Customer Reviews: Motivated by Error-Free Service or Successful Recovery?

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Across two studies, customer perceptions and outcomes of quality service in different industries were investigated using a qualitative approach that involved computer-based text analysis. In study 1, 60 participants were asked to provide positive and negative experiences in the restaurant and cell phone industries. In study 2, 900 social media comments were collected regarding the cell phone, airline, and restaurant industry. Perceptions of quality service were not necessarily error free. Error free service was, however, expected in some industries. Future research should continue to mine text data to better understand the customer experience.

INTRODUCTION

In competitive markets companies strive to provide quality products and services to their customers to sustain competition and increase profitability. In addition to providing quality products and services, companies must also manage customer relations to exceed customer expectations (Parasuraman, Berry, &

Zeithaml, 1992) and provide satisfaction. Satisfaction results when a service encounter meets the customers' expectations on elements such as quality and service (Ahmad, 2002). High levels of customer satisfaction lead to increased customer loyalty which is the single most important driver of long-term financial performance (Jones & Sasser, 1995, p. 91). What matters is not just satisfied customers but customers who are completely satisfied. Jones and Sasser (1995) in their research on customer satisfaction and defection found that in competitive markets the gap in sustained loyalty between satisfied and completely satisfied customers tends to be high. Thus, suggesting that completely satisfied customers tend to be more loyal and less likely to switch to competing firms than customers who are merely satisfied. In markets where competition is less intense, or where a monopoly exists, providing outstanding value is less important to maintain loyal customers. These markets create what is called "false-loyalty" where customers remain loyal only if there are no alternate choices available. When alternate choices become an option, customers tend to defect to better services. When customer's switch firms it impacts a businesses' bottom line (Reichheld & Sasser, 1990).

Keaveney (1995) in his exploratory study on customer switching behavior found core service failures, characterized as mistakes or technical problems, as the largest category of service failure that led to customer switching behavior followed by service encounter failures which are characterized by personal interactions between customers and employees. To avoid such switching behaviors companies must have recovery processes that are highly responsive. Service recovery refers to the actions an organization takes in response to a service failure (Gronroos, 1988). Service failure occurs when there is a disconnect between a customer's expectation and reality of the product or service offered (Shapiro, Nieman-Gonder, Andreoli, & Trimarco-Beta, 2006). An organizations' response to such service failures can either restore customer satisfaction and loyalty or push the customers to competing firms (Smith, Bolton, & Wagner, 1999).

Customer service recovery efforts have mainly been explained using social exchange theory and the organizational justice framework (Adams, 1965; Smith et al., 1999; Shapiro & Nieman-Gonder, 2006; Tax & Brown, 1998). Customers tend to match the recovery resources they receive with the type and magnitude of the service failure that they encounter (Smith et al., 1999). According to past research, customers evaluate three aspects of service recovery when evaluating the fairness of the recovery effort. These include: the outcomes of fairness, procedural features and interactional treatment (Tax & Brown, 1998). This is consistent with the organizational justice literature which divides organizational justice into three categories: distributive justice, procedural justice and interactional justice (Bies & Moag, 1986; Greenberg, 1987; Homans, 1961; Thibaut & Walker, 1975). Distributive justice is a perception of the fairness of resource distribution and includes pay, rewards, promotions and the outcome of dispute resolution (Adams, 1963; Blau, 1964; Colquitt, Greenberg, & Zapata-Phelan, 2005; Homans, 1961), procedural justice is a perception of fairness of the procedure that results in the distribution of outcomes (Thibaut & Walker, 1975; Leventhal, 1980) and interactional justice is the perception of the nature of interpersonal treatment received from others (Bies & Moag, 1986; Colquitt, Greenberg, & Zapata-Phelan, 2005).

Based on a cross-sectional design using retrospective reports Tax, Brown and Chandrashekaran (1998) found the three dimensions of organizational justice were positively related to customer satisfaction with the recovery process. They also found satisfaction with complaint handling was positively correlated to trust and commitment. In addition, experimental research on justice-based recovery strategies found distributive justice, interactional justice or a combination of these strategies were successful in maintaining customer satisfaction, loyalty, positive word of mouth (WOM) and minimizing negative word of mouth after a service failure had occurred (Shapiro & Nieman-Gonder, 2006).

Similarly, Smith et al. (1999) developed a comprehensive theory-driven model of customer satisfaction with service recovery and failure encounters. They presented an exchange framework using principles of resource exchange, mental accounting and prospect theory. They refer to service recovery as a "bundle of resources" that can be used when a service failure occurs. Their model explains the effects of service recovery efforts in response to a service failure on the customers' perceptions of justice and

judgement of satisfaction. They hypothesize that the type and magnitude of failure (i.e. the context of the failure) and service recovery attributes (compensation, response speed, apology, initiation) influence customers perceptions of justice and satisfaction.

Smith et al. (1999) found that each of the service recovery attributes influence at least one type of perceived justice. Where compensation (offered as discounts, free merchandise, coupons) was positively related to distributive justice; a speedy recovery was positively related to procedural justice; and an apology along with organization-initiated recovery were positively related to interactional justice. Perceptions of justice were positively related to customer satisfaction. In addition, the type (process and outcome) and the magnitude (high and low) of service failure influenced customer satisfaction. Process failure (how customers receive a service) led to more customer dissatisfaction than outcome (what customers receive as a service) failure while a high magnitude failure led to more dissatisfaction than a low magnitude failure. Thus, providing evidence that customers expect recovery resources that are equal or considered fair to the type and magnitude of the failure that occurs.

Apart from fairness in handling service recovery efforts, Michel, Bowen and Johnston (2009) state that management of successful service recovery efforts require the integration of three interdisciplinary perspectives which include customer recovery, process recovery and employee recovery. Customer recovery perspective focuses on reestablishing the aforementioned justice dimensions after a service failure and ensuring that the service failure is not repeated; process recovery perspective involves learning from the failure and taking steps in making improvements by gathering and analyzing service failure data; and employee recovery perspective involves practicing internal service recovery by training employees to deal with service failures and keeping employees happy so that they keep the customers happy. According to Michel et al. (2009), different groupings of the three different perspectives cause "tensions" which remain unresolved when only one of the perspectives is used as a solution. By taking integrated actions organizations might help resolve the tension leading to successful recovery efforts.

Previous research has also focused on the service recovery paradox, which is described as an increase in levels of customer satisfaction after a service failure and superior recovery than when the failure did not occur at all (Etzel & Silverman, 1981). While some evidence lending support to the service recovery paradox has been found, the results are mixed (Maxham & Netemeyer, 2002; McCollough, Smith & Bolton, 1998). Evidence has been found that customers are more satisfied with error-free services (McCollough, Berry, & Yadav, 2000). Kau and Wan-Yiun Loh (2006) using structured survey questionnaires found that customers who were satisfied with the recovery effort reported higher levels of trust, positive word of mouth and loyalty compared to dissatisfied customers. However, customers who were satisfied with the initial error free service, expressed greater trust and positive word of mouth than customers who were satisfied after a recovery effort.

