the research findings on one product category do not necessarily translate to another.

The results from this study suggest that consumers utilize different user review attributes depending on the product category. When looking for a seller or household products, consumers are concerned with the average review and the number of negative reviews. The participants in this study not only unilaterally selected only excepted 'excellent'

reviews, they sought to minimize negative reviews. However, this study indicates that consumers do not approach experiential user reviews in this manner. In fact, they are willing to accept more negative reviews especially if the negatives indicate controversy instead of a poor product. For example, participants in this study were still interested in movies that were on the whole rated highly, but still received significant negative user reviews.

The dichotomy between seller/product reviews and experiential reviews suggest that online retail stores should adjust their presentation of information depending on the product category. This design implication could significantly affect large online retailers such as Amazon that sell items across several product categories. Today, Amazon sells experiential products such as DVDs and CDs, consumer products such as coffee makers and electronics, and buyers can buy from different sellers or stores. While promoting positive user reviews and the overall average product rating might work well for traditional products and sellers, this information should be adjusted for experiential products. The results from this study suggest that displaying negative reviews alongside the positive reviews, or showing the controversy surrounding the product, could increase consumers' interest and may ultimately increase corporate revenue and profitability.

Promoting controversy might also benefit the numerous experiential review sites online. Today, many movie review websites offer a quick combined user rating score upfront. As a result of this study, these websites should also consider displaying a measure of the overall distribution. For example, consider two movies with 1,000 reviews. The first

movie's user reviews are split down the middle, half loved it and half hated it. The second movie receives average ratings from everyone that viewed it. Moviegoers would likely be more attracted to the first movie, perhaps even more than a uniformly positively rated movie, since the results and previous research show that controversy inspires interest.

While the overall research indicated similarities in the way consumers approached both product and seller reviews, additional research should investigate this trend. The product category itself is rather ambiguous and all encompassing. It is very likely that the price of the product will affect the consumers' approach to combing through user reviews. For example, a consumer might be willing to accept more negative user reviews for a \$40 coffee maker than they would for a \$40,000 car.

Additionally, this study has used movies as a proxy for experiential products in general. Further research should investigate whether the type of experiential product changes the consumer's approach to user reviews. For example, it is unknown if consumers act the same if they are buying a CD or DVD as they would when deciding which movie to watch in the theatres.

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8. Appendix

* 1. First Name:

* 2. Last Name:

* 3. City:

* 4. State:

* 5. ZIP/Postal Code:

* 6. Please provide the email address at which you would like to be contacted:

* 7. Please indicate your gender:

- Male
 Female

* 8. Please indicate your age group:

9. What is your current occupation?

10. How many hours per week do you use the Internet?

- Less than 1 hour
 1-5 hours
 5-10 hours
 10-20 hours
 20 or more hours

* 11. Please select ALL of the following websites you have used to purchase items:

- | | | | |
|--------------------------|-----------------|--------------------------|-------------|
| <input type="checkbox"/> | Amazon.com | <input type="checkbox"/> | eBay.com |
| <input type="checkbox"/> | Yahoo! Shopping | <input type="checkbox"/> | Froogle.com |
| <input type="checkbox"/> | Target.com | <input type="checkbox"/> | NetFlix.com |
| <input type="checkbox"/> | Shopping.com | <input type="checkbox"/> | |

* 12. Please select ALL of the following websites you have used to read product reviews or movie reviews:

- | | | | |
|--------------------------|-----------------|--------------------------|--------------|
| <input type="checkbox"/> | Shopping.com | <input type="checkbox"/> | Froogle |
| <input type="checkbox"/> | Amazon.com | <input type="checkbox"/> | IMDB |
| <input type="checkbox"/> | eBay | <input type="checkbox"/> | Epinions |
| <input type="checkbox"/> | Rotten Tomatoes | <input type="checkbox"/> | Trip Advisor |
| <input type="checkbox"/> | Yahoo! Movies | <input type="checkbox"/> | CNET |

Review Parameters

Today we will be looking at 3 different review sites. Each of the reviews contains the following information: Average Rating, Number of Review, and Distribution. These 3 parameters are then bucketed into subgroups (*see below*).

Average Rating

- Excellent
- Fair
- Poor

Number of Reviews

- Large
- Medium
- Small

Distribution

- Even
- Polar

Test Script - Movies

You are considering going to a movie festival this weekend. You go to the festival site to look at online user reviews.

Tickets sell out quickly so you want to choose 3 movies that you'd consider going to. Using the site in front of you, please indicate your 1st choice, 2nd choice, and 3rd choice in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

1 st	2 nd	3 rd

Why did you rate the movies in this order?

