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## Does construction service provider's response matter? Understanding the influence of anecdotal information on online consumer decisions

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### ABSTRACT

The home improvement service industry is growing rapidly, and the advancement in technology has made information about service providers, such as customer reviews, accessible with a few clicks. However, the impact of anecdotal information, like reviews and a service provider's response to a review, have not been studied extensively in the home improvement service industry. Using the Data Frame Theory of Sensemaking, this study investigated the combined effect of these two variables on an online consumer's decision. We recruited 360 participants through Qualtrics Research Services to participate in a 4\*3 between-subjects study. The findings suggest that when all reviews were either entirely positive or negative, i.e., consistent information, the service provider's response did not influence the customer's decision. However, when the reviews were inconsistent, the service provider's response was influential. In addition, negative reviews created a lack of trust in the information, which is a potential area for future research.

### 1. Introduction

The growth of the home improvement industry is increasing every year. According to Harvard's Joint Center for Housing Studies, an estimated \$424 billion was spent by homeowners on home improvements in 2017 ([Improving America's Housing, 2019](#)), more than the clothing and accessories, full-service restaurant or the healthcare and drug industries ([Retail Trade and Food Services Report, 2020](#)). One of the primary reasons for the increase in the amount being spent on housing is due to its age. Almost 80% of housing in United States are 20 years or older ([Improving America's Housing, 2019](#)). Given the amount being spent by the homeowners, the selection of the right service provider is critical to ensure that the work is of optimum quality and efficiency ([Zavadskas and Vilutienė, 2006](#)).

With the advancement in technology, information about service providers from websites like Angie's List, Thumbtack and Home Advisor is accessible from anywhere in the world with a few clicks, changing the method of sharing information between people. These websites are used to both acknowledge good work and express frustration and

disappointment with a service. This type of information is referred to as Electronic Word of Mouth (eWOM), defined by Hennig-Thurau et al. as "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" ([Hennig-Thurau et al., 2004](#)). eWOM has advantages over the traditional communication methods, including quicker information dissemination, an increased amount of accessible information for online consumers to use in decision making, the convenience of being accessible from anywhere in the world, and its basis in community engagement ([Sun et al., 2006](#); [King et al., 2014](#)). According to a study conducted by Bickart and Schindler on the different types of information available online, consumers appear to be more interested in user-generated over marketer-generated information, highlighting the impact of eWOM ([Bickart and Schindler, 2001](#)). However, eWOM has several disadvantages including uncertainty about the authenticity of the information leading to lack of trust ([Lee and Youn, 2009](#); [Chatterjee, 2006](#); [Schindler and Bickart, 2005](#)). Trust in online information is a crucial factor, one that is based on consumer perception of the website, its credibility and the confidence it exhibits

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(Bart et al., 2005).

## 2. Objective

With the growth of the Internet and availability of user-generated online information with respect to the home improvement service industry, there is a need to learn more about how online consumers use such information while making decisions. Limited research has been conducted in this area which is why this study investigated the combined effect of the valence of the reviews and a service provider's response to the review on online consumers' decisions. Specifically, this study focuses on the following research questions:

RQ1. How does the valence of a review and the service provider's response to it change an online consumer's likelihood to hire the home improvement service provider?

RQ2. How does the valence of a review and the service provider's response to it change an online consumer's confidence in the decision?

RQ3. How does the valence of a review and the service provider's response to it change an online consumer's trust in the information about the service provider?

### 2.1. Related studies and point of departure

Although research on eWOM is a novel area in the domain of home improvement service industry, it has been studied extensively across other domains like healthcare, tourism, and social media (Litvin et al., 2008; Ponathil et al., 2017, 2020a; Khasawneh et al., 2018; Abraham et al., 2011; Senecal and Nantel, 2004). These studies have looked into online consumer decision making using eWOM. Specifically, studies have shown that reviews have a strong influence on an online consumer's perception of a product or service especially when previous customers provide a detailed account of their experiences (Ye et al., 2011; Akehurst, 2009; Fotis et al., 2012; Dickinger, 2011). In addition, this account acts not only as a reflection of satisfaction in a product or service but also as valuable information for potential customers in making their decisions (Bissell, 2012; Xiang and Gretzel, 2010). In a healthcare study on the effectiveness of user-generated information like reviews, Agnisarman et al. found the users rely on them while making decisions (Agnisarman et al., 2018). More specifically, Ponathil et al. found the valence of the reviews, i.e., the positive or negative orientation of the reviews, to be a critical factor while selecting a dentist (Ponathil et al., 2020b).

eWOM has also been widely used and researched in the field of tourism where a similar effect was seen, with results showing a positive correlation between purchase intention and the valence of the reviews (Schuckert et al., 2015; Sparks and Browning, 2011; Mauri and Minazzi, 2013). Similarly, an e-commerce study found that the valence of the review influenced both attitude and purchase intention (Tata et al., 2020). More specifically, Vermeulen and Seegers found that for lesser-known hotels, positive reviews have a stronger effect on a user (Vermeulen and Seegers, 2009). Studies have shown that a 10% increase in traveler review ratings leads to an online booking increase of more than 5% (Ye et al., 2009, 2011). Similar results were also seen in the restaurant industry for reviews and online orders (Lu et al., 2013).

Zou et al. and Doh and Hwang found that the impact of the valence of a review is greater for consumers with low expertise, suggesting experience and prior knowledge with eWOM have an impact (Zou et al., 2011; Doh and Hwang, 2009). The effect of the valence of a review is also dependent on the type of product or service considered (Langan et al., 2017). Chen and Lurie's analysis of restaurant reviews found positive reviews had more influence than negative ones (Chen and Lurie, 2013). A similar effect was found in a study investigating consumers' e-commerce experience, with customers indicating positive reviews to be more persuasive than negative ones (Wang et al., 2015), while a study conducted by Lee et al. on product attitude showed negative reviews are more impactful than positive (Lee et al., 2008). As these contradictory

results suggest, the valence of reviews is perceived differently across scenarios, demonstrating the importance of understanding how consumers comprehend them in the home improvement service scenario.

