

Perceived ‘usefulness’ of online consumer reviews: An exploratory investigation across three services categories

Pradeep Racherla^{a,1}, Wesley Friske^{b,*}

^a College of Business, West Texas A&M University, 2403 Russell Long Blvd., Canyon, TX 79016, USA

^b Rawls College of Business, Texas Tech University, Lubbock, TX 79409, USA

ARTICLE INFO

Article history:

Available online 7 July 2012

Keywords:

Online reviews
Word-of-mouth (WOM)
Message usefulness
Reputation
Identity disclosure
Expertise

ABSTRACT

Online reviews, a form of online word-of-mouth (eWOM), have recently become one of the most important sources of information for modern consumers. Recent scholarship involving eWOM often focuses on the transmission and impact of online reviews but sheds less light on the underlying processes that drive consumers' receptions of them. Similarly, few studies have explored the recipients' perspectives in the context of various services. This study addresses the aforementioned gaps in extant literature. The research model in this study is built upon the rich stream of literature related to how people are influenced by information and is tested on reviews collected from Yelp.com, a popular online advisory website dedicated to services businesses throughout the United States. The results of the study show that a combination of both reviewer and review characteristics are significantly correlated with the perceived usefulness of reviews. The study also finds several results that are anomalous to established knowledge related to consumers' information consumption, both offline and online. The authors present the results of the study and discuss their significance for research and practice.

© 2012 Elsevier B.V. All rights reserved.

1. Introduction

Online word-of-mouth (EWOM) platforms have become one of the most important sources of information for modern consumers. These platforms enable consumers to socially interact with one another, exchange product-related information, and make informed purchases. EWOM platforms are burgeoning on the Internet for products such as music and books (Amazon.com), consumer electronics (shopping.com), and various services (Yelp.com; TripAdvisor.com; Hotels.com). There has been a veritable “explosion in the number, range, completeness, and general availability of online reviews” (Clemons et al. 2006) in recent years, and consumers have taken notice. As a result, “consumers are now more fully informed about what is available to them” than at any point in the past, and they behave as if this “informedness” matters (Clemons and Gao 2008).

Not surprisingly, online reviews have attracted considerable research recently (e.g., Chevalier and Mayzlin 2006, Clemons and Gao 2008, Dellarocas 2003, Lim and Chung 2011, Mudambi and Schuff 2010, Pavlou and Dimoka 2006). However, extant research overlooks certain interesting aspects of online reviews. Much of the existing research focuses on the transmission and impact of online

reviews but sheds less light on the underlying processes that drive consumers' perceptions of online reviews (Sen and Lerman 2007; Zhang et al. 2010). Given the abundance of online reviews and the multitude of problems associated with them (such as anonymity and potential for manipulation) (Chevalier and Mayzlin 2006), it is important to understand how consumers manage to alleviate uncertainty and get the information they want and are willing to trust. Consequently, the question that arises is “what types of reviews do consumers find useful?” Understanding this issue will help both marketing researchers and managers come to terms with the reputation-based online information mechanisms currently used by most information providers and online retailers (Libai et al. 2010).

Few studies have explored the recipients' perspective in the context of services. Services do not have ‘try before you buy’ or ‘return in case quality is below expectations’ features. Therefore, WOM is particularly important in services marketing due to the heterogeneity of service quality, the higher associated risk, and the intangible nature of services (Bansal and Voyer 2000, Ekelund et al. 1995). Thus, more and more consumers are relying heavily on online reviews to assess services prior to purchase (Senecal and Nantel 2004). This reliance is evident in the significant rise in the popularity of websites such as Yelp.com, TripAdvisor.com and CitySearch.com that focus almost exclusively on various types of services. But the effectiveness of such interpersonal influence may still depend on the specific attributes of reviews that consumers evaluate (Wangenheim and Bayon 2004). Consumers perceive

* Corresponding author. Tel.: +1 406 580 5280.

E-mail addresses: pracherla@wtamu.edu (P. Racherla), wesley.friske@ttu.edu (W. Friske).

¹ Tel.: +1 806 651 2502; fax: +1 806 651 2206.

greater risk and knowledge uncertainty while purchasing services, and this uncertainty varies across different service categories (search, experience and credence services) (Ostrom and Iacobucci 1995). For instance, the variable and non-standard nature of credence services (e.g., doctor, hair stylist) leads to greater knowledge uncertainty when compared to search-based services that are likely to be standardized. Therefore, consumers evaluating credence services are more likely to place greater emphasis on specific aspects of the reviews than the others.

This study addresses the above limitations. The research questions that guide this study follow: (RQ1) What are the factors that contribute to consumers' perception of the usefulness of online reviews? and (RQ2) Does the impact of these factors vary by the type of service that is being considered by the consumers?

In this study, we base our research model on the fundamental assumption that consumers' assessment of the usefulness of reviews is an important antecedent to information adoption—a fact repeatedly demonstrated in both offline and online environments (Sussman and Siegal 2003, Rieh 2002). The research model of review usefulness in this study is built upon the rich stream of literature related to how people are influenced by information (Janis and Hovland 1959, Petty and Cacioppo 1986). In this, we specifically delineate the effect of three sets of factors: the message (review) factors, the source (reviewer) factors—including social-demographic characteristics—and the three types of services. The model is tested on 3000 reviews collected from Yelp.com, a popular online advisory website dedicated to services businesses. The results show that reviewers' reputation is positively correlated with perceived usefulness. Surprisingly, reviewers' expertise is negatively correlated with perceived usefulness. Similarly, review valence exhibits a convex-shaped relationship with usefulness in the sense that extreme reviews (with 1 or 4 rating) were perceived more useful than others. However, review extensiveness does not show any significant correlation with perceived usefulness. The effects of these factors showed several variations across the three service categories.

This manuscript is structured as follows. We first develop the research model of perceived usefulness of online reviews. We then describe the research setting and data collection procedures, including the description of the variables used in this study. Third, we present the analysis and hypotheses testing. Fourth, we discuss the results in detail, including their implications for research and practice. The paper ends with a brief note on study limitations and contributions.

2. Perceived usefulness of online reviews: background

Online reviews provide a wealth of information to consumers. However, on the flip side, every listed product or service on most websites is typically associated with numerous reviews (sometimes hundreds). Previous research identifies several problems and biases associated with the current methods of collecting, aggregating and listing reviews (Hu et al. 2009). For instance, Chevalier and Mayzlin (2006) note that marketers have incentives to supply promotional chat or reviews in order to influence consumers' evaluation of products. Further, due to the relative anonymity afforded by the online medium, firms can (and do) disguise their promotions as consumer recommendations. Questions regarding genuineness are compounded by the fact that consumer–consumer interactions occur in a computer-mediated environment that lacks non-verbal and social cues (Einwiller 2003). Consequently, consumers face much uncertainty while considering online WOM. These problems have been highlighted numerous times in popular press with respect to many websites that host consumer reviews (e.g., Miller 2009), so much so that researchers from universities

such as Cornell and Harvard have been working on algorithms and methods to identify and weed out fake reviews (Streitfeld 2011; Newman 2011).

Firms have been experimenting with various methods to sort and present the reviews in the most appropriate manner. So far, the most commonly used method to assess the usefulness and impact of online reviews has been based on the 'helpfulness' votes garnered by individual reviews. For instance, for every product displayed on its website, Amazon.com ranks the top two most helpful favorable and critical reviews as ranked by other consumers who read those reviews. It is generally believed that such peer ranking of reviews is the best method to separate the useful reviews from the rest, and this arrangement helps consumers efficiently parse through numerous reviews.

2.1. Prior studies on consumers' perceptions of online reviews

As online reviews became pervasive and mainstream sources of information, several researchers conducted seminal studies to understand two key questions: "why do consumers trust and use information provided by relatively unknown or anonymous people?" and "how do consumers parse the wealth of reviews to find the information they want and are willing to trust?". These studies can be categorized into two groups based on the type of data—archival data (i.e., consumer reviews and sales and pricing data) collected from websites such as Amazon.com and Ebay.com, and attitudinal data collected using surveys and experiments (see Table 1 for a summary of prior studies on consumers' perceptions of online reviews).

Chevalier and Mayzlin's (2006) seminal study sought to understand several characteristics of online reviews, most importantly their impact on product sales and how consumers actually use them during their decision making process. The authors use book reviews from Amazon.com and Barnes&Noble.com to test several hypotheses. One of the interesting findings in this study is that negative reviews have a much greater effect on book sales than positive reviews. Further, the authors find that consumers pay more attention to the textual portion of the review than summary statistics. With similar motivations, Clemons et al. (2006) study the dynamics of consumers' reviews in a craft beer website called 'ratebeer.com'. The authors explore several factors, including the effect of reviews on micro-brewed beer sales, and find that the variance of the ratings and the strength of the top quartile of the reviews determine which new products grow in the market place. Their analysis shows that the influence of a few reviews is disproportionately higher than others. In other words, their study emphasizes that, in certain contexts, individual reviews are more important to consumers than the mean ratings/sentiment associated with each product.