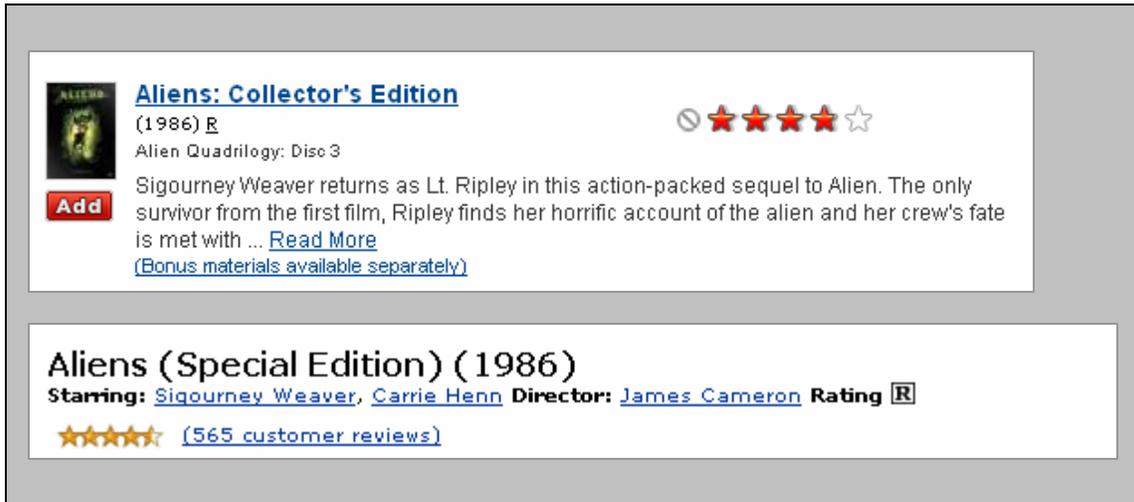
Using the site in front of you, please indicate your bottom 3 choices (1 is the worst, 2 is the 2nd worst, 3 is the 3rd worst) in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

Worst	2 nd Worst	3 rd Worst

Why did you rate the movies in this order?

Typical Movie Reviews



The screenshot shows two movie listings from Amazon.com. The top listing is for "Aliens: Collector's Edition" (1986), which is part of the Alien Quadrilogy: Disc 3. It features a small image of the movie cover, a red "Add" button, and a user rating of 4.5 stars (4 full stars and 1 half star). The description mentions Sigourney Weaver as Lt. Ripley and includes a "Read More" link. The bottom listing is for "Aliens (Special Edition) (1986)", starring Sigourney Weaver and Carrie Henn, directed by James Cameron. It has a rating of 4.5 stars (5 full stars) based on 565 customer reviews. The MPAA rating "R" is also visible.

When you are choosing a movie to watch, which elements matter to you?

Please rate the following elements in order of importance to you. If the element doesn't matter at all to you, please leave it blank.

- ___ Image
- ___ Title
- ___ Genre
- ___ Plot Summary
- ___ MPAA Rating
- ___ Length
- ___ Director
- ___ Cast
- ___ Critic Reviews
- ___ User Reviews
- ___ Box Office Revenue

Test Script - Products

You are considering buying a new coffee maker. You go to this online user review site to get information on different models of coffee makers.

You know that coffee makers sell out quickly, so you want to choose 3 models that you'd consider buying.

Using the site in front of you, please indicate your 1st choice, 2nd choice, and 3rd choice in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

1 st	2 nd	3 rd

Why did you rate the coffee makers in this order?