In the competitive field of the service environment, customer satisfaction is a key aspect. The service provider response and communication can either make or break relationships as demonstrated by Wong and Tjosvold's study on the influence of service provider response on the quality of the service (Wong and Tjosvold, 1995). They found that consumers associated a warm communication style with a positive evaluation of the service provider. Research has shown that significant importance is placed on a service provider's friendliness, expressive display and genuine care, all of which subsequently influence the overall consumer satisfaction as well as enhancing the mutual trust between them (Gountas et al., 2007, Wang et al., 2019). Similarly, Li et al. found that response speed and frequency positively enhance consumer engagement in the tourism industry (Li et al., 2017).

In addition, putting consumer's concerns first is considered more positive than having a defensive or no action strategy (Lee and Song, 2010). Consumers were found to be less satisfied when the provider exhibited authority and a controlling style (Street and Wiemann, 1987). However, studies have shown that when medical service providers communicate in a manner showing power and status, consumers are understanding due to their lack of knowledge of health issues (Webster and Sundaram, 2009). Similar to the valence of the reviews, the consumer's desired service provider communication style varies based on the nature of the product or the services, further supporting the importance of studying it in a home improvement service industry scenario (Webster and Sundaram, 2009; Notarantonio and Cohen, 1990).

### 2.2. Data Frame Theory of sensemaking

The Data Frame Theory of Sensemaking is applied to interpret the findings from this study (Klein et al., 2006, 2007; Minsky, 1974). According to this theory, individuals develop an impression of a new situation based on an initial set of information, referred to as the initial frame. As shown in Fig. 1, it's a closed loop process with individuals trying to gather additional data to obtain a better understanding of the situation, a process known as elaborating the frame. Depending on the data gained, individuals either question the frame if the subsequent data are inconsistent with the initial one or confirm it if the data are consistent. Based on the weight given to the inconsistent data, i.e., the initial data and the data obtained later, individuals may either preserve the initial frame or develop a new one. The ultimate goal of sensemaking is to develop an understanding of the situation by cultivating information about the current state to make an informed decision (Battles et al., 2006).

The Data Frame Theory is specifically applicable to multi-attribute decision contexts where the information could be conflicting. For example, when an individual buys a phone, different attributes are considered including the brand, size, battery duration, battery life, operating system, memory, price, and reliability, among others. With respect to the construction industry, when an individual wants to hire a service provider, they consider different attributes like the service provider behavior, efficiency of workers, price, hours of operation, knowledge, etc. The individual collects information on each attribute, evaluates its relative importance and then makes an educated decision based on the information (Paul Yoon and Hwang, 1995). This complex process characterizes a number of situations we find in our day-to-day activities. In this study, the Data Frame Theory of Sensemaking is used to understand how individuals make decisions about a home improvement service provider when given with such information as reviews and a service provider's response to these reviews.

Previous research has used sensemaking theories to understand the underlying process that users follow when making decisions across different domains like online review portals, healthcare information, and employee decisions in organizations (Ponathil et al., 2020a;

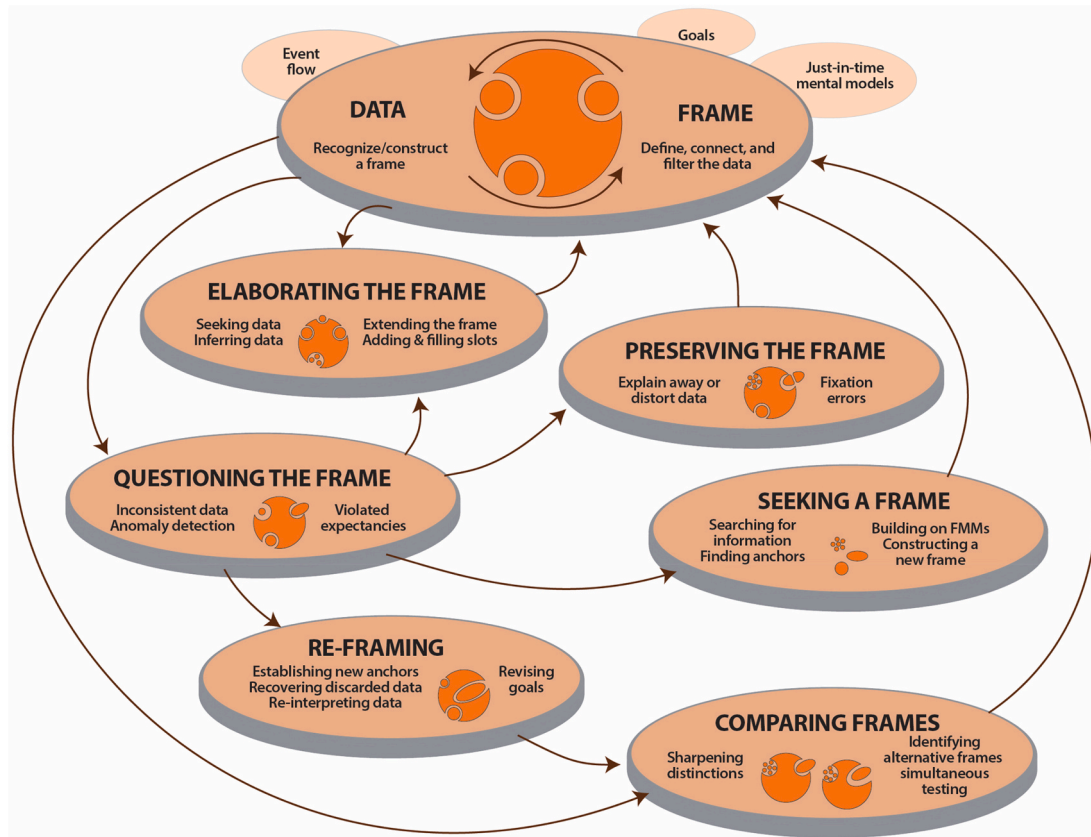


Fig. 1. The Data Frame Theory (adapted from Klein et al., 2007).