While a vast majority of research focused on customer service encounters offline, the advent of technology changed the way organizations conduct business thus shifting the focus of research to customer service encounters online. The introduction of the internet and its subsequent evolution has transformed the way organizations now communicate and interact with its customers. In recent years, social media is the most popular mode used by both organizations and customers to communicate with each other (Tripp & Grégoire, 2011). This recent trend has provided customers with a platform to voice their satisfactions and dissatisfactions with ease. Customers now no longer have to deal with complicated processes to complain about their dissatisfaction, as they can compose a complaint online within minutes (Grégoire, Sally, & Tripp, 2015). This new avenue has also changed the amount of control firms have on what is being said and written about them. Firms have moved from being able to strategically control and place information aimed at maintaining good public relations to being mere observers of information about them (Kaplan & Haenlein, 2009).

Complaints are no longer private and are publicly available on various social media platforms. Customers may use social media to express both their positive and negative experiences. According to Gregoire et al. (2015) there are six ways in which consumers may use social media to complain. These include: (1) directness, which involves contacting the firm using social media platforms like Twitter or Facebook to report their problem; (2) boasting, by providing positive publicity via Facebook or Twitter of

a successful service recovery effort; (3) badmouthing, by spreading negative word-of-mouth without contacting the firm; (4) tattling, by complaining to third parties; (5) spiting, by spreading negative publicity for revenge; and (6) feeding the vultures, which includes amplifying a failed recovery effort and providing competitors with an opportunity to steal customers. While boasting might help expand the consumer base due to positive publicity, instances like spiting and feeding the vultures can make a service failure ugly if the complaint goes viral. Spite-driven complaints are most likely to go viral, in part because customers will do whatever it takes to tarnish the firm's reputation and credibility in order to fulfill their desire for revenge (Grégoire et al., p 178). The best way a firm can defend itself from such complaints is by avoiding service failure. However, if a failure does occur then it is important to have a communication plan in place to address such online complaints (Grégoire et al., 2015).

According to Litvin, Goldsmith and Pan (2008), interpersonal influence and WOM influence a consumer's purchase decision. They further state that firms operating in competitive markets such as hotels and tourism industries can use online interpersonal influence to gain a competitive advantage. Online reviews are a form of electronic Word-of-Mouth (eWOM) that impact customer purchase decisions (Chevalier & Mayzlin, 2006). Kim, Lim, and Brymer (2015) illustrated the impact of online reviews on a hotel's performance. They found that better overall online ratings by customers and the firms high response rate to negative comments were positively related to the hotels performance. Thus, suggesting the importance of online reviews in influencing a firm's performance.

Prior research has focused on the effect of error-free service or service failure and recovery efforts on customer satisfaction. While established models have been tested (Smith et al., 1999) it is important to evaluate how customers express their feelings around service encounters. Given the importance of the role of social media in influencing a firm's performance, the present study aims to demonstrate customer perceptions of service quality online using a mix of quantitative and qualitative data sources. According to Jick (1979) combining two methodologies helps balance the weakness of one method with the strengths of another. Study 1 is conducted in a laboratory setting where participants are prompted to provide a description of positive and negative customer service experiences with two service providers. Study 2 extends the findings of Study 1 and explores the perceptions of service quality using actual comments and reviews from three types of service industries online.

- *Research Question 1:* How often are problems and service recovery efforts described in positive service encounters?
- *Research Question 2:* What type of language is used to describe positive and negative service encounters across industries?
- *Research Question 3:* Does the language and sentiment expressed in customer descriptions differ across industries?

METHOD-STUDY 1

Participants

Sixty undergraduate college students, enrolled in a psychology course at a public Northeastern University, participated in the first study. The majority of participants (92%) were between the ages of 18 and 23 years old and 72% were female. To ensure that participants had adequate consumer experience, they were asked to report their cellular phone use and dining habits. One hundred percent of participants in the cellular phone condition reported frequent use of their cell phone and 47% were responsible for paying their bill some months. One hundred percent of participants reported that they have eaten at a dine-in restaurant and 73% reported that they are sometimes responsible for the bill.

Design and Procedures

Participants were randomly assigned into one of two conditions: cellular phone (n = 30) or restaurant (n = 30) customer experience. Once assigned, they accessed an online survey which first asked them to spend a few moments reflecting on their experience as a cellular phone or restaurant customer, depending on condition. Specifically, they were asked to think about their past and current cellular phone provider

or the dine-in restaurants where they have eaten and the customer service experiences that they have had with those companies or restaurants. After several minutes of contemplation, they were asked to provide examples of positive and negative customer service experiences. First, participants were asked to provide a detailed example of a positive customer service experience that they have had with their cellular phone company or at a dine-in restaurant. They were asked to provide specific details of the experience and to specify what made it positive. They were then asked to provide a negative customer service experience using the same procedure. No length requirements were specified, and participants had approximately 10 minutes to type their responses into the survey. Data were downloaded and saved as four separate conditions to facilitate analysis: (1) Positive cellular experience, (2) Negative cellular experience, (3) Positive restaurant experience, (4) Negative restaurant experience.

RESULTS-STUDY 1

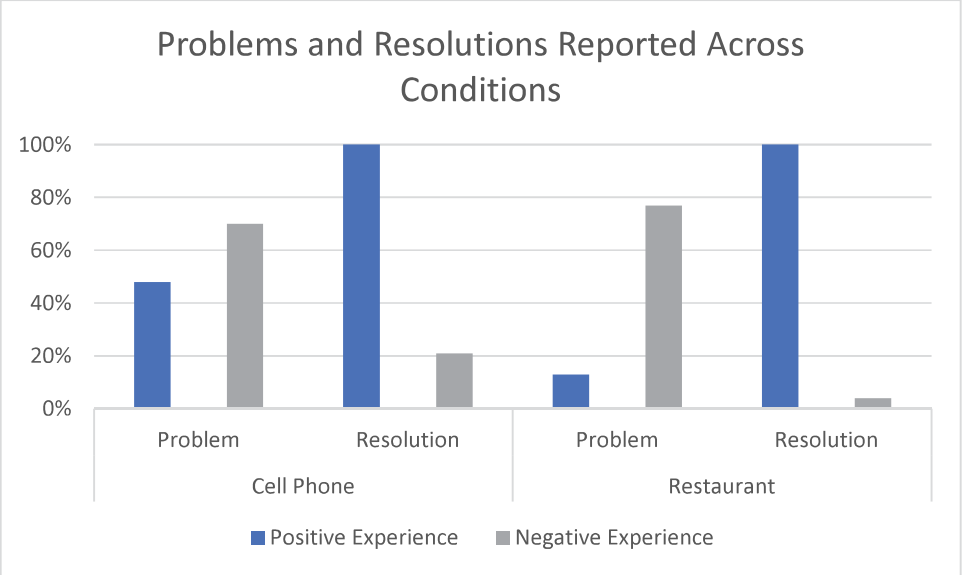
Content analysis was used to evaluate descriptions of positive and negative service experiences across industries. Two independent evaluators identified the occurrence of service problems and whether a resolution was offered in each condition.

Table 1 indicates the percentage of problems reported as evaluated by the independent raters. In the cellular condition, 48% of participants reported a problem in describing the positive experience. 100% of problems were solved, often with resolution and considerate treatment. In comparison, 70% of negative cellular experiences involved a problem and only 21% were resolved. Perceptions of quality service did differ across industries. Figure 1 indicates that 87% of positive restaurant experiences involved error-free service. In the 13% of cases reporting a problem, 100% of problems were resolved. 77% of participants described a problem in a negative restaurant experience with only 4% of problems being resolved. Quality service in the cell phone industry was not necessarily error-free, but all failures were mitigated with service recovery efforts. In contrast, customer perceptions of quality service in the restaurant industry depend on error-free service.

