

Intentions to Use the Yelp Review Website and Purchase Behavior after Reading Reviews

Joshua Fogel¹ and Samson Zachariah²

¹ Brooklyn College of the City University of New York, Department of Business Management, Brooklyn, NY, USA, jfogel@brooklyn.cuny.edu

² Brooklyn College of the City University of New York, Department of Business Management, Brooklyn, NY, USA, smsnzach94@gmail.com

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Abstract

Yelp is a popular online consumer review website. The limited scholarly literature on Yelp indicates that under certain conditions consumers will value the review and recommend the reviewed vendor to others. We study a number of variables to determine associations with intentions to use Yelp and also behavior of use of a service or purchase of a product after reading Yelp reviews. College students (n=617) were surveyed about demographics, trust, knowledge about online review fraud, and Internet experience. Our results found that increased brand trust and increased number of reviews read were each associated with both increased intentions and behavior. Correct knowledge of online review fraud and those who previously wrote Yelp reviews were each associated with increased behavior. We recommend that companies can benefit by claiming the website of their company on Yelp. Brand managers or e-commerce managers should respond to the negative reviews posted on Yelp in order to reassure those who read the reviews about the trustworthiness of the company. Companies should consider trust-building approaches when responding to negative comments to reassure the consumer that the company is a reputable company and would not engage in fraudulent practices of posting fraudulent positive reviews.

Keywords: Yelp, Online consumer reviews, Electronic word of mouth, Intentions, Behaviors, Trust, Knowledge, Internet experience

1 Introduction

Consumers perceive online reviews as useful [33]. Different types of online reviews have different influences on consumer purchase decisions. One study reports that 90% indicate that positive online consumer reviews influence their purchase decisions while slightly less at 80% indicate that negative online consumer reviews influence their purchase decisions [15]. Companies that are rated online often are concerned about their online consumer reviews and develop different approaches toward responding to negative consumer reviews. Apology responses to negative consumer reviews are deemed more effective than denial responses to negative consumer reviews [36]. On websites that companies control, companies retain the right to remove consumer reviews [45]. Some companies even hire others to post positive online reviews about the company [39].

Online reviews can be posted on company websites rating particular products or on websites that rate products or companies that are not owned or controlled by the company that is being rated. Also, there are different types of products that can be rated on recommendation websites. This can include search products and experience products. Search products can be inspected before purchase such as an electronic appliance. Experience products cannot be inspected before purchase such as a repair service. Consumers are more influenced by online ratings for experience products than search products [43]. The objective of this study is to understand and explain consumer motivation for intention and use purchase behavior after reading reviews posted on a review website for experience products on a review website not owned by the company being rated. Yelp is an example of a popular online consumer review website that is not owned or controlled by the company that is being rated. Yelp is also a popular online consumer review website that focuses on experience product reviews. There appears to be limited scholarly research about online consumer behavior for consumer reviews on Yelp. The main work appears to be two studies. One study about online restaurant reviews on Yelp found that increased belief that online reviews were written by restaurant customers was associated with consumers posting positive ratings for the restaurant and that consumers were more likely to recommend the restaurant to others [14]. Another study of Yelp found that consumer reviews that contained content indicating that the review was written very close to the time of product consumption was associated with increased value for positive reviews than for negative reviews [13]. One major gap missing is that none of these studies focus on how reading online Yelp reviews impact consumer behavior related to future purchases after reading these reviews.

The purpose and research objective of this paper is twofold. One aim is to study intentions to use the Yelp consumer review website. Another aim is to study consumer purchase behavior after reading Yelp reviews. The methodology and study framework used is to consider relevant variables from a number of areas as predictor variables for the analyses. Demographic variables consist of age, sex, race/ethnicity, and born in the United States. Trust variables consist of brand trust, search engine optimization trust, positive word trust, and negative word trust. Knowledge about online review fraud variables consist of knowledge topics about negative ratings, a few reviews, many reviews, reviews for branded chains, and reviews for a company claimed page. Previous Internet experience variables consist of number of online reviews read from review-based websites, perception of percentage of online reviews from review-based websites believed to be written by consumers, previously wrote a review on Yelp, never read a review on Yelp, and hours of weekly Internet use. Theory of planned behavior variables consist of attitudes about reading reviews from review-based websites, social norms about reading reviews from review-based websites, behavioral control for decision-making after reading reviews from review-based websites, and in the consumer purchase behavior outcome also including intentions to use the Yelp consumer review website. A multivariate framework is used to consider the impact of these variables when included in the same analytical model.

This paper provides several contributions. First, research papers often study intentions but do not study behavior [26]. However, intentions do not always translate into behavior. This paper helps understand not only consumer intentions for using the Yelp consumer review website but also consumer purchase behavior after reading Yelp reviews. Second, this paper provides guidance on topics of importance for company brand managers and e-commerce managers on how online consumer reviews are perceived and reacted upon by potential consumers. Third, this paper provides applied recommendations for company brand managers and e-commerce managers on how best to interact with the Yelp consumer review website.

This paper has several sections. We review the literature on potentially relevant variables that have either been studied with online review websites in general or more specifically with Yelp. We focus on the following areas of demographics, trust, knowledge about online review fraud, previous Internet experience, and our theoretical framework of the theory of planned behavior. The Method section describes in detail the specific approaches used to measure the relevant variables considered as predictors. The Results section includes both univariate and multivariate analyses. The Discussion section compares the study findings to the relevant literature and concludes with guidance and applied recommendations for company brand managers and e-commerce managers.