More recently, Mudambi and Schuff (2010) explore consumers' perceptions of review helpfulness using data from Amazon.com. The authors test the effects of several variables, such as the length of the textual portion in reviews and products' numerical ratings, on consumers' perceptions of review helpfulness. In addition, they also test the variability of these effects across several product categories, including mp3 players, digital cameras and video games. Interestingly, the authors note that reviews with extreme positive or negative ratings are usually found unhelpful by other consumers. This is especially true in the case of hedonic goods like movies and video games. Further, the authors find that the length of the textual portion of the review positively impacts 'helpfulness' perceptions. Yang and Mai (2010) study user reviews' impact on sales of video games and find that negative reviews usually have a greater effect on sales and the number of reviews associated with a product is typically used as a heuristic by consumers to assess the general quality of the product.

Table 1
Summary of studies on consumers' perceptions of online reviews.

Study	Study context and data	Key findings and conclusions
Bronner and de Hoog (2010)	Context: vacation decision process of tourists Data: 1650 trip reviews from the Dutch Continuous Vacation Panel survey (CVO)	<ul style="list-style-type: none"> • Consumers use both user-generated and company-generated websites when searching for information • Positive and neutral contributions to user-generated websites are far more frequent than negative ones
Chevalier and Mayzlin (2006)	Context: the impact of online reviews on book sales Data: 2387 consumer reviews from Amazon.com and B&N.com	<ul style="list-style-type: none"> • Customer reviews are largely positive (95% positive) • An improvement in a book's reviews leads to an increase in relative sales • One-star rankings have a greater impact than five-star rankings • Customers most likely read the reviews rather than rely on summary statistics
Clemons et al. (2006)	Context: craft beer sales Data: 281,868 ratings for 1159 US microbreweries from Ratebeer.com	<ul style="list-style-type: none"> • The variance of ratings the strength of the most positive quartile of reviews play a significant role in determining which new products grow fastest in the marketplace
Lim and Chung (2011)	Context: the effects of positive and negative WOM on perceptions of brands Data: observations of 107 subjects in experiment 1 and 96 subjects in experiment 2	<ul style="list-style-type: none"> • Negative WOM, not positive WOM, is more effective in changing the evaluation of credence attributes than that of search attributes for unfamiliar brands
Mudambi and Schuff (2010)	Context: reviews of six different product types, such as mp3 players and digital cameras Data: 1587 consumer reviews from Amazon.com	<ul style="list-style-type: none"> • Review extremity, review depth, and product type affect the perceived helpfulness of the review
Pavlou and Dimoka (2006)	Context: buyer and seller feedback, and its impact on trust and price premiums Data: text from 420 buyer–seller dyads on eBay	<ul style="list-style-type: none"> • Feedback has economic value • Text comments have more influence on a source's credibility than numerical ranking systems • Feedback mechanisms shape price premiums through the moderating value of trust • Benevolence plays a significant role in shaping price premiums
Smith et al. (2005)	Context: influence of recommendations (both peer and expert) on consumer decision making Data: two experiments with 252 and 150 subjects respectively	<ul style="list-style-type: none"> • Consumers use the mere availability of peer recommendations as a decision making heuristic, irrespective of the peer recommender's personal characteristics • Peer versus editorial recommendations depends on the specific nature of the consumer's shopping goal: utilitarian or hedonic
Yang and Mai (2010)	Context: online video game sales Data: 1695 user reviews of seven games from Gamespot.com and Mogchart.com	<ul style="list-style-type: none"> • The availability of online reviews cannot fully transform experience attributes into search attributes • Negative reviews have more of an impact than positive reviews • The amount of reviews signals the quality of the product being reviewed

The studies using 'subjective' data primarily apply techniques such as surveys and experiments to tease out the key factors that affect consumers' perceptions of online reviews. For instance, Smith et al. (2005) use an experiment with student subjects to understand consumers' preference for peer versus expert reviews of experiential products. They find that, in general, consumers trust peer reviews more than expert reviews. Also, two factors, perceived expertise and perceived social similarity, tend to impact perceptions of trustworthiness. These effects are much greater for hedonic than utilitarian products. Wei and Watts (2008) apply the Heuristic–Systematic Model (Chaiken et al. 2002) and the Elaboration Likelihood Model (Petty and Cacioppo 1989) as the theoretical lenses to survey members of two online communities and explore why and how consumers adopt online information. They find that argument quality and perceived source credibility are the two most important factors that affect online information adoption. The strength of these factors is magnified when the consumer is looking for disconfirming information.

A survey of extant literature on this topic uncovers several interesting facets of consumer behavior and online reviews. Mainly, (a) consumers tend to seek and trust negative/ disconfirming evidence in online reviews; (b) consequently, extremely positive reviews are considered less helpful/diagnostic than negative reviews; (c) consumers pay attention not only to the numerical information in the reviews but also to the textual part that some-

times gives much more information than crude numbers; and (d) given the overwhelming number of reviews, consumers sometimes pick only reviews written by reviewers who, the consumers feel, are genuine and have similar social backgrounds, tastes and preferences. As a result, some reviews have greater influence on consumers than the others.

While these studies have been instrumental in enhancing our understanding of various aspects of reviews, they overlook several interesting aspects of consumer behavior pertaining to information adoption. For instance, the majority of studies, in general, do not consider the social processes that underlie consumers' adoption of word-of-mouth information. Considering the fact that online reviews are essentially consumer–consumer (C2C) communications, it is logical to assume that both informational as well as social aspects play an important role in their transmission and adoption. The above studies do consider some of these issues/factors, but they do so in isolation due to data limitations (e.g., Mudambi and Schuff (2010) do not consider the social aspects since Amazon.com reviews do not have reviewers' social information, while Smith et al. (2005) mainly focus on social aspects). This sort of approach leads to a fragmented understanding of the phenomenon. Further, most of the studies test the aggregate effects of reviews associated with a product or service. This only tells part of the story. As Resnick et al. (2000) note: “these simple numerical ratings fail to convey important subtleties of online interactions.

For example, what were the reputations of the people providing the feedback?” It remains an open question as to what extent community evaluations of individual reviews and individual reviewers influence consumer purchase decisions online. Further, as the literature review suggests, most studies (owing to the convenience and availability of data) have focused on products as opposed to services-related hosting sites, which are fast growing in this realm. We believe that these gaps in literature warrant a separate study that takes a holistic approach to exploring consumers’ perceptions of online reviews, especially services-specific online reviews.

3. Research model of perceived credibility of online reviews

In this study, we base our research model on the fundamental assumption that consumers’ assessment regarding the usefulness of reviews is an important precursor to the perceptions of review credibility (and the review writer) and eventually information adoption (Sussman and Siegal 2003) – a fact repeatedly demonstrated in both offline (Mak et al. 1997) and online (Rieh 2002) environments. In the case of online reviews, while consumers’ encounter many reviews associated with a product or service, they expect only a few to be ‘useful’ and reliable to make an informed purchase decision. When reading online reviews, consumers have to deal with two types of uncertainty: the first is to infer the characteristics of the product/service. This task is more difficult in the case of services because services are intangible and difficult to quantify in terms of features and functionalities. Secondly, consumers must also handle the uncertainty regarding the integrity and intentions of the people who write the reviews. Consequently, consumers use both social as well as informational cues to assess whether or not an online review is worth relying upon (Forman et al. 2008).

Investigating persuasive communication is essentially a task that attempts to define “who says what to whom with what effect?” (Janis and Hovland 1959). The ‘who’ part relates to features of the message source, such as personal characteristics, status and expertise (Hovland et al. 1954). The ‘what’ part refers to the characteristics of the message, including quality (extensiveness of information) and content (valence). The ‘whom’ part refers to receiver characteristics, such as product expertise, prior knowledge and extent of involvement.

Previous research has termed source-related factors as having informational and normative influences. Informational influence is “an influence to accept information obtained from another as evidence about reality” (Deutsch and Gerard 1955, p. 629). Informational influence occurs through a process of internalization (Bearden and Etzel 1982). Here the influence of a message depends on the extent to which the message source provides information that enhances the receiver’s understanding of the phenomenon. Normative influence is “an influence to comply with the positive expectations of another” (Deutsch and Gerard 1955, p. 629). It is important to distinguish between the two forms of normative influence: utilitarian and value-expressive influence (Bearden and Etzel 1982, Childers and Rao 1992). Utilitarian influence is operative when individuals conform to the expectations of others in order to receive rewards or avoid punishments. Value-expressive influence occurs through a process of identification whereby individuals attempt to associate themselves with positively evaluated groups and distance themselves from negatively evaluated groups. Such actions serve to maintain or enhance the individual’s self-concept (De Bruyn and Lilien 2008).