Khasawneh et al., 2018; Rothausen et al., 2017). Ponathil et al. found that in multi-attribute decision contexts in restaurant review portals, reputation scores complemented the reviews, improving trust in the information and confidence in the decisions (Ponathil et al., 2020a). Rothausen et al. studied why employees quit or remain with an organization to understand retention and turnover, finding that elements like perceived threat to their well-being, acceptance, trajectory, differentiation and relatedness led to escalating cycles, causing turnovers, while the lack of threat and successful coping results in retention (Rothausen et al., 2017). Weick studied the Bhopal gas leak disaster of 1984, finding the crisis was in part due to the breakdown in the cognition and actions normally associated with enacting sensemaking (Weick, 2010). Rogers et al. showed through her research how mobile devices can facilitate sensemaking activities to enhance learning (Rogers et al., 2010).

In the domain of healthcare, research has shown that older adults tend to review positive choice attributes more than negative ones when making healthcare decisions (Löckenhoff and Carstensen, 2007), while Shamaskin et al. found that they rated positive information as more informative than negative (Shamaskin et al., 2010). In a study of online consumer reviews of a dental care provider, the researchers found the reviews, bedside manner rating and cleanliness rating of the facility to be important factors in an online consumer's decision making (Ponathil et al., 2020b). These studies show the importance and the various ways the sensemaking process is utilized in multi-attribute decision contexts. In this study, we examine the eWOM information, specifically the valence of the reviews and a service provider's response to the review, in the home improvement service context and analyze the findings using the Data Frame Theory of Sensemaking.

Previous research on user feedback to information has shown that responding to consumer concerns was considered more positively by users than a no response strategy (Lee and Song, 2010). Additionally, when users get a detailed response explaining the situation, they appreciated it more than getting a standardized response (Jarvenpaa

et al., 1998; Ridings et al., 2002). However, these responses had to be action oriented rather than a short one-sentence statement which added little value to the users. Further, research has shown that positive reviews have a stronger effect and lead to a higher likelihood to choose a product compared to negative reviews (Ponathil et al., 2020a, 2020b; Vermeulen and Seegers, 2009). When online consumers make sense of the information, the reviews act as the initial set of cues in developing the initial frame in their mental model (Khasawneh et al., 2018). These service provider responses then serve as an additional set of datapoints helping consumers make decisions. When the reviews are positive and the responses are elaborate, we believe that the datapoints should work in tandem to preserve the initial frame, which is why we hypothesized.

**H1.** The likelihood to hire the service provider increases as the response changes from no response to elaborate response and the valence of the review changes from negative to positive.

**H2.** The confidence in the decision increases as the response changes from no response to elaborate response and valence of the review changes from negative to positive.

Additionally, research has shown that when reviews are consistently positive, people tend to be suspicious (López-López and Parra, 2016). Consumers are reluctant to believe them since they suspect them to be fake (Mayzlin et al., 2014). On the other hand, neutral reviews or a combination of positive and negative reviews tend to share both the positive and negative aspects of the service provider, giving the appearance of being more believable as its rare to find only good reports (Ponathil et al., 2020c). Hence, we hypothesized.

**H3.** Positive reviews are perceived to be less trustworthy than neutral, negative and a combination of positive and negative reviews.

### 3. Method

#### 3.1. Participants

An a-priori power analysis was conducted to compute the sample size for the between-subjects ANOVA study. For a medium effect size of  $f = 0.25$ , a minimum total sample size of 341 is recommended at a statistical power of 0.95 (Cohen, 2013). We recruited a total of 360 participants (30 per study condition) for the study through Qualtrics Research Services, an online service frequently used to recruit respondents for experimental studies requiring a large sample population (Boas et al., 2020; Khasawneh, 2019; Qualtrics, 2013). Literature has shown the effectiveness of obtaining high-quality data through such services (Buhmester et al., 2011; Chalil Madathil and Greenstein, 2018; Paolacci et al., 2010). Participants for this study were recruited based on the following inclusion/exclusion criteria: They had to be at least 18 years of age; currently or in the past owned an apartment, house or some sort of residence; and have searched online for and subsequently contacted a contractor or hired a contractor they knew for a home repair.

#### 3.2. Experimental design

This study used a 4\*3 between subjects experimental design, with the conditions being randomly assigned to the participants. The two independent variables in the study included:

- 1 *Valence of the review* at four levels—Positive, combination of both Positive and Negative, Neutral, or Negative—based on the orientation of the anecdotal content of the review (Frijda and Autor Fridja, 1986; Kusumasondjaja et al., 2012). Neutral reviews, which portrayed the contractor as merely an alright option, consisted of both positive and negative aspects. Each level had four reviews while the combination level of both positive and negative reviews had two positive and two negative reviews for a total of four reviews. All the reviews were randomly collected from online home improvement service websites such as Angie's List and Yelp. The reviews were confirmed as positive, neutral or negative based on an initial manipulation check using 10 participants. The manipulation check was also conducted at the end of the study to obtain a higher confidence level through a larger sample.
- 2 *Service provider's response to the review* at three levels—Detailed, Standardized (one-line) or No Response. The detailed responses were the actual responses to the reviews collected from the online home improvement service websites. The standardized responses were one-line responses thanking the reviewer for sharing the feedback. The no response condition did not have any responses to the review.

Other factors like the company name, hours, location and services were kept constant throughout the study.