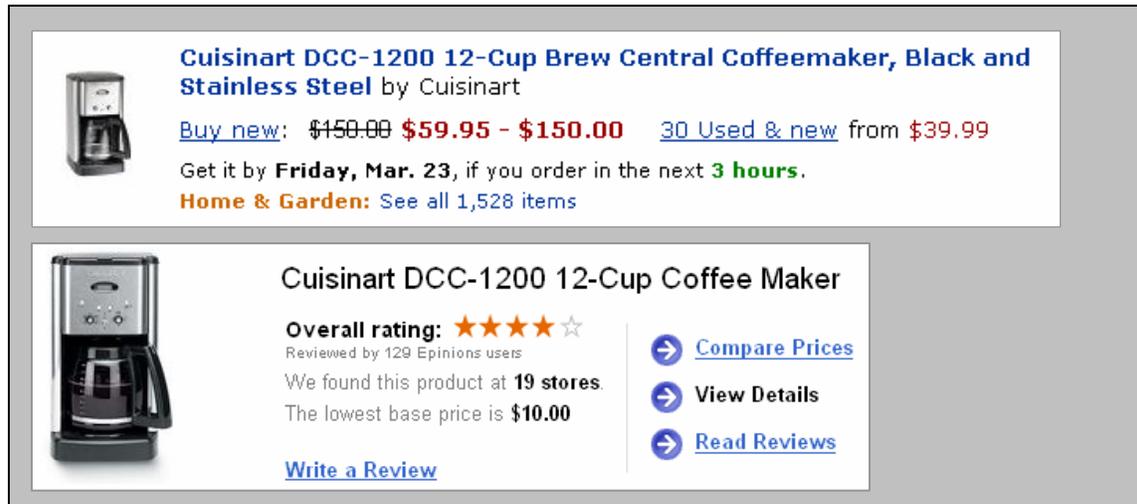
Using the site in front of you, please indicate your bottom 3 choices (1 is the worst, 2 is the 2nd worst, 3 is the 3rd worst) in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

Worst	2 nd Worst	3 rd Worst

Why did you rate the coffee makers in this order?

Typical Product Reviews



Cuisinart DCC-1200 12-Cup Brew Central Coffeemaker, Black and Stainless Steel by Cuisinart
Buy new: ~~\$150.00~~ **\$59.95 - \$150.00** 30 Used & new from **\$39.99**
Get it by **Friday, Mar. 23**, if you order in the next **3 hours**.
Home & Garden: See all 1,528 items

Cuisinart DCC-1200 12-Cup Coffee Maker
Overall rating: ★★★★★
Reviewed by 129 Epinions users
We found this product at **19 stores**.
The lowest base price is **\$10.00**

[Write a Review](#)

[Compare Prices](#)
[View Details](#)
[Read Reviews](#)

When you are choosing a product to buy, which elements matter to you?

Please rate the following elements in order of importance to you. If the element doesn't matter at all to you, please leave it blank.

- ___ Image
- ___ Title
- ___ Price
- ___ Professional Reviews
- ___ User Reviews
- ___ Shipping (shipping cost, shipping methods, shipping length)
- ___ Specifications (cups of coffee, timer, etc)
- ___ Brand

Test Script - Sellers

You are going to buy a new laptop online and you have already decided on a particular laptop. You go to this page to evaluate each of the sellers who are selling the laptop you want, they are all offering the laptop at the same price.

Each seller is only offering one laptop, and you know that they sell out quickly, so you want to choose 3 sellers that you'd consider buying from.

Using the site in front of you, please indicate your 1st choice, 2nd choice, and 3rd choice in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

1 st	2 nd	3 rd

Why did you rate the sellers in this order?

Using the site in front of you, please indicate your bottom 3 choices (1 is the worst, 2 is the 2nd worst, 3 is the 3rd worst) in the text box on the right of the screen

Feel free to sort each of the columns by clicking on the column header.

Worst	2 nd Worst	3 rd Worst

Why did you rate the sellers in this order?

Typical Seller Reviews

Member Profile: tcracer1 (54 ★)

Feedback Score:	54	Recent Ratings:			
Positive Feedback:	100%		Past Month	Past 6 Months	Past 12 Months
Members who left a positive:	54	positive	0	22	40
Members who left a negative:	0	neutral	0	0	0
All positive feedback received:	60	negative	0	0	0

[Learn about](#) what these numbers mean.

Bid Retractions (Past 6 months): 0

Member since: Feb-07-03
Location: United States

- [ID History](#)
- [Items for Sale](#)
- [Add to Favorite Sellers](#)
- [View My World page](#)
- [View my Reviews & Guides](#)

[Contact Member](#)

Store Ratings* Summary

Overall Rating:

Abt Electronics
Customer Certified
Over **25,000** customers have rated this store since 1999

Would Shop Here Again	On Time Delivery	Customer Support	Products Met Expectations

Overall Rating Summary	Past Week	Past Month	Past 3 Months
Positive	93%	92%	94%
Neutral	7%	3%	2%
Negative	—	5%	4%

When you are choosing a seller to buy from, which elements matter to you?

Please rate the following elements in order of importance to you. If the element doesn't matter at all to you, please leave it blank.