The research model (see Fig. 1) in this study is derived from the above discussion. We posit that consumers’ perceptions of review usefulness are affected by three sets of factors: reviewer

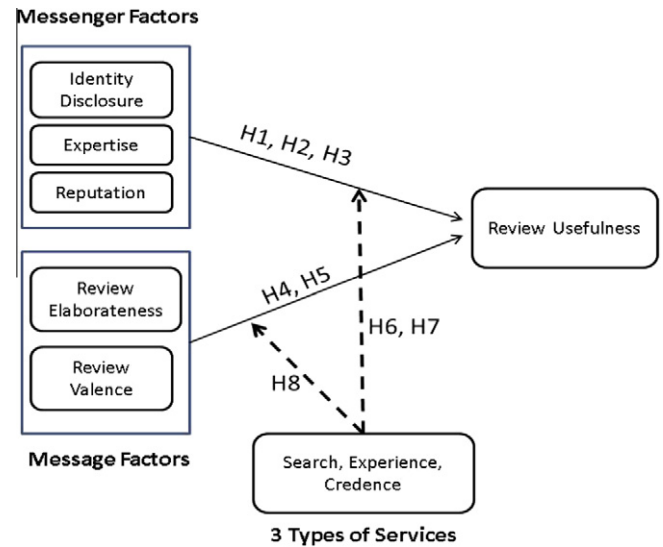


Fig. 1. Research model of online review credibility.

characteristics (messenger characteristics), review characteristics (message characteristics) and consumers’ decision context (the three types of services). We mainly measure usefulness as the key outcome, and extend the logic that only credible information sources are typically perceived as useful (Petty et al. 1981).

3.1. Reviewer Characteristics

3.1.1. Reviewer identity disclosure

Personal identification of the source based on information such as gender and geographical origin considerably enhances the credibility of a message (Maddux and Rogers 1980). It is especially important in an online environment wherein information seekers are trying to reduce uncertainty that arises from the lack of social cues (Tidwell and Walther 2002).

Scholars identify at least two reasons why identity disclosure is important in online interactions. First, information acquisition is more efficient when the source is identifiable. Second, source identity helps increase the credibility of the information source, and, as a result, the information is perceived to be more useful (Sussman and Siegal 2003). Fogg et al. (2001) find that identity disclosure (i.e., features such as name and photo) of an online information source has a positive effect on the trust perceptions of the consumers. Similarly, Walther et al. (2001) find that in newly formed virtual teams, images of team members promoted affection and social attraction. More recently, Forman et al. (2008) find that when reviewers in Amazon.com reveal their background information, such as age, gender and location, it spurs identity-verifying behavior from other customers and eventually has a positive impact on sales.

H1. Reviews with the reviewer’s background information, such as a real photo, real name and location, are perceived to be more useful than reviews which lack such information.

3.1.2. Reviewer expertise

Bristor (1990) defines expertise as “the extent to which the source is perceived as being capable of providing correct information, and expertise is expected to induce persuasion because receivers have little motivation to check the veracity of the source’s assertions by retrieving and rehearsing their own thoughts” (p. 73). The sender of a WOM message is perceived to possess a high degree of expertise by virtue of his/her training or experience in

a unique position (Schiffman and Kanuk 1997). In the presence of a large number of information sources, consumers tend to trust sources that possess high degrees of expertise and are perceived to be knowledgeable in the service that is being reviewed. However, in the online environment, such evaluations must be made from the relatively impersonal text-based resource exchange provided by actors in the site network. Therefore, consumers tend to assess the expertise of reviewers based on their past behavior in terms of the number and content of the reviews written or information provided for others' queries (Weiss et al. 2008) and form opinions of the present message.

H2. The reviews provided by reviewers with high expertise are perceived more useful than reviews written by reviewers with low expertise.

3.1.3. Reviewer reputation

The notion of expertise is closely related to the reputation of the reviewer. Reputation is an important characteristic that differentiates a reviewer from others and is known to be an important driver of trust in the online environment. For instance, previous research (Gruen et al. 2006, Lerner et al. 2006) finds that reputation and peer recognition significantly enhance the influence of a member on other members. Online review writing is a tedious task that requires substantial time and effort without any tangible outcomes. Therefore, one of the factors that sustain reviewers is the positive feedback from others in the form of friendship requests or votes. The greater the lure of positive reputation, the greater will be the reviewers' efforts in providing useful reviews (Jeppesen and Fredriksen 2006).

Bator and Cialdini (2001) identify reputation as one of the basic influential principles of understanding persuasion. However, reputation effects are contextual, and the findings in previous studies with respect to mediated environments have been equivocal. For instance, while Dubrovsky et al. (1991) show that status and expertise are less significant in computer-mediated decision groups than in face-to-face interactions, Guéguen and Jacob (2002) show that status and expertise create higher compliance, especially when messages come from a high-status member. Guadagno and Cialdini (2002) summarize these results as follows: "...authority is successful in increasing compliance in online groups when it is used as a decision heuristic, but is far less influential when present in an interactive discussion." Since online reviews are non-interactive, more prominent reviewers (reviewers who have higher reputation) may have greater influence over consumers.

H3. The reviews provided by reviewers with high reputation are perceived more useful than reviews written by reviewers with low reputation.

3.2. Review factors

3.2.1. Review elaborateness

Online reviews are essentially information sources that consumers use to gain knowledge about products and services. Therefore, the extent of information available in a review helps the customers assess the attributes of the product, and this builds trust in the source (Gupta and Harris 2010). Informational content is considered one of the most important dimensions of source credibility in many e-commerce related studies. The extent to which a customer is provided enough information to make a purchase decision has a positive influence on shopping intentions and revisits to online stores (Shelat and Egger 2002).

Since online reviews are open-ended text based communications, the amount of information definitely matters when

consumers assess the usefulness of the reviews. Reviewers who are high in expertise are likely to possess greater awareness and knowledge of the products under review (Mitchel and Dacin 1996), a fact reflected by the extensiveness of their reviews. Recent studies have emphasized the importance of message elaborateness. For instance, the Chevalier and Mayzlin (2006) study on Amazon.com reviews finds that the amount of textual information in reviews (as measured by the word count) has a significant correlation with overall sales of the associated product. One of their interpretations is that review length signals a reviewer's involvement and probably the extent of satisfaction/dissatisfaction with a particular product. They determined that other consumers who read these enthusiastic reviews were more likely to respond to the information provided by the reviewers. In a different but relevant study of craft beer sales, Clemons et al. (2006) discover that the mean of top quartile review ratings was positively and significantly associated with sales growth. In that study, the authors conclude that the top ratings were written by the most enthusiastic of reviewers and that their opinions were more likely to spur sales of a microbrewery's products than moderately enthusiastic or unenthusiastic reviews. Thus, both studies indicate that the enthusiasm of the reviewer influences the usefulness of the review.

H4. Reviews with greater amounts of information (as measured by the word-count of the textual portion) are perceived more useful than reviews that contain lesser amounts of information.

3.2.2. Review valence

Online reviews are usually associated with an overall rating (on a scale of 1–5). Typically, a 5-rating suggests an extremely positive review; a 1-rating indicates an extremely negative review. On the other hand, a 3-rating indicates that either the product is of average quality or that the reviewer has provided a balanced analysis (or is neutral) of the product. Review valence in combination with the review text tends to be a helpful cue to consumers.

Extant literature presents three different arguments related to the effect of valence. First, confirmation bias drives consumers to look for affirmative evidence supporting a product choice already made (Klayman and Ha 1989). Recent studies on online reviews support the notion of consumers' confirmation bias (Chevalier and Mayzlin 2006). Second, the notion of negativity bias (Mizerski 1982) suggests that when consumers are neutral, negative reviews tend to become more salient than positive reviews. Ba and Pavlou (2002) find that in the presence of a large number of positive reviews (which is typically the case on most websites), negative reviews have a greater influence on trust ($\beta = 0.86$) than positive reviews ($\beta = 0.55$). Third, as the ambiguity of attribute evaluation and the risk from a lack of information and knowledge increase, WOM becomes a more important source of information to consumers (Bansal and Voyer 2000). Consumers also make an effort to assess whether or not a message provides an accurate representation of the product (Buda 2003). The validity of a message is diminished when consumers attribute reporting bias to the source. Since both 1- and 5-ratings are extremes, moderate reviews with 3-ratings should be considered more useful since they tend to present both sides of the argument (Mudambi and Schuff 2010, Schlosser 2005).

H5. Moderate reviews (with 3-ratings) are perceived to be more useful than extreme reviews (1- and 5-rated reviews).