2 Literature Review

Online consumer review websites have positive, negative, and neutral reviews. The main reason why people write

and post a review on an online consumer review website is because they are either extremely satisfied or extremely dissatisfied with the product [4], [27]. With regard to ownership type of online consumer review website and consumer product judgment, an experimental study of apartment reviews found that consumer product judgment for attitudes, intentions to rent, and willingness to recommend did not differ for either positive or negative reviews posted on a company owned website versus either positive or negative reviews posted on an independent online consumer review website [30]. Seven themes are reported for reading online consumer reviews. These themes are: decision involvement, product involvement, economic involvement, consumer empowerment, self-involvement, social involvement, and site involvement [8]. Consumers rate other online consumer reviews as more important than advertising [20].

There are a number of different online consumer review websites. Yelp is currently the most popular online consumer review website used for local business reviews and recommendations [7]. Yelp is an online consumer review website for shopping, restaurants, home and other services containing more than 83 million reviews [49]. The most important reason for using Yelp is for information seeking, followed by other reasons of entertainment, convenience, interpersonal utility, and to pass time [21]. Yelp is important for facilitation of e-commerce as consumers can read reviews on Yelp before deciding upon whether to purchase from that vendor. Yelp directly facilitates e-commerce with the option for companies to pay for Yelp Ads which includes targeted local advertising when consumers search for a product [50]. Also, Yelp directly facilitates e-commerce with the option for companies to pay for a weblink on their Yelp review page where consumers can use Yelp to directly order the product such as for restaurants or tours or to request a quote such as for a repair. The uniqueness of Yelp being the most popular online consumer review website along with the limited published research on Yelp calls for the need for research to understand variables associated with intentions for using the Yelp consumer review website and also consumer purchase behavior after reading Yelp reviews.

2.1 Demographics

Demographic factors are potentially relevant for understanding use of online review websites. There are age differences for use of online word-of-mouth where those younger than age 40 do so more often than those above age 40 [37]. Race/ethnicity is extensively studied for understanding marketing and consumer behavior [24]. There are racial/ethnic differences for online restaurant reviews where African Americans have more positive attitudes toward a restaurant after reading positive online reviews from other African Americans while there is no difference in attitudes for Whites after reading positive online reviews from other Whites [16]. Online reviews can have different influences by sex as women were more influenced for purchase intentions by both negative and positive reviews as compared to men [3]. Culture can impact the type of online review written. A study comparing online review content of those from the United States of America and those from China found that Americans have longer reviews and a greater number of direct recommendations than Chinese while Chinese have greater content on website customer service and product packaging than Americans [29]. We hypothesize:

H1a: Demographic factors of younger age, female sex, non-white race/ethnicity, and born in the United States are positively associated with intention to use the online review website of Yelp.

H1b: Demographic factors of younger age, female sex, non-white race/ethnicity, and born in the United States are positively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp.

2.2 Trust

Trust in a service, business, or product can potentially impact consumer interest in using a service, business, or product. With regard to online reviews, brand trust reliability that the brand can satisfy consumer needs mediates the relationship of reading online reviews with willingness to buy the product [12]. Both increased argument quality content of an online review and increased perceived background similarity of the online reviewer are each associated with increased trust in an online review [42]. In a study of Yelp restaurant reviews, negative reviews received a greater number of useful votes than positive reviews. However, if the review was written very close to the time of product consumption, then positive reviews were associated with increased value than for negative reviews [13]. We hypothesize:

H2a: Trust is positively associated with intention to use the online review website of Yelp.

H2b: Trust is positively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp.

2.3 Knowledge about Online Review Fraud

Although consumers value online reviews, many consumers are not aware that many online reviews can be bogus [35]. Number of reviews posted is related to review fraud with a greater number of reviews associated with decreased fraud while a lesser number of reviews is associated with increased fraud [34]. Knowledge about review fraud influences the impact of mixed negative and positive reviews where those knowledgeable about review fraud

are not persuaded by the one negative review that differs from two positive reviews. However, those not knowledgeable about review fraud are persuaded by the one negative review that differs from two positive reviews [5]. Although consumers are aware of review fraud, they only partially consider review fraud and vendors typically have the upper hand and continue to have online sales [22]. We hypothesize:

H3a: Knowledge about online review fraud is positively associated with intention to use the online review website of Yelp.

H3b: Knowledge about online review fraud is positively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp.

2.4 Internet Experience

Consumer experience with the Internet potentially impacts how a consumer will react and respond to online review website content. Increased number of available online reviews is associated with increased consumer intention to purchase a product [31]. Many consumers perceive as useful those reviews that are first-time reviews by a rater for an establishment [46]. It is possible that increased perception of online reviews from review-based websites believed to be written by consumers would also be perceived as useful. Reading online reviews about automobiles is associated with increased purchase intention for automobiles [25]. A logical corollary that is possible is that not only reading but writing a review would be associated with increased intentions. Also, increased hours of Internet use may be associated with increased usefulness of online review based websites due to valuing and/or spending time in an Internet environment. It is likely that similar patterns to the studies reviewed above or ideas suggested above could occur with Yelp. We hypothesize:

H4a: Previous Internet experience of number of online reviews read from review-based websites, perception of percentage of online reviews from review-based websites believed to be written by consumers, previously wrote a review on Yelp, and hours of weekly Internet use are positively associated with intention to use the online review website of Yelp while never read a review on Yelp is negatively associated with intention to use the online review website of Yelp.

H4b: Previous Internet experience of number of online reviews read from review-based websites, perception of percentage of online reviews from review-based websites believed to be written by consumers, previously wrote a review on Yelp, and hours of weekly Internet use are positively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp while never read a review on Yelp is negatively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp.