TABLE 1
PERCENT OF PROBLEMS REPORTED

	Cell Phone		Restaurant	
	Problem	Resolution	Problem	Resolution
Positive Experience	48%	100%	13%	100%
Negative Experience	70%	21%	77%	4%

FIGURE 1
PERCENTAGE OF PROBLEMS AND RESOLUTION REPORTED



This student produced corpus was analyzed several different ways. Since this was a college student sample and the participants were prompted to provide written responses we conducted analyses to better understand these prompted written responses including highest tf-idf and log ratio techniques. To analyze the most frequently used words in participant descriptions of positive and negative customer experience, the research team first cleaned the texts and deployed the "tidytext" package in R. The preliminary analyses removed all the punctuations as well as stop words such as *a, are, that,* etc. "Tidytext" can convert the document into tokens and a frequency chart was built to pull up the number of terms in the text. The researchers used the bing dictionary in R to analyze sentiment or consumer attitude (Devault, 2018). Figure 2 displays the most common words that appeared across both conditions. As can be seen in Figure 2, the top 10 words across conditions are *service, experience, customer, time, waiter, table, waitress, family, positive* and *minutes*. For this analysis restaurant names, phone provider names, stop words and punctuation were removed.

Figure 3 shows the most common words in negative and positive reviews in order of their contribution to the overall sentiment displayed in figure 2. The first words in each category are *negative* and *positive*. Since participants were asked to describe both positive and negative experiences, they ended up using this terminology in their responses. After these words, we see in the negative descriptions *bad, terrible, rude, nice, free,* and *horrible*. This language seems to indicate interpersonal treatment across industries matters and that promises of free items or additional rewards is important. In the positive descriptions, terms such as *friendly, nice, free, delicious, helpful, helped,* and *attentive* were most common. This terminology indicates the importance of personal experiences of kindness in a customer service experience.

FIGURE 2
TOP 10 WORDS ACROSS CONDITIONS

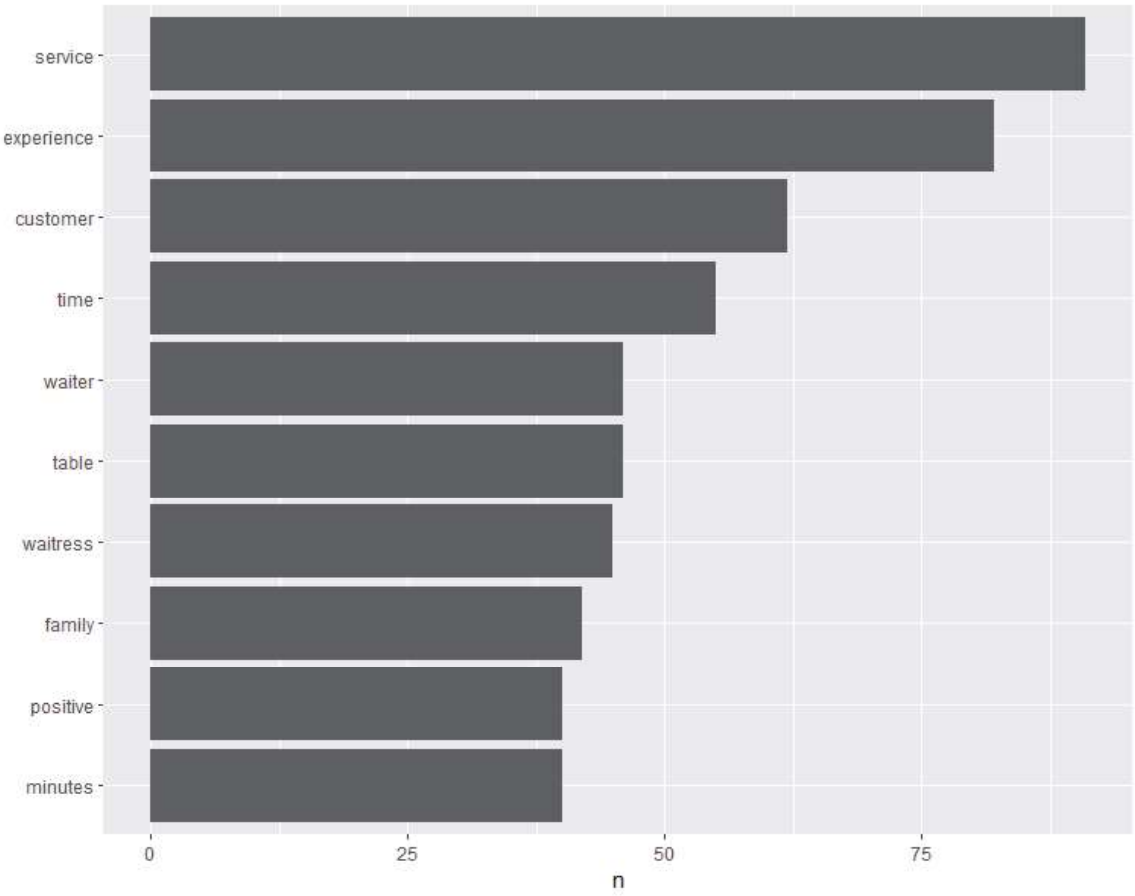
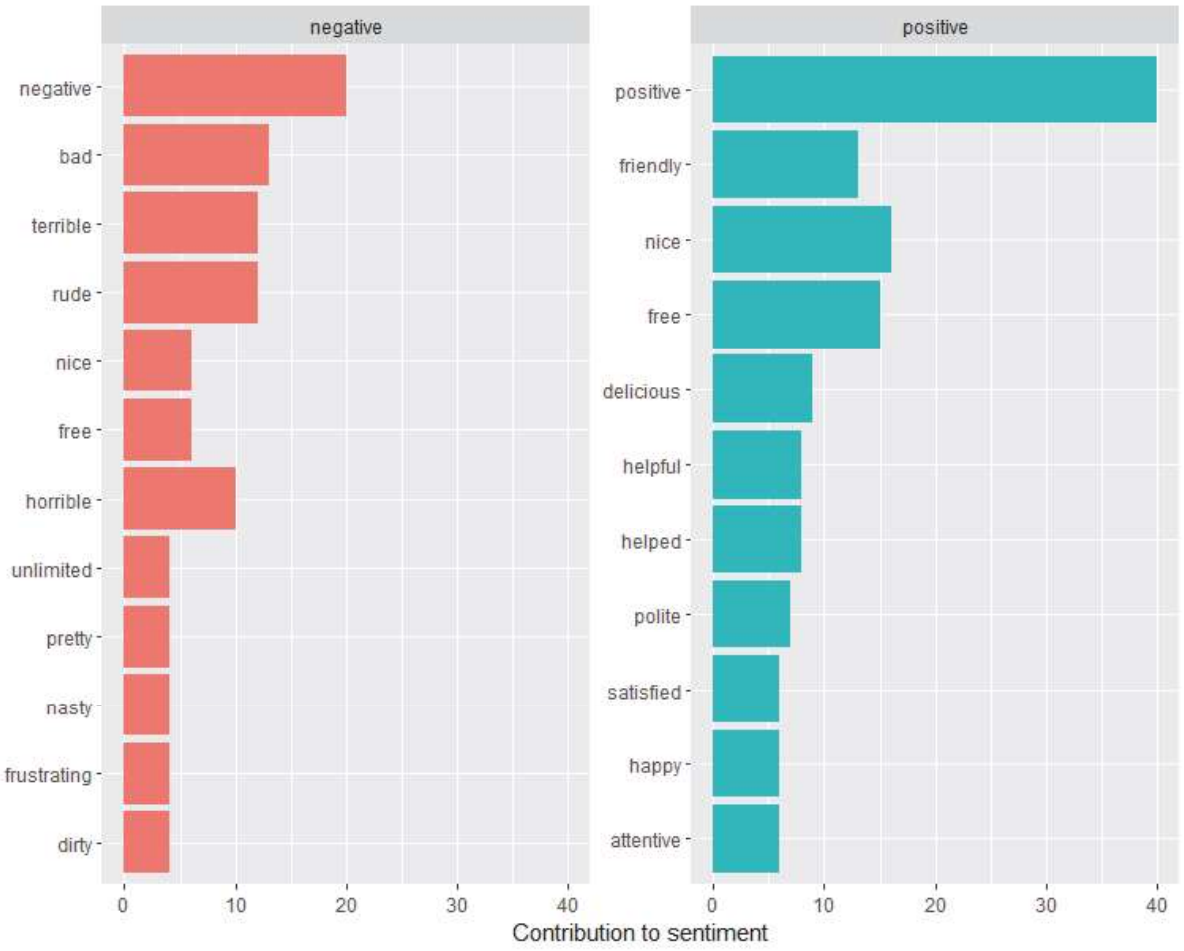