3.3. Three types of services

The elaboration likelihood model (Petty and Cacioppo 1986) suggests that the attitude towards a message is impacted by source

expertise, the extensiveness of the message, the mood of the message recipient and various other contextual variables. An important contextual variable is the type of service being purchased by the consumer. We adopt *Darby and Karni's (1973)* service categorization of search, experience and credence-based services:

- Search services are those dominated by attributes about which full information can be acquired before purchase.
- Experience services are those that customers can evaluate after some consumption.
- Credence services are dominated by attributes that the customer cannot verify even after use.

Previous research has well established the fact that the three categories entail varying degrees of perceived risk for the consumers. According to *Murray (1991)* "...consumers use various amounts and types of information sources to reduce perceived risk, depending on the amount and type of risk" (p. 12). As the perceived risk level of a purchase decision increases, consumers are more likely to rely on personal information channels. Furthermore, when perceived risk is very high, consumers use word-of-mouth as their primary risk-coping strategy (*Murray 1991*).

Search services are more standardized and have specific features/ functionalities that can be objectively assessed in the reviews. Therefore, they pose the lowest level of risk to the decision-maker. Research in advertising (e.g., *Ford et al. 1990*) shows that consumers are more skeptical of experience than search attribute claims and of subjective than objective claims. This occurs primarily due to the fact that objective information regarding search services can be more easily substantiated. Therefore, it can be assumed that the informational attributes of the reviews may play a more important role than source characteristics in affecting perceived usefulness (*Jain and Posavac 2001*). More specifically, given that consumers purchasing search services are looking for specific attribute-related information, reviews with extensive information should have greater bearing on perceived usefulness than reviewer characteristics since extensive reviews may be more diagnostic than brief reviews (*Cheema and Papatla 2010*). Similarly, as we have argued earlier, given that moderate reviews may provide more balanced analysis of the services and service providers, it can be assumed that reviews with moderate valence (primarily 3-rated reviews) shall be perceived more useful.

In contrast to search services, consumers are unable to assess the performance of experience and credence attributes prior to their direct experience with the product or service. In the case of credence services, even after the service consumption, consumers are usually unable to fully assess the quality. When the characteristics of the focal object cannot be adequately assessed from direct observation and contact, the consumers may use the reactions of others towards the focal object as evidence about the unobservable characteristics of the object (*Burnkrant and Cousineau 1975*). Experiential and credence services are un-standardized, and consumers perceive greater risk and uncertainty in purchasing these services.

Further, experience and credence services are subject to variation in individual tastes and are therefore subjective in nature. Consumers are often highly confident about their own tastes and subjective evaluations but skeptical about the views of others. Experience and credence products seem to attract reviews from consumers who either love them or hate them, with extremely positive reviews especially common (*Ghose and Ipeirotis 2007*). Therefore, advice and comments from experienced customers helps review readers experience the service offerings vicariously (*Thorbjornsen et al. 2002*). For example, the customer reviews at wine.com (<http://www.wine.com>) provide tasting notes to consumers to build the virtual experience of drinking particular wines.

Here, even though wine can be deemed as an experiential good, consumers do get a sense of the taste and texture following other consumers' experiences. This information is regarded as coming from personal sources, which are pivotal when perceived uncertainty is high (*Murray 1991, Wilson et al. 2008*). Consumers may use extreme ratings in combination with socio-demographic characteristics of the reviewer to find similar others and consequently judge the information provided by them (*Lim and Chung 2011*). For instance, perceived similarity between the message source and recipient is extremely important when evaluating credence services (*Gilly et al. 1998*). Similarly, extremely negative ratings are perceived more credible and useful in the experiential services (*Yang and Mai 2010*).

H6. For search-based services, review characteristics (review extensiveness and valence) will have a greater effect on perceived usefulness than reviewer characteristics.

H7. The effect of reviewer characteristics, such as identity disclosure, reputation and expertise, on perceived usefulness is greater for experience and credence services when compared to search services. This effect will be greater for credence than experiential services.

H8. The effect of message characteristics, such as review extensiveness and valence, on perceived usefulness is greater for experiential services when compared to search and credence services.

4. Research setting and methodology

The data for this study includes 3000 reviews (approx. 1000 each for the three service categories) obtained from Yelp.com, a popular online advisory site dedicated predominantly to various types of services across major cities in the United States. This site is considered the largest business listing site for services businesses. Yelp has thousands of more services business listings and millions of more users than rivals like CitySearch, TripAdvisor, and Restaurant.com (*Schein 2011*). The large sample from Yelp therefore provides a credible representative sample of online reviews related exclusively to services. In *Table 2* and *Fig. 2*, we summarize and illustrate the data collected from the website and how they were used to operationalize the constructs. The variable selection was based on an extensive survey of the literature related to online information sources.

We selected the following service categories based on a review of previous literature (*Murray 1991, Krishnan and Hartline 2001, Stell and Donoho 1996*): Search: Furniture Stores; Experiential: Restaurants; Credence: Beauty and Spa (Hair stylists, Cosmetologists and massage spas). In the context of this study, furniture stores function as search-based services because potential buyers can learn by comparing and inspecting the furniture store's products and service attributes before buying. Not only do furniture stores meet the search-based services criteria as described above, but an analogous study (*Murray 1991*) of search-, experience-, and credence-based goods operationalized furniture as the search-based variable. Because products with experience characteristics feature high pre-buying costs of quality detection, the buyer learns about the product's attributes after buying and consuming—and not before. In the context of this study, restaurants are the operational variable of experiential services because a consumer must first eat at the restaurant before making a judgment about the service. With credence-based services, consumers have a difficult time gauging their utility even after consumption. Consumers may then resort to signals and/or heuristics to evaluate

Table 2
Summary of variables and data description.

Variable	Information collected from the website
Review usefulness	Consumers parsing the reviews on the website are given the option to vote on the usefulness of reviews. We used the number of 'useful' votes to operationalize the dependent variable 'perceived usefulness of reviews'
Days lapsed	The number of votes received by a review could be a function of the number of days the review has been available on the website. In most websites, reviews are typically displayed by the date of submission with the latest reviews always on the top pages and older reviews on subsequent pages. Prior research suggests that the order of the information displayed has a profound impact on consumer behavior (Smith and Brynjolfsson 2001). Given the effort required to systematically process hundreds of reviews, consumers will obviously pay attention to the reviews on the first one or two pages. To control for this factor, we created a variable 'days lapsed' that is the difference between the date the review was posted and the date the review was collected
Identity disclosure	The website requires certain background information from the reviewers during the registration process. However, reviewers have the choice to either reveal their true background information by using real photos and real names or provide only animations and screen names. Initial analysis showed that a person posting real photo almost always provides a real name ($r > 0.9$). In order to avoid multicollinearity, we used only one variable: 'PHOTO? (Yes/No)' in the final analysis. We coded the presence or absence of identity information as a binary 0 or 1 variable (Forman et al. 2008)
Reviewer expertise	Reviewers are allowed to create a personal space wherein their previous review history is recorded and displayed. In this personal history, one of the prominently displayed statistics is the number of previous reviews written by a reviewer. A reviewer's demonstrated effectiveness (by writing reviews) in the past may affect the perceived value of his/her current review. We use this information as a proxy for reviewer expertise (Weiss et al. 2008)
Reviewer reputation	The site allows significant interactions between reviewers and site visitors. For instance, if a customer likes the background or reviews of reviewer B, he/she can send a 'friend' request (akin to Facebook) to B. The number of friends of each reviewer is also prominently displayed in the personal space. We use this information to operationalize reputation
Review extensiveness	Review content in this study is defined as the extensiveness/depth of information provided in the review. We captured the textual portion of each review along with other variables. Based on Daft and Lengel's (1986) uncertainty reduction theories, it can be assumed that information seekers' judgment of a review's value is enhanced if a reviewer presents more information than the others. Large amounts of information do contribute to lessening of uncertainty. Therefore, following the methods used in recent studies (Chevalier and Mayzlin 2006, Weiss et al. 2008), we counted the number of words in each review and used it as a proxy measure for review content
Valence (rating given by the reviewer)	Valence refers to the star rating (1–5 scale) given by the reviewer (Chevalier and Mayzlin 2006)