2.5 Theory of Planned Behavior

The theory of planned behavior explains that the performance of a particular behavior is influenced by intention to perform the behavior. Intentions are influenced by three factors of attitudes, subjective norms, and perceived behavioral control [1]. A review article summarizes that the theory of planned behavior is a very popular theory used for understanding online consumer behavior [10]. The theory of planned behavior is used for studying social networking websites. Greater attitudes about clicking on an advertisement on a social networking website were associated with both greater intentions about clicking on an advertisement on a social networking website and also behavior of clicking on an advertisement on a social networking website. Greater subjective norms about clicking on an advertisement on a social networking website were associated with both greater intentions about clicking on an advertisement on a social networking website and use of a social networking website. Greater perceived behavioral control about clicking on an advertisement on a social networking website were associated with both greater intentions about clicking on an advertisement on a social networking website and use of a social networking website. Greater intentions to click on an advertisement on a social networking website were associated with greater behavior of clicking on an advertisement on a social networking website [19]. Increased attitudes and increased perceived behavioral control were each associated with increased participation in virtual communities while subjective norms did not have any association [32]. The theory of planned behavior is also studied with regard to online reviews. For example, reading online travel reviews is associated with greater attitudes, greater subjective norms, and greater perceived behavioral control about the travel destination; these three factors are also associated with greater intentions to travel to the destination [26]. Chinese consumers are influenced by social norms when rating movies online and both their positive and negative ratings are within the boundaries of the general consensus for other ratings [28]. The patterns seen for the theory of planned behavior for attitudes, subjective norms, and perceived behavioral control from these relevant studies suggest that similar positive association patterns could occur with Yelp. Specifically, increased attitudes would enable increased intentions to use Yelp and also increased behavior of use of a service or purchase of a product after reading reviews on Yelp. Increased subjective norms would enable increased intentions to use Yelp and also increased behavior of use of a service or purchase of a product after reading reviews on Yelp. Increased perceived behavioral control would enable increased intentions to use Yelp and also increased behavior of use of a service or purchase of a product after reading reviews on Yelp. We use the theory of planned behavior as the theoretical framework for

guiding our study. We hypothesize:

H5a: Factors of the theory of planned behavior of attitudes, subjective norms, and perceived behavioral control about using online review websites are each positively associated with intentions to use the online review website of Yelp.

H5b: Factors of the theory of planned behavior of attitudes, subjective norms, perceived behavioral control, and intentions about using online review websites are each positively associated with the behavior of use of a service or purchase of a product after reading reviews on Yelp.

3 Materials and Methods

This section contains content on the participant data collection approach. The research instrument with the dependent and independent variables is described. The statistical analytic approach is provided along with the descriptive statistics for the dependent and independent variables.

3.1 Data

We approached 745 students to participate in our survey at a public college located in New York City. There were 60 students declining to participate, 23 surveys collected were invalid, and 3 did not complete the outcome questions. We calculated a response rate of 88.5% from the 659 completed surveys $[(659/745) * 100\%]$. Also 42 people above the age of 36 were excluded from our sample in order to maintain a sample of young adults. From the 617 remaining surveys, we analyzed the data. The survey was conducted from December 2013 through January 2014. This study was ethically approved by the college Human Research Protection Program. All participants provided informed consent.

Anonymous participants completed surveys before, during, or after class. A description of three consumer review websites of Yelp, TripAdvisor, and UrbanSpoon began the survey. Participants were then asked to fill out the survey for topics about these websites. The analyses in this manuscript focus on Yelp.

3.2 Research Instrument

This subsection describes the research instrument with the dependent and independent variables.

3.2.1 Dependent Variables

Table 1 lists the dependent variables, the way they are measured, and the sources for these variables. These variables were the intentions scale and the behavior of after reading reviews about a merchant or vendor on Yelp, these reviews resulted in my use of a service or purchase of a product.

3.2.2 Independent Variables

Table 2 lists the independent variables, the way they are measured, and the sources for these variables. Based upon the Theory of Planned Behavior, there were the attitudes scale, the social norms scale, and separate behavioral control questions due to poor Cronbach alpha. Trust measures consisted of the brand trust scale, search engine optimization trust scale, and the word use trust questions. There also were knowledge questions and Internet experience questions. Demographic questions of age, sex, race/ethnicity, and born in the United States are included as a note underneath Table 2.

Table 1: Dependent variables in research instrument

Question	Scale for Answer	Literature Source
<i>Intentions (total sum score for 3 questions; Cronbach alpha=0.93)</i>	Likert	Based upon manual in [18]
1) I expect to read reviews about a merchant or vendor on Yelp to influence my decision about whether to use a service or purchase a product	1=strongly disagree to 7=strongly agree	
2) I want to read reviews about a merchant or vendor on Yelp to influence my decision about whether to use a service or purchase a product	1=strongly disagree to 7=strongly agree	
3) I intend to read reviews about a merchant or vendor on Yelp to influence my decision about whether to use a service or purchase a product	1=strongly disagree to 7=strongly agree	
<i>Behavior</i>		
After reading reviews about a merchant or vendor on Yelp, these reviews resulted in my use of a service or purchase of a product.	0=no, 1=yes	Original

Note: In the analyses for behavior, intentions was included as an independent variable