The three dependent variables measured in this study were the following subjective measures:

- 1 *Likelihood of hiring the contractor* was measured on a 7-point Likert-type scale, with 1 being extremely unlikely and 7 being extremely likely. The participants were asked the following question, "Based on the information provided, how likely are you to consider hiring this contractor?"
- 2 *Confidence in the decision* was measured on a 7-point Likert type scale, with 1 being not at all confident and 7 being extremely confident. The participants were asked the following question, "How confident are you in your decision?"
- 3 Following Wu and Lin, *trust* was measured to explore the perceived trustworthiness in the provided information (Wu and Lin, 2017). Again, using a 7-point Likert-type scale, participants rated trust on 12 semantic items based on the scale developed by McCroskey and Teven and Beltramini: Dishonest to honest; untrustworthy to

trustworthy; unethical to ethical; phony to genuine; unreliable to reliable; insincere to sincere; not convincing to convincing; not credible to credible; unreasonable to reasonable; questionable to unquestionable; inconclusive to conclusive; and not authentic to authentic (McCroskey and Teven, 1999; Beltramini and Others, 1982). The scale had a high level of internal consistency as determined by a Cronbach's alpha of 0.98.

#### 3.3. Study setting

We used a plumbing issue as the scenario for the study since it is one of the most common home repairs requiring a professional contractor. We surveyed six online home improvement service websites including HomeAdvisor, Houzz, Google, Better Business Bureau, Angie's List and Yelp to obtain information about how reviews and service provider responses are presented. Since information like company name, hours, location and services was found on all the websites surveyed, we included these in our stimuli, keeping them constant to avoid any potential confounding effect. We used Adobe XD to create the vector-based images of the stimuli as shown in Fig. 2 (Adobe XD). The study was initially soft launched and piloted using 10 participants. Once the study was refined based on the feedback from the pilot sample, it was launched to the larger sample of participants.

#### 3.4. Procedure

Participants received the link to the study through Qualtrics Research Services. Before beginning the study, they completed a set of four screening questions (see Appendix A), included to ensure they met the inclusion/exclusion criteria. Once they qualified, they were given the expectations for the study, outlining their role and responsibilities. Subsequently, they were provided with a consent form, which they electronically signed agreeing to participate in the study. Next, the participants watched a 40-s training video explaining the various elements in the study. At the end of the video, participants had to correctly answer a quiz including three questions (see Appendix B). Failure to answer them correctly resulted in elimination from the study. Participants who answered the quiz correctly then read the scenario and the stimuli. Each participant saw a single, randomly assigned study condition which included four reviews. An example of the stimuli is shown in Fig. 2, and a flow chart representing the study procedure can be seen in Fig. 3.

After reading the stimuli, participants completed a post-test questionnaire asking about their likelihood of hiring the contractor, their confidence in their decision and their trust in the information. They then answered an open-ended question explaining the reasons for their answers to the post-test questionnaire. They were then asked the manipulation check questions, and the study concluded by collecting their demographic information. At various places in the study, attention check questions were included to maintain the quality of the participants. Failure to correctly answer any resulted in the participant being excluded from the study. This protocol was approved by the Clemson University IRB (IRB2020-155) under the exempt category as defined by Federal Regulation 45 CFR 46.

#### 3.5. Manipulation check

Manipulation checks, performed to check the effectiveness of the study manipulations, were conducted after the participants completed the post-test questionnaire. The participants were shown the reviews and were asked to rate the level of positivity, neutrality and negativity of the tone as a whole on a scale from 0 to 100 (Radomsky et al., 2001; Rimes and Watkins, 2005). Since each participant was asked to rate the reviews, the study was a repeated measures design. We performed the Shapiro-Wilk test of normality and found the p-values were less than 0.05, meaning the data were not normal. Hence, our analysis used the



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### REVIEWS



TJ and Henry arrived before the scheduled appointment time which was much appreciated. TJ listened to our concerns about the drain blockage in our laundry room. Henry assisted TJ with running the cable machine through the drain from our toilet and they were able to clear the blockage. After placing toilet back in its original position, they helped clean up the mess that had accumulated on the laundry room floor and in the shower stall from the sewage that had backed up through the drains. TJ and Henry were very professional during the service call. We felt that the final cost of the work that was done was fair. We appreciate the work that they did to clear up the blockage and felt that they did a great job explaining what they were doing and what might have caused the problem in the drains. We would highly recommend this plumbing company to any of our friends who may need plumbing work in the future. Great job, TJ and Henry!



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It is our goal to always provide efficient and affordable service to help solve any of your sewer or plumbing needs and I am happy that TJ and Henry took such good care of you. Please if you need anything else in the future don't hesitate to give us a call!



I recently called them to fix a leaking water pipe from my upstairs bathroom. This is the second time I've used their services. The operation is very professional. They offered to send a technician to my house the same day. Tommy was excellent and did an outstanding job. Showed up on time exactly as promised. He is very knowledgeable, hard-working, friendly, affable and very honest. He quickly found the leak and fixed it. He also installed a new shower valve and shower head. He worked expeditiously and efficiently. He also communicated really well and clearly tells you what is wrong and what repairs are needed. His initial quote involved an entire day's worth of work because the leak was potentially in a difficult location. However, after Tommy quickly found the leak and determined it would not take as long to repair as he initially thought, he lowered the estimate. That level of honesty is not common in this business and I very much appreciate his integrity. He is a very skilled, talented and knowledgeable plumber. I highly recommend them and especially Tommy for outstanding work.



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Wow! It's customers like you who appreciate our work that keep us energized during these times. We are out everyday helping the people in our community. Thank you for your kind words and all the thoughtfulness you put into your review. We will continue to do our best to help serve the community.



I realized we had a plumbing issue the morning after my sister and her family got into

Fig. 2. An example of the stimuli (Positive review with elaborate service provider's response).