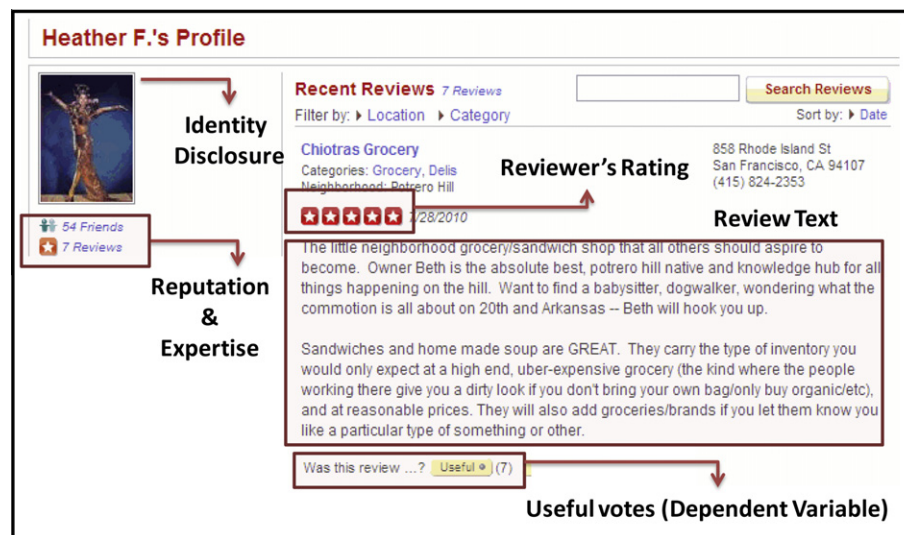


Fig. 2. Illustration of the variables in a typical Yelp.com review.

credence attributes. Unlike the case of a consumer deciding whether or not to eat at a restaurant again based on the friendliness of the staff, the helpfulness of the sommelier, the quality of the food, etc., consumers of credence-based services face high post-buying costs of quality detection. Hair stylists, for instance, meet the criteria of a credence-based service in this respect. After receiving a haircut, consumers may have difficulty internally verifying their satisfaction with the service.

We began the data collection process with the “Browse by Category” search feature on Yelp’s website. It was possible to access reviews of furniture stores from the Shopping section, reviews of restaurants from the Restaurants section, and reviews of hair stylists/hair salons from the Beauty and Spas section. We collected data from the individual reviews of each business after randomiz-

ing the order of the business listings. This randomization process ensured that the businesses did not appear in a specific order (e.g., via an order dictated by high rankings, low rankings, alphabetical order, or chronology). Then we collected only the top 10 reviews listed on the first two pages of the business page because position of the review (i.e., the order in which it is displayed) has a profound impact on consumers. Previous studies have discovered that consumers typically pay attention to only those reviews listed on the first two pages. To control for the strong influence of prior brand knowledge, we chose stores that were not a part of national and regional chains. Further, to control for geographical variances in how reviews are written and sought, we collected reviews of businesses located in the four largest cities in the US: New York (Northeast), Chicago (Midwest), Houston (South) and Los Angeles

(West). Non-parametric tests did not reveal any significant differences among the data from different regions.

5. Analysis and results

The descriptive statistics of the data are shown in Table 3. Initial tests show that most of the variables with the exception of days lapsed and reviewer rating violated the normality assumptions. Therefore, we log-transform these variables. The correlation matrix is shown in Table 4.

We use OLS regression to test the hypotheses. Based on the hypotheses, we expect linear relationships between perceived usefulness and all the independent variables except valence. Since we posit in H5 that moderate reviews are likely to be perceived more useful than either extremely positive or negative reviews, we expect a non-linear relationship. Therefore, we introduce a quadratic term 'Rating²' in the analysis. In addition, we log transformed reputation, expertise, word count and the dependent variable due to their non-normal nature. The results of regression testing are shown in Table 5.

The reviewer characteristics hypotheses receive mixed support from the data.

Table 3
Descriptive statistics.

	N	Minimum	Maximum	Mean	Std.
Real photo? ^a	2907	0	1	0.57	0.47
Reputation	2907	0	3377	67.2	286.7
Expertise	2907	1	2458	130.5	254.2
Rating by reviewer	2907	1	5	3.5	1.5
Days lapsed	2904	1	1724	419.6	365.3
Word count	2907	1	946	66.1	69.5
Number of votes	2907	0	103	8.57	6.4

^a Fifty-seven percent of the reviews have a real photo in the reviewers' profiles.

Table 4
Correlation matrix.

	1	2	3	4	5	6
1 Real photo?	1	.04*	.23**	.31**	.03	-.08**
2 Valence	.04*	1	-.06**	-.06**	-.04	-.21**
3 Expertise	.23**	-.06**	1	.39**	-.09**	.36**
4 Reputation	.31**	-.06**	.39**	1	-.06**	.20**
5 Elaborateness	.03	-.04	-.09**	-.06**	1	.01
6 Days lapsed	-.07**	-.21**	.36**	.19**	.01	1

* Indicates significance at the .05 level.

** Indicates significance at the .01 level.

*** Indicates significance at the .001 level.

Table 5
Results of regression analysis.^a

	Beta	Std. Error	t-value	Sig.
(Constant)	2.112	.060	35.18	.000
Days lapsed	-.01	.001	-.46	.64
Real photo? (Yes/No)	.02	.019	1.42	.15
Ln(Reputation)	.18***	.008	22.45	.001
Ln(Expertise)	-.14***	.010	-6.42	.001
Rating by reviewer	-.15***	.035	-4.19	.001
Rating^b	.02**	.006	3.71	.001
Ln(WordCount)	-.02*	.008	-2.82	.05
R	.54	R ²	Adjusted R ²	Std. error
		.29	.29	.41

The bold values indicate statistically significant results.

^a Dependent variable is Ln(Number of Votes).

^b Only unstandardized coefficients are shown in the table.

* Indicates significance at the .05 level.

** Indicates significance at the .01 level.

*** Indicates significance at the .001 level.

Hypothesis1: The results show that the reviewer's background information has no significant positive effect on the perceived usefulness of the reviews ($\beta = 0.02$). Follow-up post-tests indicate that while identity disclosure is significant, the effect size is minimized in the presence of the much stronger variable, reputation.

Hypotheses 2 and 3: As expected, reputation ($\beta = 0.18***$) was found to positively affect usefulness. To our surprise, the coefficient for expertise ($\beta = -0.14***$) was significant but negative.

Hypotheses 4 and 5: The results on the effect of message characteristics are mixed. The word count (a proxy measure for the extent of useful information in the reviews) shows significant but minor effect size. This is in contrast to results from recent studies (e.g., Chevalier and Mayzlin 2006) that show significant positive affect of word count.

The valence of the reviews has a significant effect on perceived usefulness. Interestingly, the linear term is negative ($\beta = -0.15***$) and the quadratic term is significant ($\beta = 0.02***$). This reflects a convex shaped relationship between valence and perceived usefulness.

The hypotheses regarding differences in effect sizes when compared among the three service categories receive mixed support (see Table 6). We hypothesized (H6) that for experiential and credence services, the importance of identity disclosure will be greater since it mainly serves as a signal of socio-demographic similarity. The data does not support this hypothesis because the coefficient was found to be not significant across the board. However, the other variables showed interesting variations among the three types of services. For instance, we posited (H7) that expertise and reputation shall have a greater bearing on usefulness in experiential and credence services when compared to search services. The data provides mixed support to these hypotheses in the sense that the expertise of the reviewers shows strong negative correlation with usefulness across all the service categories. However, the effect sizes are considerably higher in the experiential and credence services as opposed to search services.

The data provides mixed support to H8. For instance, review valence showed a significant convex-shaped relationship with perceived usefulness in search and credence services but no correlation in experiential services. Interestingly, word count shows a negative correlation with perceived usefulness in experiential services ($\beta = -0.09^*$) when compared to search and credence services. The results of hypotheses testing are summarized in Table 7.

6. Discussion

In this section, we discuss how the results address our research questions.

RQ1. What are the factors that contribute to consumers' perception of the usefulness of online reviews?

An interesting finding in this study is that the presence of socio-demographic information such as real name and photo did not contribute significantly to usefulness perceptions. It is commonly believed that consumers form impressions of others even with relatively limited non-verbal and social cues available in the online environment. Both academics and practitioners agree that such social information lowers the risk of incorrect information and misleading advice because it enhances the fit between the consumer providing information and the consumer seeking the information. However, this result should be inferred in the context of the results of the post-tests which show that the effect of identity information is mitigated by the much stronger variable, reputation. It is possible that providing a real photo and place of origin is an antecedent for garnering greater reputation on this website, and reputation

Table 6
Regression analysis for individual services.

	Search only				Experience only				Credence only			
	β^a	σ	t	p	β^a	σ	t	p	β^a	σ	t	p
(Intercept)	2.17	.10	20.82	.00	2.05	.11	18.25	.00	2.07	.10	20.88	.00
Days lapsed	.04	.03	1.17	.24	.03	.04	.79	.43	.01	.03	.38	.70
Real photo?	.00	.01	-.43	.67	.01	.01	-1.71	.09	.00	.01	1.30	.20
Ln(Reputation)	.12	.01	11.68	.00	.29	.02	12.38	.00	.22	.01	14.67	.00
Ln(Expertise)	-.14	.02	-3.19	.00	-.24	.02	-2.36	.02	-.18	.02	-4.95	.00
Review rating	-.19	.06	-2.99	.00	-.09	.07	-1.35	.18	-.16	.06	-2.78	.01
Rating ^b	.03	.01	2.70	.01	.01	.01	1.22	.22	.02	.01	2.46	.01
Ln(Word Count)	.03	.02	-1.98	.08	-.09	.01	-2.62	.05	-.01	.01	-.98	.33

The bold values indicate statistically significant results

^a Dependent variable is Ln(Number of Useful Votes).