FIGURE 3
MOST COMMON WORDS IN POSITIVE AND NEGATIVE REVIEWS



The researchers used the bing dictionary in R to run a comparison of overall sentiment between phone reviews and restaurant reviews. Figure 4 contains the overall sentiment chart which indicates the total number of reviews by industry. This indicates that the restaurant industry reviews resulted in reviews using more total words used than the phone industry. Figure 5 illustrates a sentiment comparison by industry. Restaurant reviews have a larger word count in total and contain more positive and negative words than the phone industry indicating a greater likelihood of explanation around experiences. Table 2 shows the ratio of negative to positive words with the restaurant industry having a higher ratio than the phone industry.

Figure 6 shows the most common terms by sentiment and by industry using the bing dictionary in R. An interesting commonality can be seen between both phone and restaurant services. Both positive and negative reviews are impacted by employee behavior and politeness towards customers. In the restaurant category we see more words that indicate enjoyment of food (i.e. delicious) and the environment (i.e. cold) that drive positive and negative reviews. The phone industry has more language related to price (i.e. cheaper), functionality of devices (i.e. broken) and plans (i.e. unlimited). Figures 7 and 8 present word clouds using the R package "*wordcloud*". The word clouds indicate the most common terms by positive and negative valence. The larger the word the most often it appears in the corpus of the text. The most positive words for the restaurant industry were *nice, positive, friendly,* and *delicious*. The most negative words were *terrible, rude, horrible,* and *negative.* These results seem to indicate that service failures most

often stem from poor treatment whereas service recovery may stem from food quality as well as treatment. The most positive words for the phone industry were *positive, free,* and *helpful.* The most common negative words for the phone industry were *bad, broken, and frustrating***.** These results indicate that the customer service failures often come from frustrating processes or product failures and that service recovery comes from effective customer support and free products.

