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Information Quality and Online Reputation Systems: A Preliminary Investigation

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ABSTRACT
As electronic commerce developed, it became clear that buyers and sellers needed a way to evaluate the reputation of potential trade partners. Online reputation systems were developed to meet this need. More recently, online reputation systems have expanded into additional domains such as the evaluation of college professors. The study proposed here examines the characteristics of two representative online reputation systems and examines user perceptions of the information quality of the systems. Results will have implications for the design of online reputation systems and for interventions aimed at helping users understand how to best use these systems.

Keywords (Required)
Reputation systems, information quality, data quality.

INTRODUCTION
A key challenge for buyers and sellers participating in online transactions is developing an understanding of the likely behavior of one’s trading partners. Will the buyer actually pay for items he or she has purchased? Will the seller actually ship the item that has been purchased? Will it be packaged to prevent breakage in transit? Once the item arrives, will it be what the buyer expected? Online reputation systems were developed to address these questions by helping buyers and sellers evaluate potential trading partners in online transactions (Resnick, Zeckhauser, Friedman and Kuwabara, 2000). More recently online reputation systems have been extended to other domains. Students can now evaluate professors and teachers online. Patients can evaluate doctors and dentists. The design of online reputation systems varies from system to system. As users come to depend on these systems, it is important that they recognize these design differences and develop an awareness of the quality of the information presented in these systems.

This study focuses on user perceptions of the information quality of online reputation systems. The paper begins by reviewing the literature on reputation systems and on information quality. Next characteristics of two representative online reputation systems are discussed. Finally, the research questions, hypotheses, and research methodology are outlined.

LITERATURE REVIEW
Reputation Systems
Users participating in online transactions frequently are unable to judge the reputations of online sellers using traditional signals such as the location and physical appearance of stores (Resnick, et al., 2000). Online reputation systems were developed to address this shortcoming. Typically an online reputation system allows buyers and sellers to rate one another. Prospective buyers and sellers can then review these ratings as part of the buyer-selection or seller-selection decision-making process (Bruce, Haruvy and Rao, 2004; Keser, 2003; Lucking-Reiley, 2000). The Feedback Forum developed by eBay is an example of an online reputation system. Following each completed transaction, buyers and sellers are encouraged to rate one another and to provide qualitative feedback about the transaction. Prospective buyers interested in bidding on an item can then review the seller’s ratings, and sellers can block buyers from bidding on items on the basis of the buyer’s ratings. Many people believe that the information collected in eBay’s online reputation system is very valuable. Both sellers and buyers generally try to minimize poor ratings (McDonald and Slawson, 2002). eBay views the information as so valuable that they have blocked user’s attempts to display their ratings in other systems (Wingfield, 2002), and ratings have been found to affect selling prices (Ba and Pavlou, 2002).
Recently online reputation systems have been extended to a variety of new domains in which information about the performance of professionals can be viewed online. Students can rate their teachers and professors in RateMyProfessors.com and RateMyTeachers.com. Prospective students may use these systems to decide what classes to take. Patients can rate their doctors and dentists in RateMDs.com. Prospective patients may use this system to choose a doctor. Reputation systems such as RateMyProfessors.com are different than earlier reputation systems because the user is generally evaluating his or her experience with a professional over a period of time rather than rating the performance of a buyer or seller in the context of a single transaction.

**Dimensions of Information Quality**

Wang and Strong (1996) developed a taxonomy of information quality which provides an instrument for assessing users’ perceptions of information quality. The instrument includes fifteen dimensions of information quality, encompassing fifty data attributes. The dimensions are believability, accuracy, objectivity, reputation, value-added, relevancy, timeliness, completeness, appropriate amount of data, interpretability, ease of understanding, representational consistency, concise representation, accessibility, and access security. Further support for these fifteen dimensions has been found in later studies (Lee, Strong, Kahn and Wang, 2002).

**Information Quality and the Internet**

Information quality problems have been noted in the literature on information accessed through the Internet. For example, since editorial and peer review processes are sometimes missing when information is published on the Internet, the information may not be reliable (Pack 1999). The lack of review processes and ease of publication mean that information published on the Internet may be more timely but less accurate than information published in other media such as books and newspapers (Hawkins 1999).

Prior findings on the use of web-based information are mixed. Rich and Belkin (1998) found that users perceive web-based information as less authoritative and credible than other kinds of information systems. Klein (2001) found that users are aware of the relative strengths and weaknesses of information published on the Internet and information published in traditional text sources such as books, journals, magazines, and newspapers. However, Borchers (2002) found that, in some circumstances, users do not perceive strong differences between web-based and traditional sources of information. Additionally, Graham and Metaxas (2003) found that most college students do not double-check information found on the Internet.

**CHARACTERISTICS OF TWO ONLINE REPUTATION SYSTEMS**

Subjects participating in this study will be asked about their perceptions of the Feedback Forum developed by eBay and RateMyProfessors.com, a system used to rate college and university professors. These are two online reputation systems with different objective characteristics. Some factors that may affect users’ perceptions of these systems are discussed below.

**Anonymity**

Ratings in eBay’s Feedback Forum are tied to a single, specific eBay account. This ensures that there is some accountability associated with the Feedback Forum ratings. It is possible, for example, to view all of the ratings a particular user has provided which may allow users to evaluate the credibility of the ratings provided by the user. Users of RateMyProfessors.com can enter ratings anonymously. Some ratings in the system cannot be traced to specific users. It is also not possible to view all of the ratings provided by a user who has entered anonymous ratings.