^b Only unstandardized coefficients are shown in the table.

* Indicates significance at the .05 level.

** Indicates significance at the .01 level.

*** Indicates significance at the .001 level.

Table 7
Summary of hypotheses testing.

Hypothesis	Result
H1 Reviews with the reviewer's identity disclosure (i.e., real photo, real name, and location) are perceived to be more useful than reviews which lack such information	Not supported
H2 The reviews provided by reviewers with high expertise are perceived more useful than reviews provided by reviewers with low expertise	Strongly supported
H3 The reviews provided by reviewers with high reputation are perceived more useful than reviews written by reviewers with low reputation	Strongly supported
H4 Reviews with greater amounts of textual information are perceived more useful than reviews that contain less information	Not supported
H5 Moderate reviews (with 3-ratings) are perceived to be more useful than extreme reviews (1- and 5-rated reviews)	Mixed support
H6 For search-based services, review characteristics (i.e., review extensiveness and valence) will have a greater effect on perceived usefulness than reviewer characteristics	Not supported
H7 The effect of reviewer characteristics (i.e., identity disclosure, reputation and expertise) on perceived usefulness is greater for experience and credence services when compared to search services	Mixed support
H8 The effect of message characteristics (i.e., review extensiveness and valence) on perceived usefulness is greater for search services when compared to experience and credence services	Mixed support

subsumed the independent effects of socio-demographic information on usefulness perceptions. As [Cialdini \(2001\)](#) suggests, reputation effects essentially signal social validation and therefore enhance the credibility, and consequently the usefulness, of information sources. Nevertheless, this result should be investigated further.

Two factors that seem to significantly affect perceived usefulness are reputation and expertise. Reviewer reputation seems to add significantly to the perception of usefulness. This emphasizes the importance of reputation systems in maintaining the fidelity of C2C information exchange networks. The constant feedback from other consumers keeps the reviewers honest and also motivates them to provide more accurate and useful reviews. Interestingly, consumers who are looking for information seem to also trust this socially constructed reputation system. However, it should be noted that the link between reputation and usefulness is bi-directional and dynamic. Because a review is useful, the reviewer gets high reputation. This is likely to happen, as our measure for reputation is the count of friends. A reader is more motivated to befriend the contributor of the review when he/she finds the review useful. However, this in itself is a positive outcome of online reputation systems. The need for social approval and the desire to be recognized is probably the strongest motivator for online content providers (in this case, reviewers) to be honest, balanced and forthright in their judgments of service providers, a precursor to useful online content that eventually enhances consumers' purchase decision journeys.

Our results are parallel to the assertions of previous research in this regard.

Surprisingly, this study finds that expertise is negatively correlated with review usefulness. This is in marked contrast to the commonly accepted notion in extant literature that expertise greatly enhances message credibility and persuasiveness ([Belch and Belch 2011](#)). Three possible explanations can be put forward for this anomalous outcome. First, this result could be an artifact stemming from the subjective nature of services considered for this study. As mentioned previously, consumers are typically skeptical of strong claims, especially when they are subjective in nature ([Ford et al. 1990](#)). This effect is magnified because consumers engage in causal attributions ([Laczniak et al. 2001](#)) towards the message source—especially in the context of messages that deviate from the norm. In this study (as our additional analyses have revealed), the fact that reviewers with high expertise tend to write moderately-valenced reviews, and the fact that consumers tend to value extremely valenced reviews may have led to the negative effect. Another counterintuitive explanation, closely related to the first point, is based on the notion of information incongruence between source claims of certainty and perceived expertise. Recent studies ([Karmarkar and Tormala 2010](#)) show that a claim of certainty from a high expertise source can sometimes violate expectations, especially when it comes to judgments that lack an objective scale ([Sniezek and Van Swol 2001](#)). It is possible that the so-called 'expert' reviewers may have laid strong claims even though their perceived expertise may not be that high in the eyes

of the review reader, and this disconnect leads to a negative effect. Third, another effect at play may be the domain depth versus breadth perception (Weiss et al. 2008). Perceived expertise is essentially a heuristic in information evaluation (Petty et al. 1981) that can go either way in terms of persuasion. It is possible that a reviewer with multiple reviews on various businesses may have established/claimed domain breadth but may have not effectively convinced the review reader as to the quality of the reviews, hence the negative effect. From a research point of view, these incongruent findings point to important avenues for future research.

Also, managers of online review sites should be cognizant of the fact that people with greater expertise may not always be the opinion leaders in online communities. It is possible to create systems which allow review seekers to filter reviews based not only on valence but also by using a combination of reviewers' expertise and social background. This will not only help consumers seek information more efficiently but also enhance the trust perceptions of the websites themselves.

The results show that negative reviews are perceived to be more useful than either extremely positive or moderate reviews. This strongly supports the notion of negativity bias. Negativity bias is enhanced in the presence of a large amount of positive information (which is typically the case in online review sites). However, this result should be interpreted with caution because it may be an artifact of several unknown variables, including the consumer's pre-WOM brand affinity, consumption goals (Zhang et al. 2010) and the extent of the deviation of a specific reviewer's rating from all other ratings for a given product. For instance, recent studies (e.g., East and Lomax 2008) find that consumers ignore advice from a negative review if they are very likely to choose a brand. Moreover, consumers are equally likely to ignore positive reviews of products they do not intend to purchase. In this study, the majority of the brands chosen for the study are not very well known (since they are not part of national and regional chains). Therefore, we assume consumers were neutral prior to reading the reviews and, therefore, sought negative reviews to better understand the services.

Surprisingly, word count does not significantly contribute to overall perceptions of usefulness. This is in contrast to many recent eWOM studies (Chevalier and Mayzlin 2006, Mudambi and Schuff 2010) which found a high positive correlation between amount of information in a review and perceived helpfulness. It is generally assumed that the majority of the review/reviewer characteristics (i.e., social information, reputation and review valence) are mere peripheral cues that consumers use to narrow down reviews first, and then they actually read the review text to better understand the nuances of the service provider. Our finding is not in line with these assertions. It is possible that the amount of content in the review functions as a peripheral cue. Previous research in source credibility (Yalch and Elmore Yalch 1984) found that the presentation of quantitative information stimulated subjects to elaborate less on the information quality and rely more on peripheral cues such as source characteristics, whereas less information led to greater elaboration based on the information quality. Similar effects could be at play in our research context. Given the numerous reviews available for every service provider, some consumers are overwhelmed by information and therefore do not even pay attention to long (and seemingly rambling) reviews. These consumers would prefer reviews that are 'short, sweet and to the point'. What could matter more is the argument quality in the reviews (Dillard et al. 2007). That is, how a reviewer presents the right information and argues the key points for or against the service provider is likely to be more useful than the length of the review. In fact, argument quality has been considered an important feature of persuasive messages, both offline and online (Racherla et al. 2012). Future

research should develop methods that reconcile this seemingly immeasurable feature with other features identified in this study.

RQ2. *Does the impact of these factors vary by the type of service that is being considered by consumers?*

The effect of the factors, when compared across the three service categories, showed variation with respect to expertise, reputation, review valence and word count.

Reviewer expertise is valued much more in experiential and credence services than search services, although the effect is greatest in experiential services followed by credence and search services. This could have resulted from the fact that credence services are impossible to evaluate even after gathering information from interpersonal sources. Buyers of credence services not only use interpersonal sources but also rely upon greater amounts of impersonal information from other sources, both offline and online (Mitra et al. 1999). On the other hand, in the case of experiential services, a sufficient amount of information from a socially acceptable source is helpful to consumers making decisions. This finding has important implications for marketing credence-based services via review sites. Managers should appreciate the fact that while recommendation from interpersonal sources is important, the recommendations should also be supported by information that buttresses the reliability and authority of the recommendation and the recommender respectively. It is well known that under conditions of uncertainty, people are more influenced by information from sources with authority and prominence. This principle can be put to good use to increase the effectiveness of C2C recommendation systems.

Another important variation is the non-significance of reviewer rating in experiential services when compared to search and credence services. Experiential services are essentially a function of individual taste. Consumers are often highly confident about their own tastes and subjective evaluations and skeptical about the extreme views of others. Experience goods, such as movies and music, seem to attract reviews from consumers who either love them or hate them, with extremely positive reviews especially common (Ghose and Ipeirotis 2007). Similar conclusions can be drawn from the result that word count shows a negative coefficient for experiential services when compared to search and credence services. Search and credence products entail cognitive involvement and therefore require greater product-related information. As Yaniv (2004) suggest, while the benefits of aggregating and combining information during decision making are theoretically demonstrable and sound for products with search characteristics, the same thinking cannot be applied to experience products.