FIGURE 4
OVERALL SENTIMENT COMPARISON

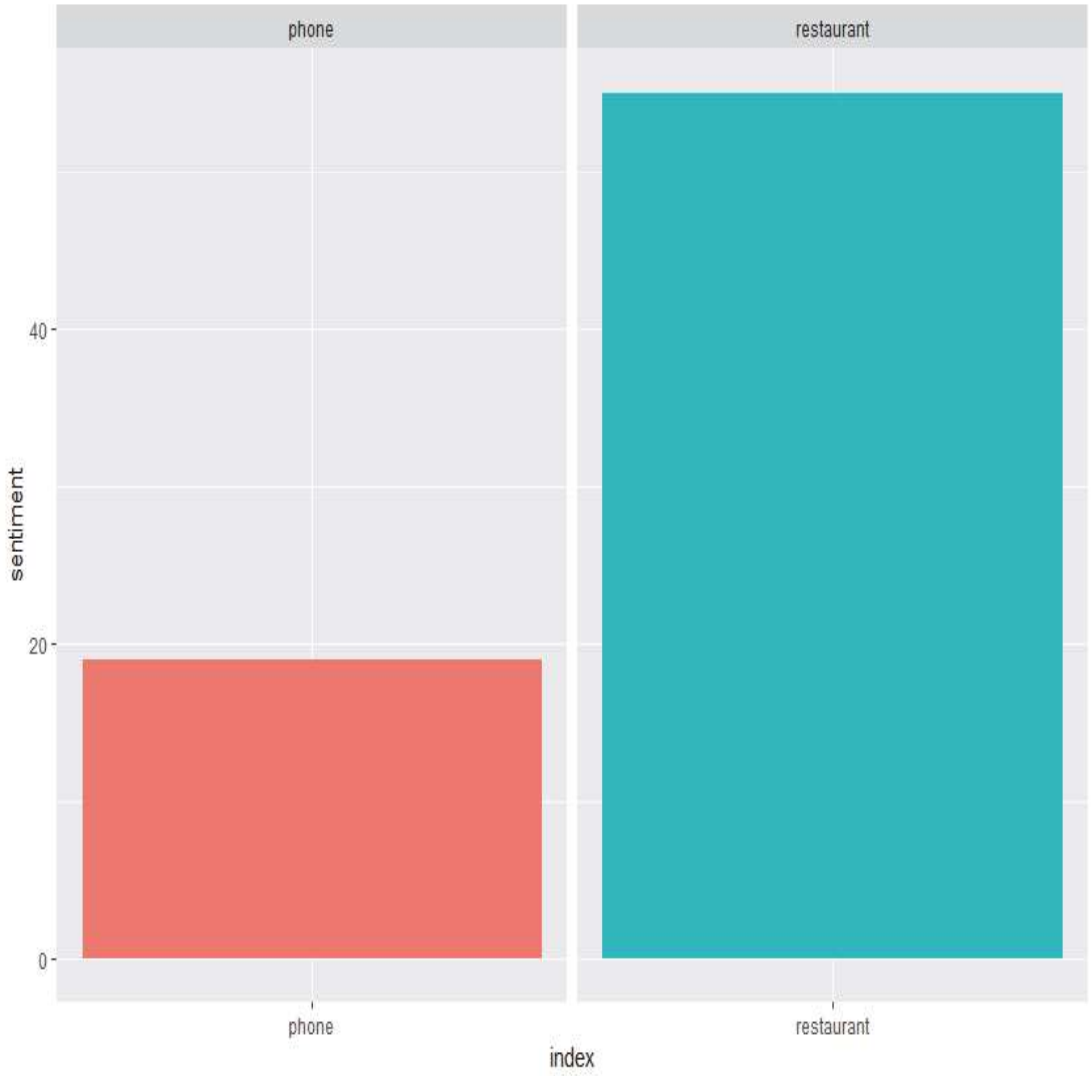


FIGURE 5
SENTIMENT COMPARISON BY INDUSTRY

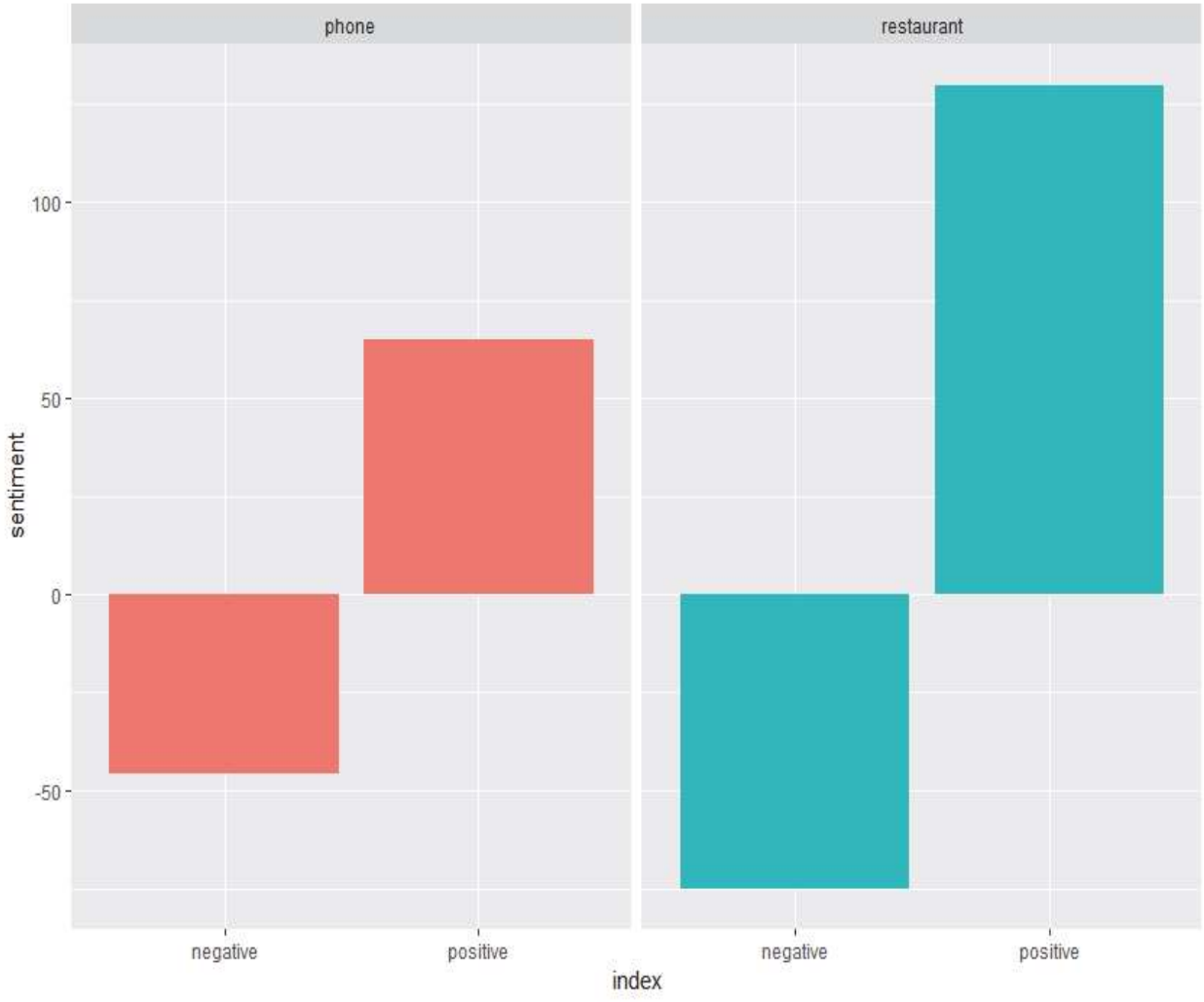
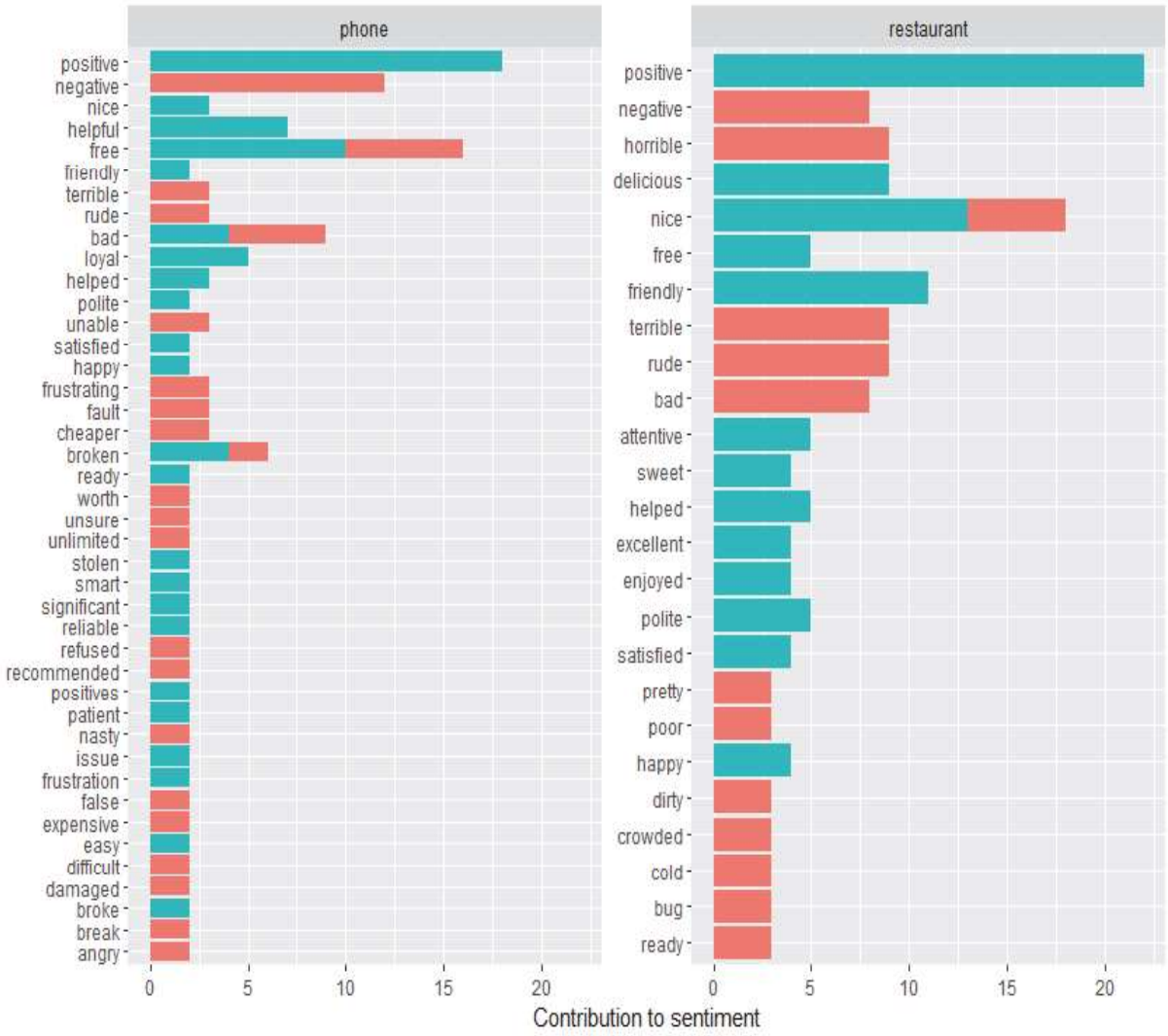


TABLE 2
RATIO OF POSITIVE AND NEGATIVE WORDS BY INDUSTRY

Industry	*Negative words*	*Positive words*	*Ratio*
phone	127	61	2.08
restaurant	165	59	2.80

FIGURE 6
MOST COMMON TERMS BY SENTIMENT AND INDUSTRY



Note: These words contributed to positive and negative sentiment by industry. Blue is positive, orange is negative.