Table 2: Independent variables in research instrument

Question	Scale for Answer	Literature Source
<i>Attitudes (total sum score for 4 questions; Cronbach alpha=0.75)</i> Reading reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon is:	Likert	Based upon manual in [18]
1) harmful, beneficial	1=harmful to 7=beneficial	
2) good, bad [reverse coded]	1=good to 7=bad	
3) pleasant (for me), unpleasant (for me) [reverse coded]	1=pleasant to 7=unpleasant	
4) worthless, useful	1=worthless to 7=useful	
<i>Social Norms (total sum score for 3 questions; Cronbach alpha=0.64)</i>	Likert	Based upon manual in [18]
1) It is expected of me that I read reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon.	1=strongly disagree to 7=strongly agree	
2) I feel under social pressure to read reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon.	1=strongly disagree to 7=strongly agree	
3) Most people who are important to me want me to read reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon.	1=strongly disagree to 7=strongly agree	
<i>Behavioral Control (4 separate questions)</i>	Likert	Based upon manual in [18]
1) I am confident that if I wanted to I could make a decision after reading reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or Urban Spoon.	1=strongly disagree to 7=strongly agree	
2) Whether I make a decision about a merchant or vendor after reading reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or Urban Spoon is entirely up to me.	1=strongly disagree to 7=strongly agree	
3) To decide about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or Urban Spoon is beyond my control. [reverse coded]	1=strongly disagree to 7=strongly agree	
4) For me to make a decision about a merchant or vendor after reading reviews about a merchant or vendor on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon is: [reverse coded]	1=easy= to 7=difficult	
<i>Brand Trust (total sum score for 4 questions; Cronbach alpha=0.78)</i>	Likert	Based on [47]
1) I trust online reviews that I read on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon about merchants or vendors.	1=strongly disagree to 5=strongly agree	
2) Online reviews that I read on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon about merchants or vendors meet my expectations.	1=strongly disagree to 5=strongly agree	
3) I feel confident in online reviews that I read on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon about merchants or vendors.	1=strongly disagree to 5=strongly agree	
4) Online reviews that I read on online review-based websites such as Yelp, TripAdvisor, or UrbanSpoon about merchants or vendors never disappoint me.	1=strongly disagree to 5=strongly agree	
<i>Search Engine Optimization (SEO) Trust (total sum score for 4 questions; Cronbach alpha=0.76)</i>	Likert	Based on [2], [44]
1) The rating score (e.g., from 1 to 5 or positive/negative rating) from individual reviewers for a vendor or merchant influences me to trust the online reviews for a vendor or merchant.	1=strongly disagree to 5=strongly agree	
2) The total number of available reviews for a vendor or merchant influences me to trust the online reviews for a vendor or merchant.	1=strongly disagree to 5=strongly agree	
3) The average rating score (e.g., from 1 to 5 or percentage positive rating), for a vendor or merchant influences me to trust the online reviews for a vendor or merchant.	1=strongly disagree to 5=strongly agree	

<i>Table 2: continuation</i>		
4) The number of recent reviews within the past month for a vendor or merchant influences me to trust the online reviews for a vendor or merchant.	1=strongly disagree to 5=strongly agree	
<i>Word Use Trust (2 separate questions)</i>	Likert	Based on [35]
1) Use of positive words such as love, nice, or sweet makes an online review more trustworthy.	1=strongly disagree to 5=strongly agree	
2) Use of negative words such as ugly, dumb, or hate makes an online review more trustworthy.	1=strongly disagree to 5=strongly agree	
<i>Knowledge (5 separate questions)</i>		Based on [34]
1) A vendor or merchant that has a large number of low star or negative ratings on an online review-based website has increased risk for fraud with positive reviews.	0=no, 1=yes Correct answer=yes	
2) A vendor or merchant with very few reviews on an online review-based website has increased risk for fraud with positive reviews.	0=no, 1=yes Correct answer=yes	
3) A vendor or merchant with many reviews on an online review-based website has decreased risk for fraud with positive reviews.	0=no, 1=yes Correct answer=yes	
4) A vendor or merchant that is part of a branded chain (and is not an independent establishment) has decreased risk for fraud with positive reviews on an online review-based website.	0=no, 1=yes Correct answer=yes	
5) A vendor or merchant with a claimed page on an online review-based website where the vendor or merchant can respond to consumer comments, add photos, and post information about the service establishment has increased risk for fraud with positive reviews.	0=no, 1=yes Correct answer=yes	
<i>Internet Experience (5 separate questions)</i>		
1) How many online reviews do you read from review-based websites such as Yelp, Trip Advisor, or Urban Spoon, before visiting a new vendor or merchant?	number	Based on [44]
2) What percentage of online reviews from review-based websites such as Yelp, TripAdvisor, or Urban Spoon do you believe are those that were really composed by consumers?	percentage	Based on [44]
3) I previously wrote a review on Yelp	0=no, 1=yes	Original
4) I never read a review on Yelp	0=no, 1=yes	Original
5) Approximately how many hours do you use the Internet each week?	number	Original

Note: In the analyses for behavior, intentions was included as an independent variable. Demographic variables included age (years), sex (0=man, 1=woman), race/ethnicity (0=white, 1=African American, 2=Hispanic American, 3=Asian/Asian American, 4=South Asian [India, Pakistan, surrounding areas], and 5=other). Also, participants were asked if they were born in the United States (0=no, 1=yes)

3.3 Statistical Analysis

Descriptive statistics of mean and standard deviation were used for the continuous variables and percentage and frequency for the categorical variables. Linear regression analysis studied the dependent variable outcome of intentions to use Yelp. Independent variable predictors included the theory of planned behavior variables (attitudes, social norms, and behavioral control), demographic variables, the trust variables, the knowledge variables, and the Internet experience variables. Logistic regression analysis studied the behavior dependent variable outcome of reading reviews on Yelp resulting in use of a service or purchase of a product. Independent variable predictors included all the above variables used for linear regression and also included intentions. For both the linear and logistic regression analyses, univariate analysis were initially conducted. Only those variables statistically significant in the univariate analysis were then simultaneously included in the multivariate analysis. The variable of number of reviews read before trying a new vendor had a skewed distribution. As there were responses of zero precluding a logarithmic transformation, the value of 1 was added to all participants and then the variable was logarithmic transformed. All analyses used IBM SPSS Statistics version 23 [23]. All p-values were two-tailed.