7. Limitations

This study has several limitations. First, the results are based on the reviews of a single website. It is important for future research to study various service types across other websites (e.g., citysearch.com) to compare and contrast the findings. Also, we intentionally avoided branded service providers that are part of national and regional chains in order to control for consumers' brand affinity. Future studies should consider testing additional variables, such as brands and cost of the services.

Another limitation is the way we operationalize the variables in this study. The study uses objective information from actual reviews as proxy measures for what could be subjective evaluations by consumers. We based this decision on the need to present an analysis that is driven by real information found in the online environment. It would be quite reasonable to question whether proxy measures capture the true nature of consumers who seek information via online reviews. However, the measures used in this study

have been validated across various online settings, so they offer a reasonably clear picture of the underlying constructs.

The dependent variable in this study may be constrained by response bias. Much like the non-response biases seen in customer satisfaction surveys (Peterson and Wilson 1992), considerable under-reporting bias exists in the case of both the reviews and helpful votes (Hu et al. 2009). Consequently, a better measure of perceived usefulness is the ratio of helpful votes to the number of consumers who actually read a review. However, Yelp.com does not provide this statistic, thereby limiting the applicability of the dependent variable. It is important for future research to extend this dependent variable and base the assessment of review credibility on whether the review changed consumers' attitudes about the service and/or affected the consumer's actual purchase behavior.

8. Conclusions

It is our sincere belief that this study is an important step towards developing better measures and methods that can help online information providers better manage online information provision, and thereby reduce consumers' cognitive load. This study contributes to the existing literature in the following ways:

- We consider the recipients' perspective of online consumer reviews. Few studies have explored this interesting aspect. As online consumer reviews become more pervasive, it is time to focus on the quality rather than quantity of the reviews. Building on previous literature, we delineate specific aspects of reviews that consumers typically use to assess the credibility of consumer generated media.
- This study uses data from actual consumer review sites as opposed to methods such as surveys and experimentation used in recent marketing studies (e.g., East and Lomax 2008). While the above approaches do help in approximating online behavior, they do not capture the real behavior of customers who traverse online review sites looking for information. The objective data used in this study fills this gap to an extent.
- We focus exclusively on services, as opposed to the majority of the previous studies that have investigated goods-oriented sites such as eBay and Amazon.com. The findings of this study can help managers create better guidelines to enhance the usability of online review sites depending on the type of service that is being considered by consumers, rather than offering straight-jacket solutions.

References

- Ba, B. S., and Pavlou, P. Evidence of the effect of trust building technology in electronic markets: price premiums and buyer behavior. *MIS Quarterly*, 26, 3, 2002, 243–268.
- Bansal, H., and Voyer, P. Word-of-mouth processes within a services purchase decision context. *Journal of Service Research*, 3, 2, 2000, 166–178.
- Bator, R., and Cialdini, R. The application of persuasion theory to the development of effective proenvironmental public service announcements. *Journal of Social Issues*, 56, 3, 2001, 527–542.
- Bearden, W., and Etzel, M. Reference group influence on product and brand purchase decisions. *Journal of Consumer Research*, 9, 2, 1982, 183–194.
- Belch, G., and Belch, M. *Advertising and Promotion: An Integrated Marketing Communications Perspective*, 9th edition. McGraw-Hill, New York, NY, 2011.
- Bristol, J. Enhanced explanations of word of mouth communications: the power of relationships. *Research in Consumer Behavior*, 4, 1990, 51–83.
- Bronner, F., and de Hoog, R. Consumer-generated versus marketer-generated websites in consumer decision making. *International Journal of Market Research*, 52, 2, 2010, 231–248.
- Buda, R. The interactive effect of message framing, presentation order and source credibility on recruitment practices. *International Journal of Management*, 20, 2, 2003, 156–163.
- Burnkrant, R., and Cousineau, A. Informational and normative social influence in buyer behavior. *Journal of Consumer Research*, 1975, 206–215.
- Cialdini, R. Harnessing the science of persuasion. *Harvard Business Review*, 79, 9, 2001, 72–79.
- Chaiken, S., Liberman, A., and Eagly, A. H. Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman and J. A. Bargh (eds.), *Unintended Thought*, Guilford Press, New York, 2002, 212–252.
- Cheema, A., and Papatla, P. Relative importance of online versus offline information for Internet purchases: product category and Internet experience effects. *Journal of Business Research*, 63, 9–10, 2010, 979–985.
- Chevalier, J., and Mayzlin, D. The effect of word of mouth online: online book reviews. *Journal of Marketing Research*, 43, 3, 2006, 345–354.
- Childers, T., and Rao, A. The influence of familial and peer-based reference groups on consumer decisions. *Journal of Consumer Research*, 19, 2, 1992, 198–211.
- Clemons, E., and Gao, G. Consumer informedness and diverse consumer purchasing behaviors: traditional mass-market, trading down, and trading out into the long tail. *Electronic Commerce Research and Applications*, 7, 2008, 3–17.
- Clemons, E., Gao, G., and Hitt, L. When online reviews meet hyperdifferentiation: a study of the craft beer industry. *Journal of Management Information Systems*, 23, 2, 2006, 149–171.
- Darby, M., and Karni, E. Free competition and the optimal amount of fraud. *The Journal of Law and Economics*, 16, 1, 1973, 67.
- Daft, R. L., and Lengel, R. H. Organizational information requirements, media richness and structural design. *Management Science*, 1986, 554–571.
- De Bruyn, A., and Lilien, G. A multi-stage model of word-of-mouth influence through viral marketing. *International Journal of Research in Marketing*, 25, 3, 2008, 151–165.
- Dellarocas, C., Fan, M., and Wood, C. Self-interest, reciprocity, and participation in online reputation systems. 2003 Workshop in Information Systems and Economics (WISE), Seattle, WA, 2003.
- Deutsch, M., and Gerard, H. A study of normative and informational social influences upon individual judgment. *Journal of abnormal and social psychology*, 51, 3, 1955, 629–636.
- Dillard, J., Shen, L., and Vail, R. Does perceived message effectiveness cause persuasion or vice versa? 17 consistent answers. *Human Communication Research*, 33, 4, 2007, 467–488.
- Dubrovsky, V. J., Kiesler, S., and Sethna, B. N. The equalization phenomenon: status effects in computer-mediated and face-to-face decision-making groups. *Human-Computer Interaction*, 6, 2, 1991, 119–146.
- East, R., and Lomax, W. Measuring the impact of positive and negative word of mouth on brand purchase probability. *International Journal of Research in Marketing*, 25, 3, 2008, 215–224.
- Einwiller, S. The significance of reputation and brand in creating trust between an online vendor and its customers. In O. Petrovic, M. Fallenböck, and C. Kittl (eds.), *Trust in the Network Economy*, Springer-Verlag, Heidelberg, Germany, 2003, 113–127.
- Ekelund, R., Mixon, F., and Ressler, R. Advertising and information: an empirical study of search, experience and credence goods. *Journal of Economic Studies*, 22, 2, 1995, 33–43.
- Fogg, B., Marshall, J., Laraki, O., Osipovich, A., Varma, C., and Fang, N. What makes websites credible? A report on a large quantitative study. *CHI 2001: Human Factors in Computing*, 2001, 61–68.
- Ford, G., Smith, D., and Swasy, J. Consumer skepticism of advertising claims: testing hypotheses from economics of information. *Journal of Consumer Research*, 16, 4, 1990, 433–441.
- Forman, C., Ghose, A., and Goldfarb, A. Examining the relationship between reviews and sales: the role of reviewer identity disclosure in electronic markets. *Information Systems Research*, 19, 3, 2008, 291–313.
- Ghose, A., and Ipeirotis, P. Designing novel review ranking systems: predicting the usefulness and impact of reviews. In *ICCE 2007*, Minneapolis, MN, 2007.
- Gilly, M., Graham, J., Wolfenbarger, M., and Yale, L. A dyadic study of interpersonal information search. *Journal of the Academy of Marketing Science*, 26, 2, 1998, 83.
- Gruen, T., Osmonbekov, T., and Czaplewski, A. EWOM: the impact of customer-to-customer online know-how exchange on customer value and loyalty. *Journal of Business Research*, 59, 4, 2006, 449–456.
- Gupta, P., and Harris, J. How e-WOM recommendations influence product consideration and quality of choice: a motivation to process information perspective. *Journal of Business Research*, 63, 9–10, 2010, 1041–1049.
- Guadagno, R. E., and Cialdini, R. Online persuasion: an examination of gender differences in computer-mediated interpersonal influence. *Group Dynamics: Theory, Research, and Practice*, 6, 1, 2002, 38–46.
- Guéguen, N., and Jacob, C. Social presence reinforcement and computer-mediated communication: the effect of the solicitor's photography on compliance to a survey request made by E-mail. *CyberPsychology & Behavior*, 5, 2, 2002, 139–142.
- Hovland, C., Janis, I., and Kelley, H. *Communication and Persuasion: Psychological Studies of Opinion Change*. Yale University Press, New Haven, CT, 1954.
- Hu, N., Zhang, J., and Pavlou, P. Overcoming the J-shaped distribution of product reviews. *Communications of the ACM*, 52, 10, 2009, 144–147.
- Jain, S., and Posavac, S. Prepurchase attribute verifiability, source credibility, and persuasion. *Journal of Consumer Psychology*, 2001, 169–180.
- Janis, I., and Hovland, C. *Personality and Persuasibility*. Yale University Press, New Haven, CT, 1959.
- Jeppesen, L., and Frederiksen, L. Why do users contribute to firm-hosted user communities? *Organization Science*, 17, 1, 2006, 45–63.
- Karmarkar, U., and Tormala, Z. Believe me, I have no idea what I'm talking about: the effects of source certainty on consumer involvement and persuasion. *Journal of Consumer Research*, 36, 6, 2010, 1033–1049.