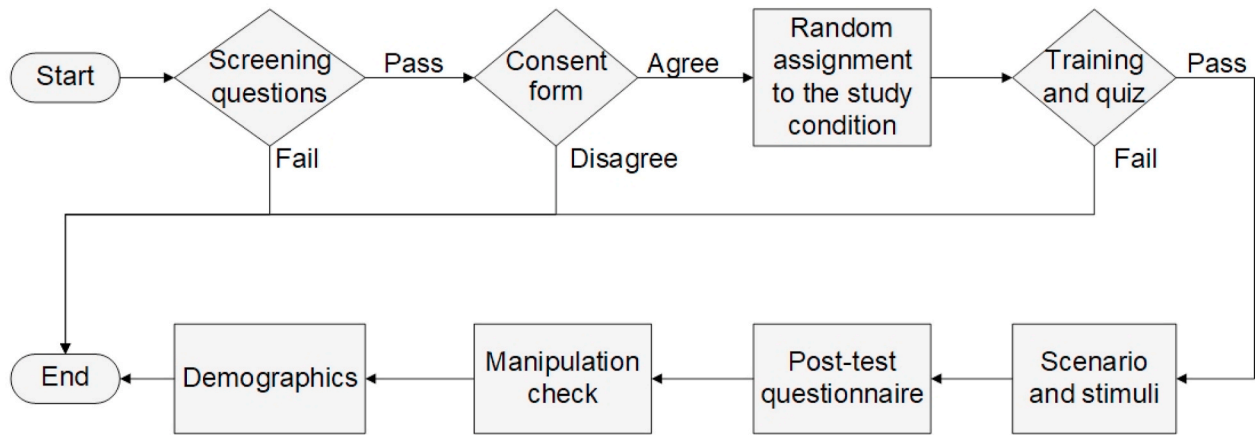


Fig. 3. Flowchart outlining the study procedure.

Friedman’s test, and pairwise comparison was evaluated at an alpha value of  $p < 0.05$  to verify the individual differences. The analysis showed that the participants were able to correctly differentiate the reviews as positive, neutral and negative (refer Table 1).

3.6. Analysis

The data were analyzed using IBM SPSS Statistics 27. Two-way between subjects ANOVA was used to analyze the dependent variables. The homogeneity of variances was measured using Levene’s test of equality of variances. Least Significant Difference (LSD) adjustments were applied to the interaction, and simple main effects were evaluated at a statistical significance of  $p < 0.05$ . All simple pairwise comparisons were evaluated at an alpha value of 0.05. The main effects were also evaluated at a statistical significance of  $p < 0.05$ .

4. Results

4.1. Demographics

A total of 360 participants, 180 males and 180 females, with a mean age of 59.93 years (SD = 14.22, range = 24–89 years) completed the study. The participants were recruited within United States, and all had experience searching for contractor information or had previously hired one. Additional demographic information related to the sample is provided in Table 2.

4.2. Likelihood of hiring the contractor

A statistically significant two-way interaction was found between the valence of the review and the service provider’s response to the review on the likelihood of hiring the contractor, as informed by  $F(6,348) = 4.07, p = 0.001, \text{partial } \eta^2 = 0.066$ . To further explore the effects of the interacting variables, a simple main effects analysis was conducted with respect to the service provider’s response, with the results finding that effect of the response was significant for the combined positive and negative review condition,  $F(2,348) = 5.14, p = 0.006, \text{partial } \eta^2 = 0.029$  and the neutral review condition,  $F(2,348) = 19.05, p < 0.001, \text{partial } \eta^2 = 0.099$ .

Table 2 Demographics data.

Variable (N = 360)	Number	Percent
Education level		
High School/GED	19	5.3
Some College	46	12.8
2-year College Degree	35	9.7
4-year College Degree	141	39.2
Master’s Degree	85	23.6
Doctoral Degree	14	3.9
Professional Degree (JD, MD)	20	5.6
Experience using online consumer review websites		
Less than a year	45	12.5
1–3 years	39	10.8
3–5 years	70	19.4
5–10 years	102	28.3
10–20 years	82	22.8
More than 20 years	22	6.1
Frequency of use of online consumer review websites		
Once a month	87	24.2
2–5 times a month	121	33.6
6–10 times a month	32	8.9
11–15 times a month	11	3.1
16 times or more per month	10	2.8
I don’t use any these websites frequently	99	27.5

Subsequently, pairwise comparisons were run for the statistically significant simple main effects. For the combined positive and negative review condition, the participants were more likely to hire the contractor when they read an elaborate response compared to there being no service provider response, with a mean difference of 0.83, 95% CI [0.31, 1.36],  $p = 0.002$ . Participants were also more likely to hire when they read a standard response compared to no response, with a mean difference of 0.57, 95% CI [0.04, 1.09],  $p = 0.034$ .

For the neutral review condition, the participants were more likely to hire when they read an elaborate response compared to a standard response, with a mean difference of 1.47, 95% CI [0.94, 1.99],  $p < 0.001$ , and no response, with a mean difference of 1.37, 95% CI [0.84, 1.89],  $p < 0.001$ .

In addition, simple main effects analysis was conducted on the valence of the reviews. The results were significant for all elaborate  $F(3,348) = 142.59, p < 0.001, \text{partial } \eta^2 = 0.551$ ; standard  $F(3,348) = 191.55, p < 0.001, \text{partial } \eta^2 = 0.623$ ; and no response conditions,  $F(3,348) = 170.58, p < 0.001, \text{partial } \eta^2 = 0.595$ . Subsequently, pairwise comparisons were run for the statistically significant simple main effects. Fig. 4 provides a graphical representation of the interaction and simple main effects.

Table 1 Manipulation check.

Valence of the review	Friedman test statistics
Positive	$\chi^2(2) = 148.11, p < 0.001$
Neutral	$\chi^2(2) = 9.01, p = 0.011$
Negative	$\chi^2(2) = 129.73, p < 0.001$