Table 3: Descriptive statistics for the independent variables

Variable	Mean		Percentage	Frequency
<i>Demographics</i>				
Age (years)	22.7	3.35		---
Sex				
Woman	---	---	58.3%	360
Missing			0.5%	3
Race/Ethnicity				
White			35.2%	217
African American			11.3%	70
Hispanic American			13.6%	84
Asian/Asian American	---	---	23.0%	142
Southeast Asian			6.8%	42
Other			8.6%	53
Missing			1.5%	9
Born in United States				
Yes	---	---	56.6%	349
Missing			0.6%	4
<i>Theory of Planned Behavior</i>				
Attitudes	19.7	4.35		
Social Norms	10.3	3.68		
Confidence in decision making based on reviews and review websites	4.6	1.39		
Easiness of decision making after reading reviews	4.4	1.40		
Control over decision-making after reading reviews	4.6	1.56		
Decision-making after reading reviews entirely up to me	5.1	1.55		
<i>Trust</i>				
Brand Trust	13.2	2.52		
SEO Trust	14.2	2.61		
Use of positive words makes an online review more trustworthy	3.1	1.03		
Use of negative words makes an online review more trustworthy	3.0	1.09		
<i>Knowledge</i>				
Knowledge of review fraud based on number of negative reviews				
Yes	---	---	57.1%	352
Missing			1.8%	11
Knowledge of review fraud based on few reviews				
Yes	---	---	42.6%	263
Missing			1.8%	11
Knowledge of review fraud based on many reviews				
Yes	---	---	54.3%	335
Missing			2.3%	14
Knowledge of review fraud for vendor part of branded chain				
Yes	---	---	52.0%	321
Missing			2.9%	18
Knowledge of review fraud by vendors who can respond to consumer comments				
Yes	---	---	34.5%	213
Missing			3.2%	20
<i>Internet Experience</i>				
Previously wrote Yelp reviews				
Yes	---	---	19.9%	123
Missing			0.3%	2
Never read review on Yelp				
Yes	---	---	26.1%	161
Missing			0.6%	4
Number of reviews read before trying a new vendor	6.6	8.57	---	---
Percentage of reviews believed to be real	55.6	7.46	---	---
Internet hours (weekly)	27.1	4.23	---	---

Note: SD=standard deviation, SEO=search engine optimization. In the analyses for behavior, intentions was included as an independent variable and see Table 4 for descriptive statistics.

3.4 Descriptive Statistics

Table 3 shows the descriptive statistics for the independent variables. Mean age was almost 23 years. There were slightly more women than men. With regard to race/ethnicity, slightly more than one-third were white, with non-white of Asian/Asian American, African Americans and Hispanic Americans at more than one-tenth each. Slightly more than half were born in the United States. The attitudes towards reading reviews about a merchant or vendor from Yelp was above the midpoint in the direction toward more positive attitudes. Social norms influencing decisions to read reviews on Yelp were less than the midpoint toward strongly disagree. All four behavioral control items were above the midpoint in the direction of strongly agree. Both brand trust and SEO trust were above the midpoint towards strongly agree. Both positive and negative words making the review more trustworthy were rated neutral. Slightly more than half had correct knowledge of review fraud based on: number of negative reviews, many reviews, and for vendors part of a branded chain. The other knowledge of review fraud based on: few reviews and vendors who can respond to consumer comments had below half with correct responses. Less than one-fifth previously wrote Yelp reviews. Slightly more than one-quarter never read a review on Yelp. Participants read almost seven reviews before they tried a new vendor. Participants believed that more than 50% of reviews were real reviews made by consumers. Mean Internet use was more than one whole day per week.

Table 4 shows the descriptive statistics for the dependent variables. Intentions were above the midpoint in the direction of strongly agree. More than 62% indicated yes to the behavior that after reading reviews about a merchant or vendor on Yelp, these reviews resulted in the use of a service or purchase of a product.

Table 4: Descriptive statistics for the dependent variables

Variable	Mean	SD	Percentage	Frequency
Intentions	13.9	4.20		
Behavior				
Yes			62.1%	383
Missing			1.5%	9

Note: SD=standard deviation

4 Results

Table 5 shows linear regression analyses for intentions to use Yelp. In the univariate analyses, with regard to demographics, only Asian/Asian American race/ethnicity was statistically significantly associated with increased intentions to use Yelp. With regard to the theory of planned behavior variables, increased attitudes, increased social norms, and increased values for three of the four behavioral control items were each statistically significantly associated with increased intentions to use Yelp. With regard to trust, increased brand trust, increased SEO trust, increased positive word trust, and increased negative word trust were each statistically significantly associated with increased intentions to use Yelp. Correct knowledge of review fraud based on many reviews, by vendors part of branded chain, and by vendors who can respond to consumer comments were each statistically significantly associated with increased intentions to use Yelp. Internet experience variables of those who previously wrote Yelp reviews, increased number of reviews read before trying a new vendor, increased percentage of reviews believed to be real and increased Internet hours were each statistically significantly associated with increased intentions to use Yelp. Never read a Yelp review was statistically significantly associated with decreased intentions to use Yelp.