- Klayman, J., and Ha, Y. Hypothesis testing in rule discovery: strategy, structure, and content. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 15, 4, 1989, 596–604.
- Krishnan, B. C., and Hartline, M. D. Brand equity: is it more important in services? *Journal of Services Marketing*, 15, 5, 2001, 328–342.
- Laczniak, R., DeCarlo, T., and Ramaswami, S. Consumers' responses to negative word-of-mouth communication: an attribution theory perspective. *Journal of Consumer Psychology*, 11, 1, 2001, 57–73.
- Lerner, J., Pathak, P., and Tirole, J. The dynamics of open-source contributors. *The American Economic Review*, 96, 2, 2006, 114–118.
- Libai, B., Bolton, R., Bugel, M., Gotz, O., and Risselada, H. Customer-to-customer interactions: broadening the scope of word of mouth research. *Journal of Service Research*, 13, 3, 2010, 267.
- Lim, B., and Chung, C. The impact of word-of-mouth communication on attribute evaluation. *Journal of Business Research*, 64, 2011, 18–23.
- Maddux, J., and Rogers, R. Effects of source expertness, physical attractiveness, and supporting arguments on persuasion: a case of brains over beauty. *Journal of Personality and Social Psychology*, 39, 2, 1980, 235–244.
- Mak, B., Schmitt, B., and Lyttingen, K. User participation in knowledge update of expert systems. *Information & Management*, 32, 2, 1997, 55–63.
- Miller, C. The review site Yelp draws some outcries of its own. *New York Times*, 2009.
- Mitchel, A., and Dacin, P. The assessment of alternative measures of consumer expertise. *Journal of Consumer Research*, 23, 3, 1996, 210–219.
- Mitra, K., Reiss, M., and Capella, L. An examination of perceived risk, information search and behavioral intentions in search, experience and credence services. *Journal of Services Marketing*, 13, 3, 1999, 208–228.
- Mizerski, R. An attribution explanation of the disproportionate influence of unfavorable information. *Journal of Consumer Research*, 9, 3, 1982, 301–310.
- Mudambi, S., and Schuff, D. What makes a helpful online review? *MIS Quarterly*, 34, 1, 2010, 185–200.
- Murray, K. A test of services marketing theory: consumer information acquisition activities. *The Journal of Marketing*, 1991, 10–25.
- Newman, J. Cornell software learns how to spot fake online reviews. *PCWorld*, 27 July, 2011.
- Ostrom, A., and Iacobucci, D. Consumer trade-offs and the evaluation of services. *The Journal of Marketing*, 59, 1, 1995, 17–28.
- Pavlou, P., and Dimoka, A. The nature and role of feedback text comments in online marketplaces: implications for trust building, price premiums, and seller differentiation. *Information Systems Research*, 17, 4, 2006, 392–414.
- Peterson, R., and Wilson, W. Measuring customer satisfaction: fact and artifact. *Journal of the Academy of Marketing Science*, 20, 1, 1992, 61–71.
- Petty, R., and Cacioppo, J. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. Springer-Verlag, New York, 1986.
- Petty, R., Cacioppo, J., and Goldman, R. Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41, 5, 1981, 847.
- Racherla, P., Mandviwalla, M., and Connolly, D. Factors affecting consumers' trust in online product reviews. *Journal of Consumer Behavior*, 11, 2, 2012, 94–104.
- Resnick, P., Zeckhauser, R., Friedman, E., and Kuwabara, K. Reputation Systems. *Communications of the ACM*, 43, 12, 2000, 45–48.
- Rieh, S. Judgment of information quality and cognitive authority in the Web. *Journal of the American Society for Information Science and Technology*, 53, 2, 2002, 145–161.
- Schiffman, L., and Kanuk, L. *Consumer Behavior*. Prentice Hall, Upper Saddle River, NJ, 1997.
- Schein, A. Yelp! Inc. Hoover's Company Records, 159520. Retrieved November 21, 2011, from Hoover's Company Records.
- Schlosser, A. Posting versus lurking: communicating in a multiple audience context. *Journal of Consumer Research*, 32, 2, 2005, 260–265.
- Sen, S., and Lerman, D. Why are you telling me this? An examination into negative consumer reviews on the web. *Journal of Interactive Marketing*, 21, 4, 2007, 76–94.
- Senecal, S., and Nantel, J. The influence of online product recommendations on consumers' online choices. *Journal of Retailing*, 80, 2, 2004, 159–169.
- Shelat, B., and Egger, F. What makes people trust online gambling sites? Conference on Human Factors in Computing Systems, 2002, 852–853.
- Smith, M., and Brynjolfsson, E. Consumer decision making at an Internet shopbot: brand still matters. *The Journal of Industrial Economics*, 49, 4, 2001, 541–558.
- Smith, D., Menon, S., and Sivakumar, K. Online peer and editorial recommendations, trust, and choice in virtual markets. *Journal of Interactive Marketing*, 19, 3, 2005, 15–37.
- Snizek, J., and Van Swol, L. Trust, confidence, and expertise in a judge-advisor system. *Organizational Behavior and Human Decision Processes*, 84, 2, 2001, 288–307.
- Streitfeld, D. In a race to out-rave, 5-star web reviews go for \$5. *The New York Times*. Available at <http://nyti.ms/nib6QL>. Retrieved on 19 August, 2011.
- Stell, R., and Donoho, C. Classifying services from a consumer perspective. *Journal of Services Marketing*, 10, 6, 1996, 33–44.
- Sussman, S., and Siegal, W. Informational influence in organizations: an integrated approach to knowledge adoption. *Information Systems Research*, 14, 1, 2003, 47–65.
- Thorbjornsen, H., Supphellen, M., Nysveen, H., and Egil, P. Building brand relationships online: a comparison of two interactive applications. *Journal of Interactive Marketing*, 16, 3, 2002, 17–34.
- Tidwell, L., and Walther, J. Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: getting to know one another a bit at a time. *Human Communication Research*, 28, 3, 2002, 317–348.
- Walther, J., Slovacek, C., and Tidwell, L. Is a picture worth a thousand words? *Communication Research*, 28, 1, 2001, 105.
- Wangenheim, F., and Bayon, T. Satisfaction, loyalty and word of mouth within the customer base of a utility provider: differences between stayers, switchers and referral switchers. *Journal of Consumer Behaviour*, 3, 3, 2004, 211–220.
- Wei, Z., and Watts, S. Capitalizing on content: Information adoption in two online communities. *Journal of the Association for Information Systems*, 9, 2, 2008, 72–93.
- Weiss, A., Lurie, N., and MacInnis, D. Listening to strangers: whose responses are v, how valuable are they, and why? *Journal of Marketing Research*, 45, 4, 2008, 425–436.
- Wilson, A., Zeithaml, V., Bitner, M., and Gremler, D. *Services Marketing: Integrating Customer Focus Across the Firm*. McGraw-Hill, New York, 2008.
- Yalch, R., and Elmore Yalch, R. The effect of numbers on the route to persuasion. *Journal of Consumer Research*, 1984, 522–527.
- Yang, J., and Mai, E. Experiential goods with network externalities effects: an empirical study of online rating system. *Journal of Business Research*, 63, 9–10, 2010, 1050–1057.
- Yaniv, I. The benefit of additional opinions. *Current Directions in Psychological Science*, 13, 2, 2004, 75.
- Zhang, J., Craciun, G., and Shin, D. When does electronic word-of-mouth matter? A study of consumer product reviews. *Journal of Business Research*, 63, 12, 2010, 1336–1341.