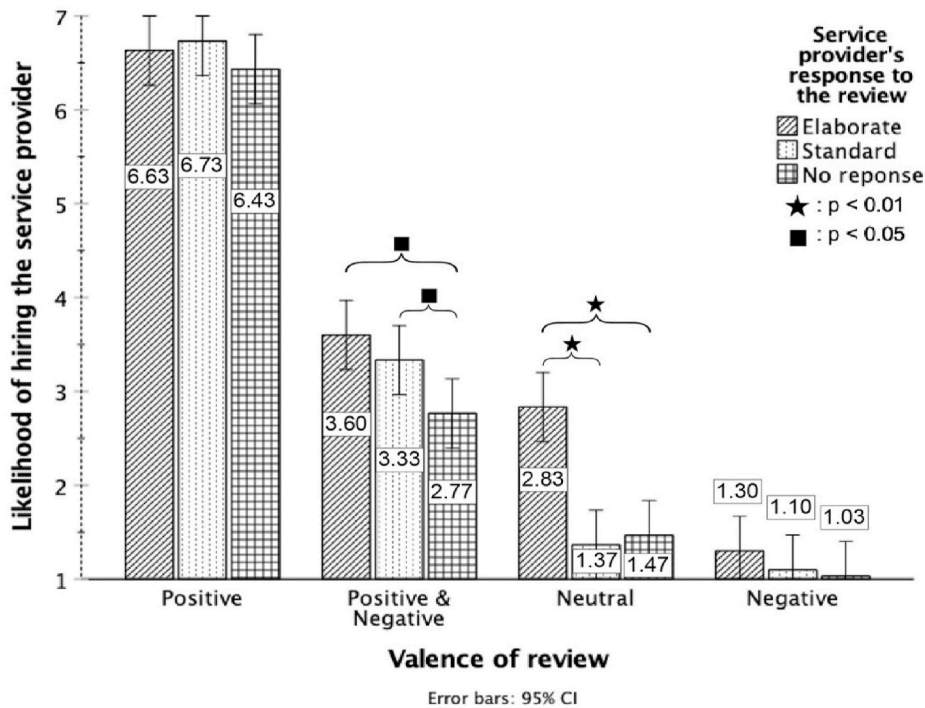


Fig. 4. Effect of valence of review and service provider’s response to the review on the likelihood of hiring the service provider.

4.3. Confidence in the decision

A statistically significant two-way interaction was found between the valence of the review and the service provider’s response to the review and confidence in the decision, as informed by  $F(6,348) = 4.14, p < 0.001, \text{partial } \eta^2 = 0.067$ . To further explore the effects of the interacting variables, a simple main effects analysis was conducted on the service provider’s response, the results finding that the effect of the response was significant for the neutral review condition,  $F(2,348) = 10.89, p < 0.001, \text{partial } \eta^2 = 0.059$ .

Subsequently, pairwise comparisons were run for the statistically significant simple main effect. For the neutral review condition, the

participants were more confident in their decision when they read a standard response compared to an elaborate response, with a mean difference of 1.00, 95% CI [0.47, 1.53],  $p < 0.001$ , and no response compared to an elaborate response, with a mean difference of 1.17, 95% CI [0.64, 1.70],  $p < 0.001$ .

In addition, simple main effects analysis was conducted on the valence of the reviews. It was significant for all elaborate response,  $F(3,348) = 8.42, p < 0.001, \text{partial } \eta^2 = 0.068$ ; standard response,  $F(3,348) = 5.32, p = 0.001, \text{partial } \eta^2 = 0.044$ ; and no response conditions,  $F(3,348) = 12.01, p < 0.001, \text{partial } \eta^2 = 0.094$ . Subsequently, pairwise comparisons were run for the statistically significant simple main effects. Fig. 5 provides a graphical representation of the interaction

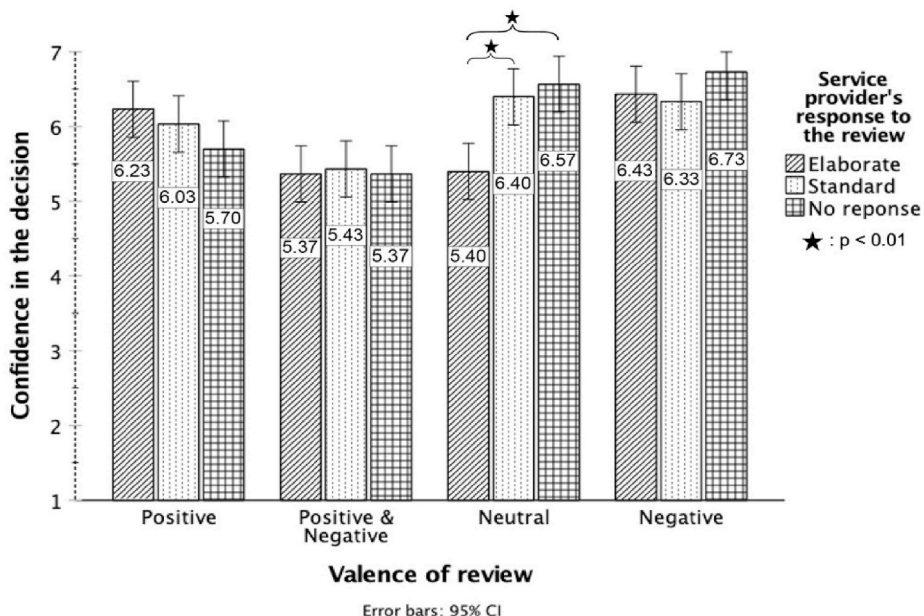


Fig. 5. Effect of valence of review and service provider’s response to the review on the confidence in the decision.



and simple main effects.

4.4. Trust in the information

The two-way interaction was not statistically significant between the valence of the review and the service provider’s response to the review for trust in the information, as informed by  $F(6,348) = 1.60, p = 0.147$ , partial  $\eta^2 = 0.027$ . The main effect of both the valence of the review and the service provider’s response exhibited statistical significance,  $F(3,348) = 194.18, p < 0.001$ , partial  $\eta^2 = 0.626$  and  $F(2,348) = 15.02, p < 0.001$ , partial  $\eta^2 = 0.079$ , respectively.

Subsequently, pairwise comparisons were run for the statistically significant main effect of service provider’s response. The participants trusted the elaborate response more than the standard response, with a mean difference of 0.55, 95% CI [0.26, 0.84],  $p < 0.001$ , and no response, with a mean difference of 0.79, 95% CI [0.50, 1.08],  $p < 0.001$ .