In the multivariate analysis, with regard to demographics, both Asian/Asian American race/ethnicity and other race/ethnicity were each statistically significantly associated with increased intentions to use Yelp. With regard to the theory of planned behavior variables, increased attitudes, increased social norms, and increased values for two of the four behavioral control items were each statistically significantly associated with increased intentions to use Yelp. With regard to trust, increased brand trust and increased SEO trust were each statistically significantly associated with increased intentions to use Yelp. None of the knowledge of review fraud items were statistically significantly associated with increased intentions to use Yelp. Only the Internet experience variable of increased number of reviews read before trying a new vendor was statistically significantly associated with increased intentions to use Yelp.

Table 5: Linear regression analyses for intention to use Yelp

Variable	Univariate B	SE	p-value	Multivariate B	SE	p-value
<i>Demographics</i>						
Age (years)	0.002	0.05	0.97	---	---	---
Sex (woman)	-0.62	0.34	0.07	---	---	---
Race/Ethnicity						
White	Reference			Reference		
African American	0.04	0.58	0.95	0.09	0.50	0.86
Hispanic American	0.03	0.54	0.95	0.04	0.46	0.93
Asian/Asian American	0.95	0.45	0.04	0.79	0.39	0.045
Southeast Asian	0.57	0.71	0.42	-0.07	0.57	0.90
Other	0.95	0.64	0.14	1.51	0.55	0.01
Born in United States	0.26	0.34	0.46	---	---	---
<i>Theory of Planned Behavior</i>						
Attitudes	0.41	0.04	<0.001	0.16	0.04	<0.001
Social Norms	0.31	0.04	<0.001	0.12	0.05	0.01
Confidence in decision making based on reviews and review websites	1.50	0.11	<0.001	0.53	0.13	<0.001
Easiness of decision making after reading reviews	0.27	0.12	0.02	0.10	0.11	0.36
Control over decision-making after reading reviews	-0.15	0.11	0.19	---	---	---
Decision-making after reading reviews entirely up to me	0.84	0.10	<0.001	0.31	0.10	0.003
<i>Trust</i>						
Brand Trust	0.68	0.06	<0.001	0.15	0.08	0.047
SEO Trust	0.69	0.06	<0.001	0.27	0.07	<0.001
Use of positive words makes an online review more trustworthy	0.65	0.16	<0.001	0.17	0.17	0.34
Use of negative words makes an online review more trustworthy	0.35	0.16	0.03	0.09	0.16	0.59
<i>Knowledge</i>						
Knowledge of review fraud based on number of negative reviews (yes)	0.67	0.35	0.06	---	---	---
Knowledge of review fraud based on few reviews (yes)	0.21	0.34	0.55	---	---	---
Knowledge of review fraud based on many reviews (yes)	0.70	0.35	0.04	-0.03	0.31	0.93
Knowledge of review fraud for vendor part of branded chain (yes)	1.12	0.34	0.001	0.13	0.31	0.69
Knowledge of review fraud by vendors who can respond to consumer comments (yes)	0.81	0.36	0.03	0.55	0.32	0.08
<i>Internet Experience</i>						
Previously wrote Yelp reviews	1.89	0.42	<0.001	0.36	0.38	0.34
Never read review on Yelp	-0.99	0.38	0.01	-0.13	0.34	0.71
Number of reviews read before trying a new vendor	3.78	0.40	<0.001	1.76	0.40	<0.001
Percentage of reviews believed to be real	0.04	0.01	<0.001	0.004	0.006	0.52
Internet hours (weekly)	0.90	0.45	0.047	0.22	0.40	0.59
Intercept				-3.96	1.27	0.002

Note: B=beta, SE=standard error, SEO=search engine optimization

Table 6 shows logistic regression analyses for behavior of use of a service or purchase of a product after reading reviews on Yelp. In the univariate analyses, with regard to demographics, only women had decreased odds for behavior. With regard to the theory of planned behavior variables, increased intentions, increased attitudes, increased social norms, and increased values for the behavioral control item of confidence in decision making were each statistically significantly associated with increased odds for behavior. With regard to trust, increased brand trust, increased SEO trust, increased positive word trust, and increased negative word trust were each statistically significantly associated with odds for behavior. Correct knowledge of review fraud by vendors who can respond to consumer comments has increased risk for fraud with positive reviews was significantly associated with increased odds for behavior. Internet experience variables of those who previously wrote Yelp reviews, increased number of reviews read before trying a new vendor, and increased percentage of reviews believed to be real were each statistically significantly associated with increased odds for behavior. Never read a Yelp review was statistically significantly associated with decreased odds for behavior.

In the multivariate analysis, with regard to the theory of planned behavior variables, increased intentions and increased social norms were each statistically significantly associated with increased odds for behavior. With regard to trust, increased brand trust was statistically significantly associated with increased odds for behavior. Correct knowledge of review fraud by vendors who can respond to consumer comments has increased risk for fraud with positive reviews was significantly associated with increased odds for behavior. Internet experience variables of those who previously wrote Yelp reviews and increased number of reviews read before trying a new vendor were each statistically significantly associated with increased odds for behavior. No demographic variable was significantly associated with behavior.