- ___ Scores (feedback, ratings, etc.)
- ___ Rating over Time
- ___ Membership length (member since X)
- ___ Number of Reviews/Ratings
- ___ Seller's Location (city/state/country)
- ___ Buyer Reviews (reviews left by buyers for the seller)
- ___ Seller Reviews (reviews left by the seller for other buyers)

Appendix 3: Review Websites Used in the In-Person Research Study

Product Reviews

TITLE	RATING	REVIEWS	DISTRIBUTION	your rating
Product 1	Excellent	Large		<input type="text"/>
Product 2	Fair	Small		<input type="text"/>
Product 3	Excellent	Small		<input type="text"/>
Product 4	Poor	Medium		<input type="text"/>
Product 5	Fair	Large		<input type="text"/>
Product 6	Poor	Small		<input type="text"/>
Product 7	Poor	Large		<input type="text"/>
Product 8	Fair	Small		<input type="text"/>
Product 9	Excellent	Large		<input type="text"/>
Product 10	Fair	Medium		<input type="text"/>
Product 11	Excellent	Medium		<input type="text"/>
Product 12	Poor	Large		<input type="text"/>
Product 13	Fair	Large		<input type="text"/>
Product 14	Excellent	Small		<input type="text"/>
Product 15	Excellent	Medium		<input type="text"/>
Product 16	Poor	Small		<input type="text"/>
Product 17	Fair	Medium		<input type="text"/>
Product 18	Poor	Medium		<input type="text"/>