**Authentication**

Ratings in eBay’s Feedback Forum are tied to a specific transaction in which a buyer purchases and pays for an item and a seller delivers an item. Ratings in RateMyProfessors.com are not necessarily tied to a specific course. There is no guarantee that a user entering a rating in RateMyProfessors.com has actually taken the course being rated or that the user is even a student at the university offering the course.
Reciprocity

In eBay’s Feedback Forum, both the buyer and the seller are allowed to enter a rating into the reputation system. Raters are generally aware that their own reputations may be affected if they enter ratings that may be viewed as inaccurate or unfair by their trading partners. Buyers and sellers at times even negotiate who will enter the first rating into the system. In contrast, ratings in RateMyProfessors.com are one-sided. Students rate professors, but professors do not publicly rate students.

Sampling Plan

In eBay’s Feedback Forum, all participants in transactions are made aware that the reputation system exists. While some users may choose not to enter ratings, all users are informed that they have the opportunity to do so. In contrast, some students may not know that RateMyProfessors.com exists. The group of students who enter ratings may not be representative of the population of students taking classes.

Consent

Buyers and sellers who use eBay understand that their behavior will be rated in the eBay Feedback Forum. Consent is implicitly given to having their reputations publicly displayed. College professors are not asked for and do not give consent to having information published in RateMyProfessors.com’s reputation system.

Content

Users of eBay’s Feedback Forum are asked to provide an overall rating (positive, neutral, or negative) of one’s trading partner and are allowed to enter comments related to the transaction. These items strike a serious, business-like tone. The questions in RateMyProfessors.com ask users to rate easiness, helpfulness, clarity, the interest of the student, and (optionally) the appearance of the professor. The rating form notes that the appearance rating (“hot” or “not”) is “just for fun.” The inclusion of the “just for fun” rating of appearance and the use of the term “hot” to describe appearance may encourage some users to view the reputation system as having a less serious tone (Lang, 2003).

RESEARCH QUESTIONS AND HYPOTHESES

Overall, the design of eBay’s Feedback Forum follows design principles that are consistent with the collection of higher-quality information. Ratings are tied to specific users and transactions, and reciprocity may encourage fair ratings. All users are informed and consent to the system, and the items in the system strike a serious tone. In contrast, the design of the reputation system in RateMyProfessors.com may lead to the collection of lower-quality information. Ratings are entered anonymously and there is no guarantee that raters have taken the course being rated. Many potential raters may not know about the system, and the use of the term “hot” to describe appearance may encourage some users to view the system as less than serious.

We speculate that these differences between the two systems may lead users to view eBay’s Feedback Forum as a high-credibility reputation system and RateMyProfessors.com’s system as a low-credibility reputation system. For the purposes of this study “high-credibility” reputation systems will be defined as reputation systems in which raters are not anonymous, ratings are tied to a specific transaction, ratings are reciprocal, all potential raters know about the existence of the system, ratees consent (at least implicitly) to participating in the system, and rating items are serious in tone. “Low-credibility” systems will be defined in the study as reputation systems in which at least some raters are anonymous, ratings are not necessarily tied to a specific transaction, ratings are not reciprocal, some potential raters do not know about the existence of the system, ratees do not consent to participating in the system, and at least some rating items may be viewed by some raters or ratees as not serious in tone. We acknowledge that reputation systems with mixed characteristics that do not fall neatly into these two categories may exist and may certainly be developed in the future.

The research question examined in this study is how users perceive the quality of the information available in reputation systems with different design characteristics. Specifically do user perceptions of information quality indicate that users are sensitive to differences in “high-credibility” reputation systems and “low-credibility” reputation systems? In this study eBay’s Feedback Forum will be characterized as a “high-credibility” reputation system and RateMyProfessors.com will be characterized as a “low-credibility” reputation system.

The research question will be addressed through a series of fifteen hypotheses linked to the fifteen dimensions of information quality identified by Wang and Strong (1996). The hypothesis for the accuracy dimension of information quality is stated in the null form. The hypotheses for the other fourteen dimensions also follow this format.
HI0: There is no difference in users’ perceptions of the accuracy of high-credibility reputation systems and low-credibility reputation systems.

RESEARCH METHODOLOGY

Study Procedures

Subjects will be familiarized with eBay’s Feedback Forum and RateMyProfessors.com through a two-hour interactive session held in a computer lab. Explicit training about the potential differences in the information quality of the two systems will not be covered in this session. Five weeks later, subjects will complete an in-person survey containing items for each of the fifty data attributes identified by Wang and Strong (1996). All subjects will answer the fifty items for both eBay’s Feedback Forum and RateMyProfessors.com. Half of the subjects will respond to items about one of the systems first, and the other subjects will respond to items about the other system first.

Two sample survey items are shown below.

<table>
<thead>
<tr>
<th>The Feedback Forum ratings in eBay are believable.</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>The instructor ratings in RateMyProfessors.com are believable.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Sample Survey Items

Subjects will also be asked to respond to open-ended questions about perceived differences in the two systems. Responses will be used as a manipulation check to determine whether users perceive differences in the anonymity, authentication, reciprocity, sampling plan, consent, and content of the two systems.

Subjects

A total of 400 subjects recruited from management courses will participate in the study.

Data Analysis

The research hypotheses will be analyzed using a paired t-test with matched observations.

CONCLUSION

Users increasingly rely on online reputation systems to evaluate potential trading partners, professors, doctors, and so forth. Little research has addressed the question of whether users are sensitive to potential information quality differences among these systems. The proposed study takes a first step in answering this question. Results of the study will have implications for the design of online reputation systems and for interventions aimed at helping users understand how to best use these systems.

REFERENCES