Table 6: Logistic regression analyses for behavior after reading reviews on Yelp

Variable	Univariate OR (95% CI)	p-value	Multivariate OR (95% CI)	p-value
<i>Demographics</i>				
Age (years)	0.97 (0.93, 1.02)	0.27	---	---
Sex (woman)	0.66 (0.48, 0.93)	0.02	0.69 (0.45, 1.06)	0.09
Race/Ethnicity				
White	1.00			
African American	1.12 (0.64, 1.96)	0.70		
Hispanic American	0.81 (0.48, 1.36)	0.42		
Asian/Asian American	1.31 (0.84, 2.05)	0.24		
Southeast Asian	0.89 (0.45, 1.77)	0.75		
Other	1.34 (0.71, 2.54)	0.37		
Born in United States	0.92 (0.66, 1.28)	0.62	---	---
<i>Theory of Planned Behavior</i>				
Intentions	1.24 (1.18, 1.30)	<0.001	1.13 (1.06, 1.21)	<0.001
Attitudes	1.16 (1.11, 1.21)	<0.001	1.06 (1.00, 1.12)	0.06
Social Norms	1.10 (1.05, 1.16)	<0.001	1.07 (1.002, 1.13)	0.04
Confidence in decision making based on reviews and review websites	1.39 (1.22, 1.57)	<0.001	0.92 (0.76, 1.10)	0.36
Easiness of decision making after reading reviews	1.08 (0.96, 1.21)	0.23	---	---
Control over decision-making after reading reviews	1.00 (0.90, 1.11)	0.94	---	---
Decision-making after reading reviews entirely up to me	1.04 (0.99, 1.22)	0.08	---	---
<i>Trust</i>				
Brand Trust	1.27 (1.18, 1.38)	<0.001	1.15 (1.03, 1.28)	0.01
SEO Trust	1.21 (1.13, 1.29)	<0.001	0.97 (0.87, 1.08)	0.56
Use of positive words makes an online review more trustworthy	1.26 (1.07, 1.47)	0.006	1.00 (0.78, 1.27)	0.98
Use of negative words makes an online review more trustworthy	1.21 (1.04, 1.41)	0.01	1.15 (0.91, 1.45)	0.25
<i>Knowledge</i>				
Knowledge of review fraud based on number of negative reviews (yes)	1.21 (0.87, 1.69)	0.26	---	---
Knowledge of review fraud based on few reviews (yes)	1.13 (0.81, 1.58)	0.46	---	---
Knowledge of review fraud based on many reviews (yes)	1.07 (0.76, 1.49)	0.71	---	---
Knowledge of review fraud for vendor part of branded chain (yes)	1.36 (0.98, 1.90)	0.07	---	---
Knowledge of review fraud by vendors who can respond to consumer comments (yes)	1.79 (1.25, 2.57)	0.002	1.59 (1.01, 2.50)	0.047
<i>Internet Experience</i>				
Previously wrote Yelp reviews	2.54 (1.59, 4.06)	<0.001	2.05 (1.12, 3.78)	0.02
Never read review on Yelp	0.52 (0.36, 0.75)	<0.001	0.78 (0.48, 1.27)	0.32
Number of reviews read before trying a new vendor	6.92 (4.28, 11.18)	<0.001	2.98 (1.67, 5.32)	<0.001
Percentage of reviews believed to be real	1.016 (1.01, 1.02)	<0.001	1.01 (1.00, 1.01)	0.13
Internet hours (weekly)	1.16 (0.74, 1.81)	0.51	---	---

Note: OR=odds ratio, CI=confidence, SEO=search engine optimization

5 Discussion

We found that Asians/Asian Americans and other race/ethnicity were associated with increased intentions to use Yelp. Increased attitudes, increased social norms, increased confidence in decision making based on reviews and review websites, and increased decision-making after reading reviews were all associated with increased intentions to use Yelp. Increased brand trust and increased SEO trust were associated with increased intentions to use Yelp. Increased number of reviews read before trying a new vendor was associated with increased intentions to use Yelp. Increased intentions and increased social norms were associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp. Increased brand trust was associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp. Correct knowledge of review fraud by vendors who can respond to consumer comments has increased risk for fraud with positive reviews was associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp. People who previously wrote Yelp reviews and increased number of reviews read before trying a new vendor were each associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp.

Table 7: Hypothesis summary

Hypothesis	Hypothesis Topic	Hypothesis Support
1a	Demographics and intentions to use Yelp	Yes, partial support from Asian/Asian Americans
1b	Demographics and behavior of use of a service or purchase of a product after reading reviews on Yelp	No support
2a	Trust and intentions to use Yelp	Yes, partial support from brand trust and search engine optimization trust
2b	Trust and behavior of use of a service or purchase of a product after reading reviews on Yelp	Yes, partial support from brand trust
3a	Knowledge and intentions to use Yelp	No support
3b	Knowledge and behavior of use of a service or purchase of a product after reading reviews on Yelp	Yes, partial support from one knowledge question
4a	Internet experience and intentions to use Yelp	Yes, partial support from number of reviews read
4b	Internet experience and behavior of use of a service or purchase of a product after reading reviews on Yelp	Yes, partial support from number of reviews read and previously wrote Yelp review
5a	Theory of Planned Behavior and intentions to use Yelp	Yes, support from attitudes, social norms, and 2 behavioral control questions
5b	Theory of Planned Behavior and behavior of use of a service or purchase of a product after reading reviews on Yelp	Yes, partial support from social norms and intentions