FIGURE 7
RESTAURANT WORD CLOUD BY SENTIMENT

FIGURE 8
PHONE INDUSTRY WORD CLOUD BY SENTIMENT

Figure 9 displays the tf-idf by industry. Tf refers to term frequency or how often a term appears in the corpus; idf refers to inverse document frequency. Inverse document frequency decreases the weight for commonly used words and increases the weight for words that are not used very much in a corpus of text. The tf-idf statistic is used to measure how important a word is to a document in a corpus of documents (Silge & Robinson, 2017). The top 15 words are included in Figure 9. Some strange words seem to come up in the corpus of texts such as *Mexico* in the phone industry which seems to indicate that service with regards to international calling is quite important. In the restaurant reviews language focused on the food itself such as *dessert, meatballs, and sushi*. The ultimate takeaway here is that the food itself (i.e. the product) contributes to perceptions of quality service. In the restaurant industry it may be difficult to untangle the effect of product quality from that of service quality.

FIGURE 9
TF-IDF BY INDUSTRY

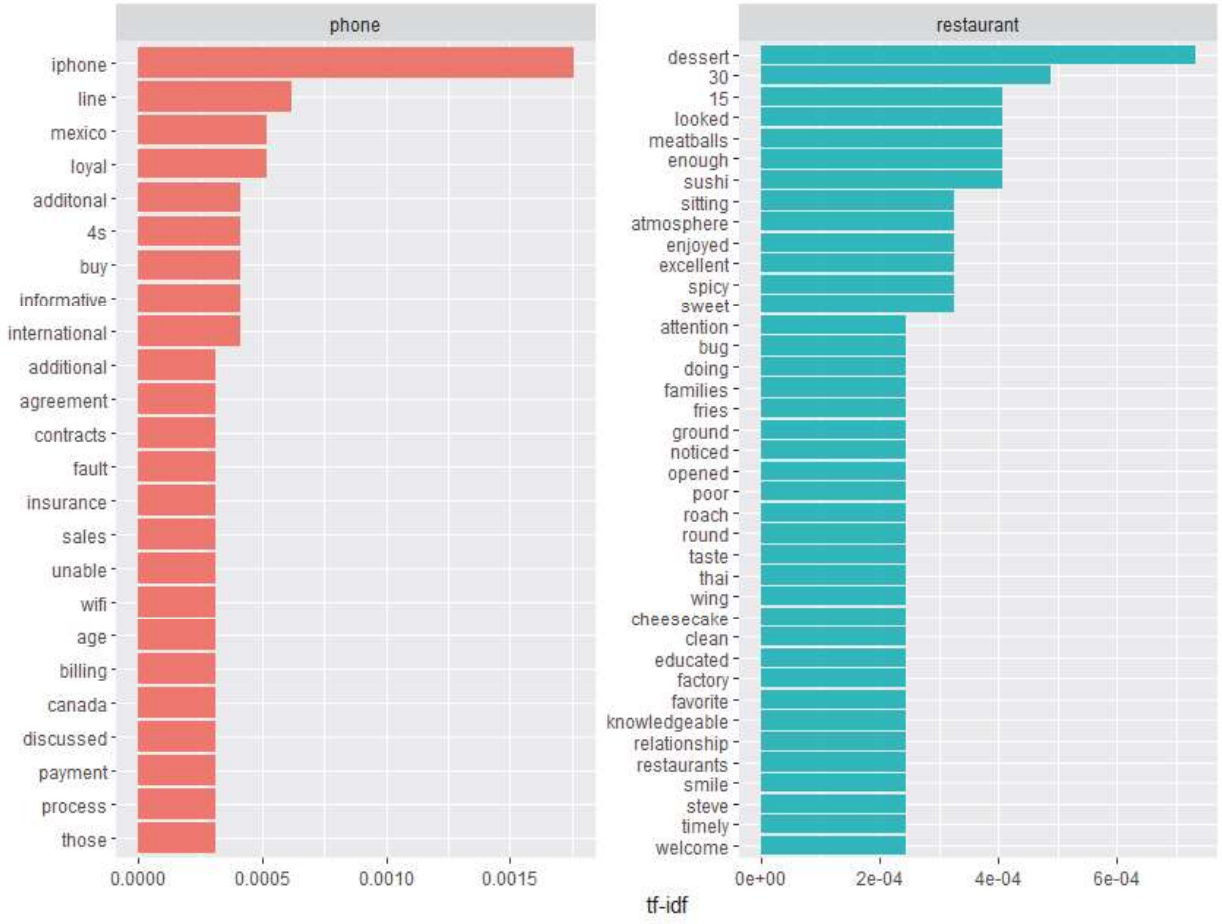
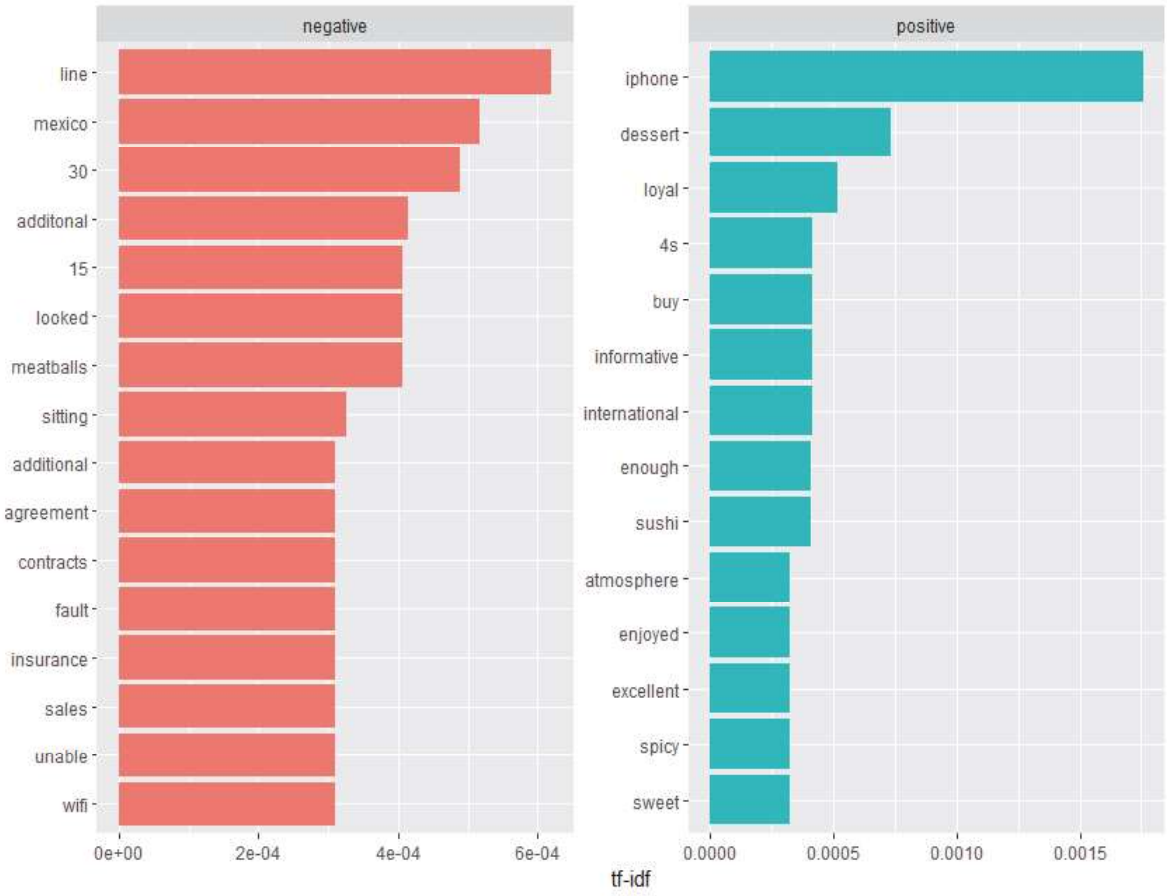