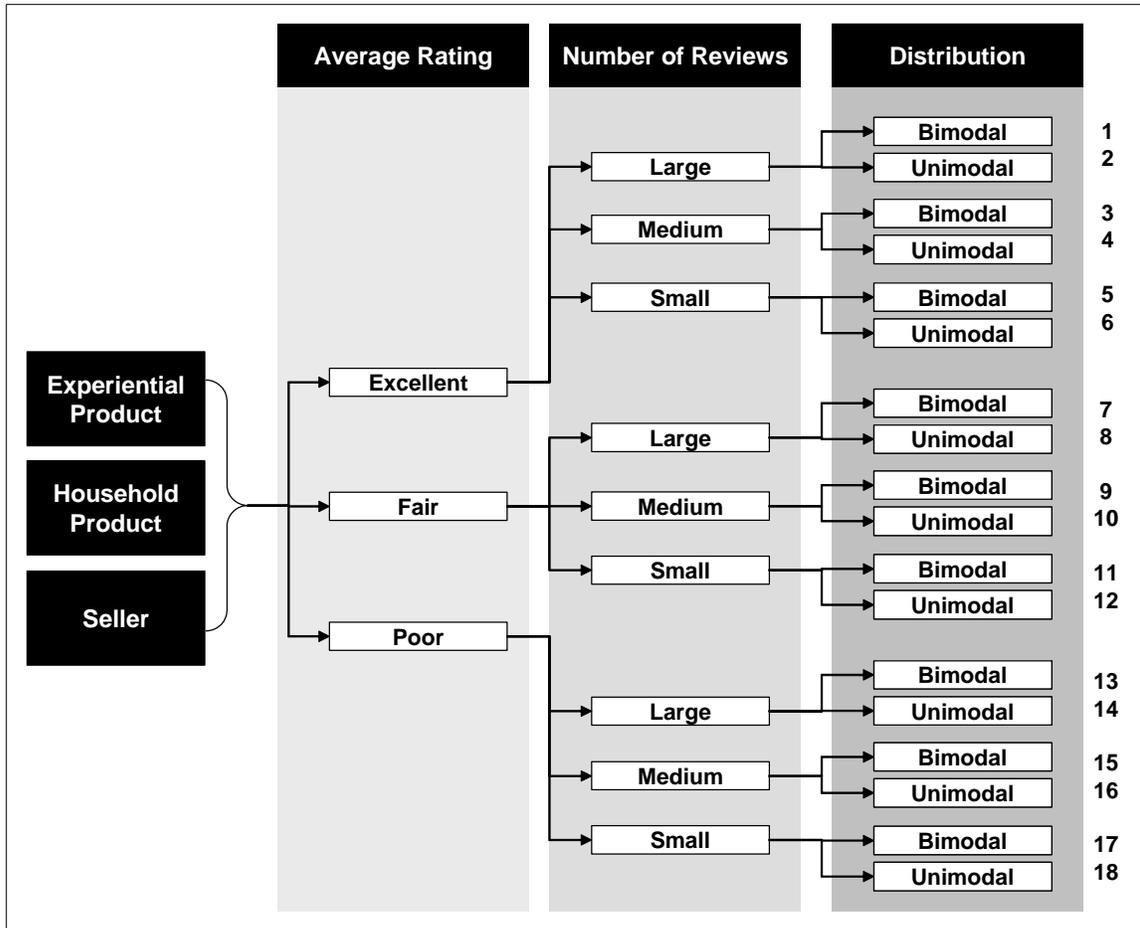
Movie Reviews

TITLE	RATING	REVIEWS	DISTRIBUTION	your rating
Movie 1	Excellent	Large		<input type="text"/>
Movie 2	Fair	Medium		<input type="text"/>
Movie 3	Excellent	Small		<input type="text"/>
Movie 4	Poor	Medium		<input type="text"/>
Movie 5	Fair	Large		<input type="text"/>
Movie 6	Poor	Small		<input type="text"/>
Movie 7	Excellent	Medium		<input type="text"/>
Movie 8	Fair	Small		<input type="text"/>
Movie 9	Excellent	Large		<input type="text"/>
Movie 10	Fair	Small		<input type="text"/>
Movie 11	Poor	Large		<input type="text"/>
Movie 12	Fair	Medium		<input type="text"/>
Movie 13	Poor	Large		<input type="text"/>
Movie 14	Poor	Small		<input type="text"/>
Movie 15	Excellent	Medium		<input type="text"/>
Movie 16	Fair	Large		<input type="text"/>
Movie 17	Excellent	Small		<input type="text"/>
Movie 18	Poor	Medium		<input type="text"/>

Seller Reviews

TITLE	RATING	REVIEWS	DISTRIBUTION	your rating
Seller 1	Excellent	Large		<input type="text"/>
Seller 2	Poor	Large		<input type="text"/>
Seller 3	Excellent	Small		<input type="text"/>
Seller 4	Poor	Medium		<input type="text"/>
Seller 5	Fair	Large		<input type="text"/>
Seller 6	Poor	Small		<input type="text"/>
Seller 7	Excellent	Medium		<input type="text"/>
Seller 8	Fair	Small		<input type="text"/>
Seller 9	Fair	Large		<input type="text"/>
Seller 10	Fair	Small		<input type="text"/>
Seller 11	Excellent	Large		<input type="text"/>
Seller 12	Fair	Medium		<input type="text"/>
Seller 13	Poor	Large		<input type="text"/>
Seller 14	Poor	Small		<input type="text"/>
Seller 15	Excellent	Medium		<input type="text"/>
Seller 16	Fair	Medium		<input type="text"/>
Seller 17	Excellent	Small		<input type="text"/>
Seller 18	Poor	Medium		<input type="text"/>

Appendix 4: Variables Tested in the In-Person Research Study



Appendix 5: In-Person Study Participant's Previous Use of Various Online User Review Websites

	Movie Reviews				Seller Reviews		Product Reviews				
	Rotten Tomatoes	IMDB	Y! Movies	NetFlix	CNET	eBay	Shopping.com	Target.com	Epinions	Amazon	Froogle
P1		1	1		1						1
P2				1	1	1		1	1	1	1
P3		1		1	1	1				1	1
P4		1			1	1			1	1	
P5	1	1		1	1	1		1	1	1	1
P6	1	1		1	1	1		1	1	1	
P7	1			1		1				1	
P8	1	1			1	1	1	1	1	1	
P9		1		1	1	1				1	
P10	1	1				1				1	
P11		1			1	1			1	1	
P12	1	1	1		1	1				1	1
P13		1				1				1	
P14		1			1	1		1		1	
P15			1	1		1				1	
P16		1		1		1				1	
P17		1		1		1			1	1	
P18				1	1					1	
Count	6	14	3	10	12	16	1	5	7	17	5
Percent	33.33%	77.78%	16.67%	55.56%	66.67%	88.89%	5.56%	27.78%	38.89%	94.44%	27.78%

Appendix 6: Descriptive Statistics of the Dataset

		Mean	Median	Mode	Std. Deviation
Average Rating	Products				
	Favorite	1.0000	1	1	.00000
	Worst	3.0000	3	3	.00000
	Sellers				
	Favorite	1.0000	1	1	.00000
	Worst	3.0000	3	3	.00000
Number of Reviews	Products				
	Favorite	1.8519	2	1	.81048
	Worst	1.6667	2	1	.75235
	Sellers				
	Favorite	1.8148	2	1	.77883
	Worst	1.8148	2	1	.80269
Distribution	Products				
	Favorite	1.0741	1	1	.26435
	Worst	1.1852	1	1	.39210
	Sellers				
	Favorite	1.1111	1	1	.31722
	Worst	1.1852	1	1	.39210
Movies	Favorite	1.3148	1	1	.46880
	Worst	1.1296	1	1	.33905