Table 7 summarizes support for the hypotheses from the study findings. We found that Asians/Asian Americans race/ethnicity was associated with increased intentions but not behavior. The findings for intentions offer partial support for hypothesis 1a. Also, previous research on reading online hotel reviews and digital camera reviews found that Chinese consumers have greater purchase intentions than those from the United Kingdom [11]. Our findings for intentions regarding Yelp are similar to this approach. Use of more word-of-mouth referrals is associated with less switching of vendors for both Japanese and American companies [38]. Our finding for online word-of-mouth of Yelp reviews for Asians/Asian Americans is similar to what has been found for non-online word of mouth. None of the other demographic variables of age, sex, or born in the United States were associated with either intentions or behavior. We did not find any support for hypothesis 1b. Younger age groups as compared to older age groups are associated with higher ratings for search, experience, and credence of a number of products available online [48]. Our lack of significance for age with regard to both intentions and behavior related to Yelp reviews may have occurred due to our restricted age range of only young adults and not those from many different age groups. Women have a larger number of factors of decreased customer expertise, increased customer involvement, and increased rapport as compared to men of only increased customer involvement associated with increased perceived e-word-of-mouth credibility. Similarly, e-word-of-mouth acceptance impact differs for men and women where e-word-of-mouth acceptance among women is associated with lower intentions to purchase than men [17]. It is challenging to understand our lack of findings for sex. It is possible that our multivariate model that separates knowledge from Internet experience differs since that study [17] combined customer expertise that included both topics. Previous research reports cross-cultural differences between United States and non-United States cultures with regard to the relationship of perceived usefulness of online reviews and purchase influence of online reviews [40]. Our lack of significance for born in the United States may have occurred since these patterns only occur cross-culturally in the original culture location but not among those born or not born in the United States.

Brand trust was associated with increased intentions and behavior and SEO trust with increased intentions. Positive and negative word trust were both not associated with intentions or behavior. This offers partial support for hypotheses 2a and 2b. On online social networks, increased trust is associated with increased online word-of-mouth and intentions. Also, increased online word-of-mouth is associated with increased intentions [6]. Our findings for the online review website of Yelp are similar to this study. Positive online hotel reviews by non-expert reviewers have greater perceived usefulness for well-known brands than for not well-known brands [9]. Our lack of statistical significance for positive trust and intentions or behavior may be due to the lack of our study differentiating between well-known and not well-known brands reviewed on Yelp.

There was no support for hypothesis 3a, as none of the knowledge variables were associated with intentions. We found partial support for hypothesis 3b as one of the five knowledge items of correct knowledge of review fraud by vendors who can respond to consumer comments was associated with increased behavior. The literature from where we obtained our five knowledge items only studied behavior and not intentions [34]. Their measure of behavior was a fraudulent review as determined by Yelp's algorithm. Our measure of behavior is consumer behavior of use of a service or purchase of a product after reading reviews on Yelp. A possible reason for our statistical significance for only one knowledge item and not all five knowledge items is that our measure of behavior is not just writing a review but the more time-consuming and personal cost of financial expenditure behavior.

Partial support occurred for hypotheses 4a and 4b, as number of reviews read was associated with both increased intentions and behavior and also previously wrote a Yelp review was associated with increased behavior. Previous research reports that increased number of reviews read is associated with increased purchase intention [41]. Our findings are similar to this pattern and add new findings for purchase behavior.

The theory of planned behavior indicates that attitudes, social norms and behavioral control are important for understanding intentions [1]. Intentions are associated with behavior [1]. We found support for hypothesis 5a and partial support for hypothesis 5b, as increased attitudes, increased social norms, and increased behavioral control were associated with increased intentions while only increased social norms and increased intentions were associated with increased behavior.

6 Conclusions

In conclusion, demographics of Asians/Asian Americans and other race/ethnicity, trust variables of increased brand trust and increased SEO trust, and the Internet experience variable of increased number of reviews read before trying a new vendor were each associated with increased intentions to use Yelp. The trust variable of increased brand trust and the Internet experience variable of increased number of reviews read before trying a new vendor were also associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp. Also, the knowledge variable of correct consumer knowledge of review fraud by vendors who can respond to consumer comments has increased risk for fraud with positive reviews and the Internet experience variable of previously wrote Yelp reviews were each associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp.

Our significant findings for intentions to use the Yelp review website are consistent with previous related literature from Internet review websites [11], [41] and online word-of-mouth [6] and add to the literature for intentions to use Yelp. This study advances knowledge from what is previously known from a cross cultural comparison study that Chinese have greater purchase intentions than those from the United Kingdom [11]. We find that Asian Americans from the United States are associated with increased intentions to use the Yelp review website. Furthermore, our significant findings for increased behavior of use of a service or purchase of a product after reading reviews on Yelp appear to be novel for both related literature and Yelp, as we are not aware of any related literature on this topic. With regard to theory, our study complements what is previously known about the theory of planned behavior that it is important for understanding intentions [1]. We found that increased attitudes, increased social norms, and increased behavioral control were associated with increased intentions to use the Yelp review website. However, our findings differed from what is known about the theory of planned behavior for behavior [1]. We found that both increased social norms and increased intentions were associated with increased behavior of use of a service or purchase of a product after reading reviews on Yelp but we did not find any association of attitudes or behavioral control with behavior.

This study offers a number of practical implications. As this study suggests that brand trust is important, companies can benefit by claiming the website of their company on Yelp. This will allow the company brand manager or e-commerce manager to respond to the negative reviews posted on Yelp in order to reassure those who read the reviews about the trustworthiness of the company. However, our study also suggests that these companies with claimed webpages are potentially at risk for having the many positive online reviews perceived as fraudulent reviews by consumers. Companies should consider trust-building approaches when responding to negative comments such as acknowledging some negative reviews as areas for improvement rather than denying that such negative reviews are incorrect. This possibly could allow the consumer who reads the online reviews to be reassured that the company is a reputable company that acknowledges areas for improvement and not the type of company that would engage in fraudulent practices of posting fraudulent positive reviews.

This study has several limitations. First, all participants were college students from one college and this may not generalize to other colleges or those with different educational backgrounds. Second, the age range was limited to typical college student age ranges. Future research should study middle-age and older-age adults. Third, we did not ask about the frequency of online shopping. Fourth, we did not ask about using Yelp directly to purchase a service through the link available on certain Yelp review websites. Future research should study these topics.

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