Figure 10 shows another analysis of tf-idf from the combined corpus of positive and negative reviews across industry. The words iPhone and dessert were among the words that most drove positive reviews which indicates that products have a major impact on customer satisfaction across both industries. On the negative side, contract terms, insurance, and Wi-Fi seem to be major contributors to issues within the phone industry whereas seating and specific food items (i.e. meatballs) seem to drive negative reviews of the restaurant industry. These results seem to indicate an overlap in both service and products in customers' experiences of satisfaction.

FIGURE 10
HIGHEST TF-IDF BY REVIEW TYPE



Since study 1 used a sample of college students we wished to see if certain terminology held different valences of positivity and negativity. Figure 11 contains an analysis of the log ratio of sentiment by term. This analysis indicates the greatest difference in terms by language (Silge & Robinson, 2017). Thus, the word positive has the largest difference in sentiment in comparison to other terminology. We see that the words *like, good, great, nice,* and *free* have very strong sentiment differences from negative terms such as *negative, bad, problem,* and *terrible.* The terms that have the smallest sentiment difference, in other words that appear to have an equal effect on both positive and negative reviews are *recommend, loyal, enough, frustrating,* and *crowded*.

FIGURE 11
LOG RATIO OF SENTIMENT

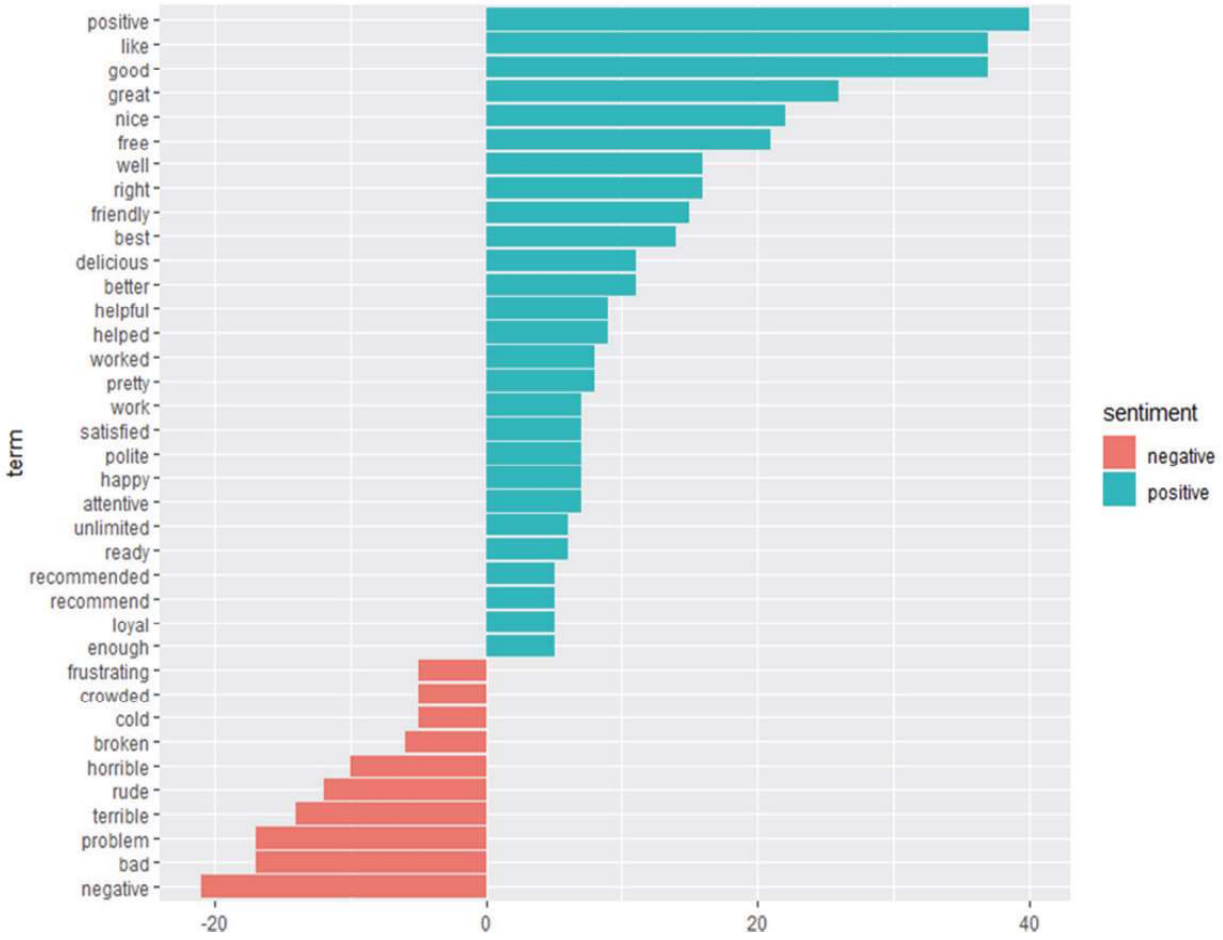


Figure 12 shows the results of an analysis using R called topic modeling. Topic modeling is a method for unsupervised classification of text which has similar attributes to clustering on numeric data (Silge & Robinson, 2017). Topic modeling is used to find natural groups of terms in a phenomenological manner. Rather than using a dictionary where the terms are already defined, this approach allows natural language to lead the way to the most common terms. Since there were two industries, the researchers assumed that two topics would appear. The tidy method, originally from the broom package (Silge & Robinson, 2017) is primarily used for tidying model objects prior to data analysis. The tidytext package provides this method for extracting the per-topic-per-word probabilities, called β ("beta"), from the model. The results indicate that there were two distinct topics in the complete corpus. The common term in the first topic is the word "phone" followed by 'service', 'verizon' and 'experience'. Topic 1 is clearly the phone category due to the probability of the term phone appearing. Topic 2 is the restaurant category with terms such as 'food', 'restaurant', 'waiter', table, and 'waitress' most likely to appear. These results confirm the manipulation used in the study.