In addition, pairwise comparisons were run for the main effect of valence of the review. The participants trusted positive reviews more than the combined positive and negative reviews, with a mean difference of 2.17, 95% CI [1.83, 2.50],  $p < 0.001$ ; neutral reviews, with a mean difference of 2.93, 95% CI [2.59, 3.26],  $p < 0.001$ ; and negative reviews, with a mean difference of 3.96, 95% CI [3.62, 4.29],  $p < 0.001$ . Participants trusted the combined positive and negative reviews more than neutral reviews, with a mean difference of 0.76, 95% CI [0.43, 1.10],  $p < 0.001$ , and negative reviews, with a mean difference of 1.79, 95% CI [1.46, 2.13],  $p < 0.001$ ; and they trusted neutral reviews more than negative reviews, with a mean difference of 1.03, 95% CI [0.69, 1.36],  $p < 0.001$ . Fig. 6 provides a graphical representation of the main effect of the service provider’s response to the review on the trust in the information and Fig. 7 shows the main effect of the valence of review on the trust.

5. Discussion

With the advancements in technology and the Internet, information about services and providers is readily available to consumers with a few clicks. This study investigated the influence of the information shared by customers about a company, also known as eWOM information, on online consumers’ decisions. More specifically, we explored online consumer behavior regarding home improvement service providers

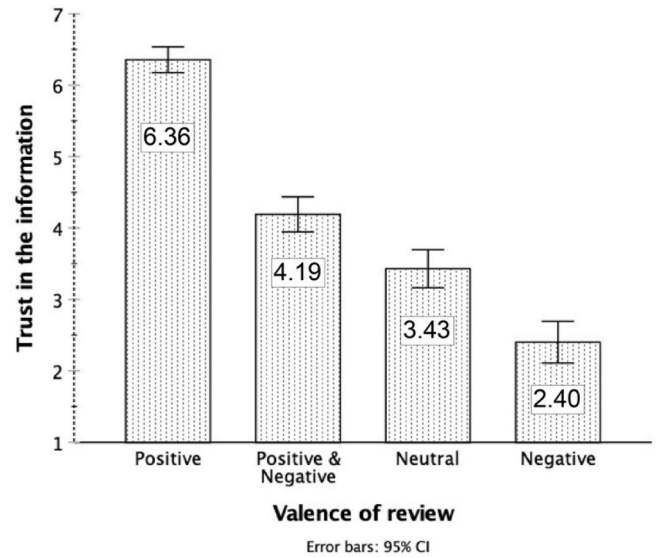


Fig. 7. Effect of valence the review on the trust in the information.

based on the anecdotal information of the valence of the reviews and the service provider’s response to a review. This section discusses our results and observations, applying the Data-Frame Theory of Sensemaking to analyze consumer behavior (Klein et al., 2006, 2007).

According to the Data-Frame Theory of sensemaking, the initial stimuli act as the basis for the initial understanding of the situation, referred to as the initial frame. Previous research has shown that consumer reviews act as the basis for the initial frame in a user’s mental model of a company (Khasawneh et al., 2018). These potential customers then look for additional information to further elaborate and confirm their frame. In the study reported here, we found that when the participants read a review with a positive or a negative valence, the service provider’s response to it did not affect their likelihood of hiring the contractor. On reading positive reviews, they trusted the information and indicated that they would hire the contractor, while on reading negative reviews, they expressed the opposite, although they indicated a relatively low level of trust in the information.

As one participant who read the positive reviews explained, “I thought they were credible following the positive review I read from different clients who had used their services before and were completely satisfied by their services,” while another elaborated, “I have used contractors previously; some good, some not so good. By reading these reviews, they sound like one of the good ones.” One of the participants who read the negative reviews explained the rationale behind deciding not to hire the contractor: “There were too many bad reviews to think that the company is good. I know it’s hard to please everyone, but this company has consistently bad reviews,” while another participant was more critical, “Usually I try to read positive and negative information to weigh how reasonable each review is. But in this case, all the reviews were not only negative, but terrible. And there were different levels of dissatisfaction described with the reviews as well.” The participants were also highly confident in their decision, suggesting that when participant’s initial frame is extreme on either ends, i.e. without reservation positive or negative, they tend to preserve the initial frame. This finding is similar to previous research findings that positive information leads to a higher likelihood to choose a product or a service while negative information leads to a lower likelihood score (Ponathil et al., 2020a, 2020b).

Previous research on multi-attribute decision-making has found that people recognize if the attributes of an option are consistent or inconsistent at the beginning of the process (Morrow and Chin, 2015), with the complexity of the decision decreasing as the variables become more consistent. However, inconsistent attributes result in a complex decision-making process resulting in more effort and cognitive demand.

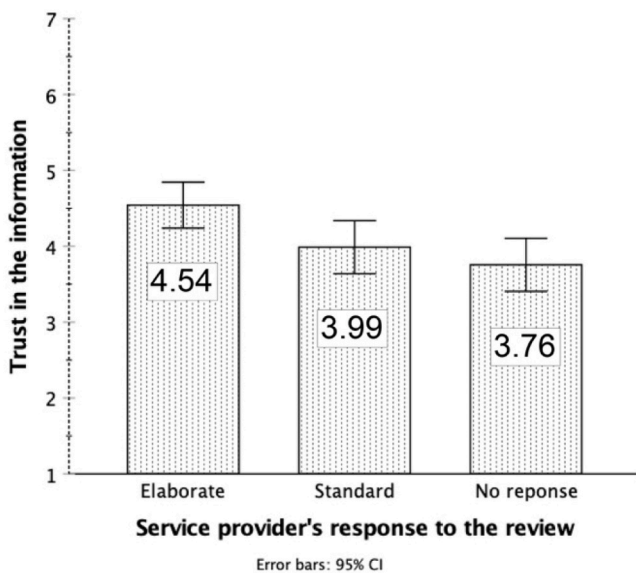


Fig. 6. Effect of service provider’s response to the review on the trust in the information.

In this study, when the stimuli included a combination of positive and negative reviews, the service provider's response was considered an important piece of information that the participants considered before making their decision to hire or not. We found that an elaborate or a standard service provider's response to the combination of positive and negative reviews increased the likelihood of hiring the contractor compared to no response. However, this inconsistency resulted in a relatively reduced confidence in their decision, indicating the participants' uncertainty when they read contradictory information, reflected in their uncertainty about their initial frame. As Metzger et al. explained, the combination of positive and negative reviews violates the consistency heuristic, thus reducing the perceived credibility and the likelihood of choosing a particular product or service (Metzger et al., 2010). In this instance, the service provider's response acted as an additional cue, helping the consumer gauge the situation. However, the likelihood of hiring the contractor in this study was in the middle, suggesting the participants were indecisive because of the inconsistency. As one of the participants explained, *"There were very opposite outcomes from using this contractor. The bad reviews were really bad. Since there are other contractors out there, I would hesitate to use this company. They might be great but, I have had a doubt planted in my mind, and I would feel uncomfortable relying on them,"* with another participant expressing a similar feeling, *"Mixed reviews make me question them. I am leaning one way and then the other. I am unsure."*

An elaborate response to neutral reviews portraying the contractor as merely an alright option (including both positive and negative aspects) significantly increased the likelihood of hiring the contractor compared to a standard response or no response. As one of the participants elaborated, *"I was ambivalent about this contractor. He made mistakes and had sloppy work but seems to have rectified or tried to rectify them. He always responded to the reviews which is good to see."* However, even though the service provider's response resulted in an increase in the likelihood score, the values were still relatively low, suggesting the participants probably would not hire this contractor. This potential decision is supported by the participants indicating more confidence in rejecting the contractor than hiring him. As one participant explained, *"The reviews followed the same theme of some good but some bad things. The bad dealt mostly with costs. And the contractor replies were not convincing and did not address the individual reviews. I would not hire this contractor,"* with another agreeing, *"Just the few instances of outrageous prices and quotes were enough for me to not want to use them. I have had this happen with mechanics. It is infuriating!"* This conclusion is in line with the findings from studies conducted by Basuroy et al. and Chevalier and Mayzlin who studied the effect of valence of reviews on online book and movie ticket sales (Basuroy et al., 2003; Chevalier and Mayzlin, 2006). They found that reviews that included negative comments had a greater impact on consumer decisions than reviews that were positive. Similarly, a study conducted by Khasawneh et al. found patients relied more on negative comments than the positive when the review information is inconsistent, resulting in their being more confident in not choosing a dentist (Khasawneh et al., 2018). As a result, our hypothesis that the likelihood to hire the service provider would increase as the response changes from no response to elaborate response and valence of the review changes from negative to positive was only partially supported. We found that the likelihood increases as the valence of the reviews changes from negative to positive, but no effect from the service provider's response for these reviews. When the reviews were neutral or a combination of positive and negative, the likelihood to hire increased from no response to elaborate response.

Initially, we hypothesized that the confidence in the decision would increase as the response changes from no response to elaborate response and the valence of the review changes from negative to positive. However, the results did not confirm this. We found that in general, participants were more confident in their decision after reading positive or negative reviews with an elaborate response than a neutral or a combination of positive and negative reviews. Additionally, when there was

no response, neutral or negative reviews yielded more confidence than positive or a combination of positive and negative reviews. These findings suggest that participants generally have more confidence when the information is consistent, for example positive reviews and elaborate responses, or the reviews are negative, resulting in not hiring the contractor.

With respect to trust in the information, we hypothesized that positive reviews are less trustworthy than neutral, negative and a combination of positive and negative reviews. Our results rejected this hypothesis as we found the opposite, i.e., participants trusted positive reviews the most. This finding agrees with a study conducted by Ladhari and Michaud (2015), who found users trusted positive information more than negative or neutral, leading to a positive attitude towards their intention to book a hotel (Ladhari and Michaud, 2015). Additionally, participants tend to trust the information when the service provider gives an elaborate response to reviews rather than a standard response or no response, suggesting that participants want to understand the situation from both sides, which is not possible when the response is standardized or a template or there is no response. In contrast, even though participants were confident in their decision of not hiring the contractor, they trusted the negative reviews the least, suggesting a disconnect in user trust when it comes to negative information, a potential direction for future research.

Based on the results from this study, we found that service provider's response acts an important additional cue for user's as they make sense of the information, especially when the information is inconsistent, i.e., there are neutral reviews or positive and negative reviews. As a result, it helps the users understand the perspective from both the reviewer's and the service provider's side. Additionally, the response needs to be elaborate and not just a standardized one-sentence reply to the review since the latter doesn't provide sufficient information for the users. The results from this study are useful for both service providers as they know now how to address a review is written about their service and the online consumers as they get the information they need to make an educated decision.

### 5.1. Limitation and future direction

This study is not without its limitations. Since the method and data collection were conducted using a remote tool, we could not include a post-test debriefing session to ask further probing questions to obtain additional insights. Participants in this study trusted the negative reviews the least, suggesting a disconnect in user trust with such information. Future research could explore the potential to restore trust in this information. In addition, future research could also explore the impact of incorporating various mechanisms such as decision aids or other cues in rebuilding trust among the users.

## 6. Conclusion

This study focused on the effect of the valence of the reviews and a service provider's response to a review on an online consumer's decisions. The results from the study show that when the information was consistent, i.e., reviews were either completely positive or negative, the service provider's response doesn't affect the consumer's decisions. Participants trusted the positive reviews the most and exhibited confidence in hiring the contractor. On the other hand, when the reviews were inconsistent, i.e., neutral reviews or a combination of positive and negative reviews, a service provider's elaborate response increased the likelihood of being hired than when there was no response. However, the likelihood values fell in the middle range, and confidence was relatively reduced, suggesting the participants were unsure if they wanted to hire the contractor. When the reviews were neutral (contained both positive and negative aspects) with a standard or no response, participants were confident in their decision not to hire the contractor. Participants exhibited a lack of trust in negative reviews,

suggesting a potential area of focus for future research. Overall, we can see that valence of a review is of paramount importance for a consumer, while the service provider's response to a review becomes a critical cue when the information is inconsistent.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Appendix A and B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.dibe.2021.100061>.

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