FIGURE 12
MOST COMMON TERMS USING TOPIC MODELING BY 2 TOPICS

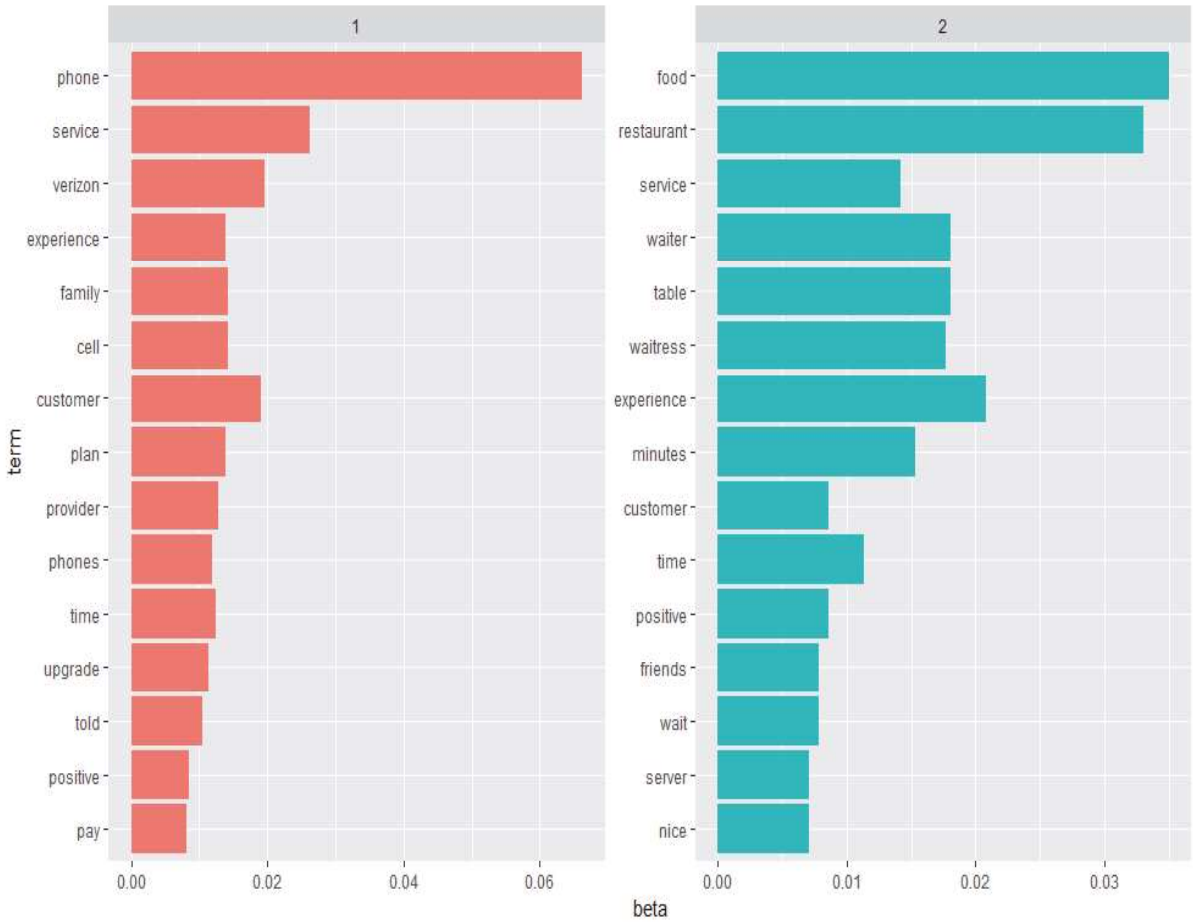
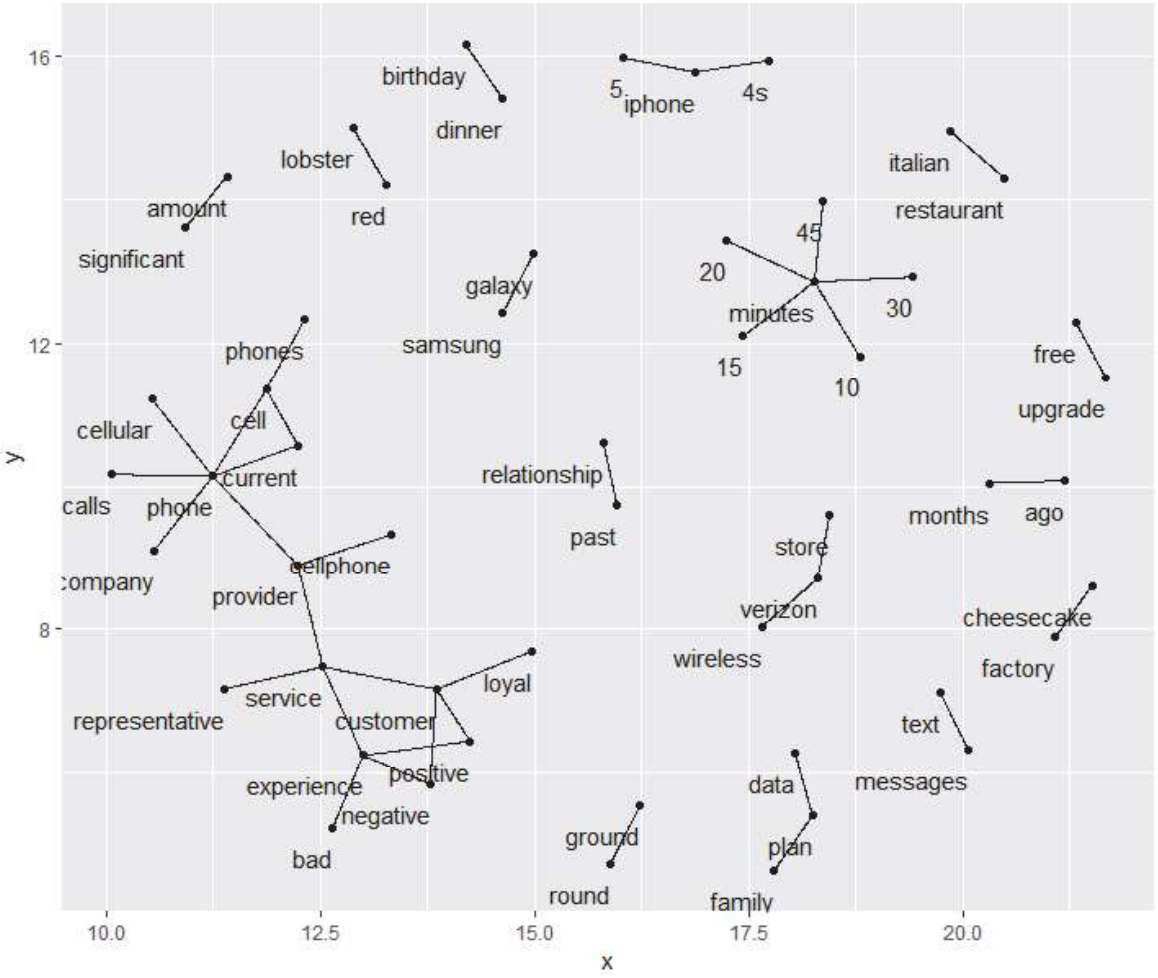


Figure 13 contains the most common bigrams for the overall text. Bigrams are pairs of consequent words that can help researchers better understand how words fit together. There are several types of bigrams that we see some related to products i.e. iPhone 4s, Samsung galaxy or locations i.e. Italian restaurant, cheesecake factory. We also see pairs that indicate experiences at specific stores i.e. Verizon store. We see that the word phone is a central term and is related in bigram form to many other terms such as cellular, calls, and company. Time is also an important issue across the corpus with the word minutes being related to numbers.

FIGURE 13
MOST COMMON BIGRAMTS FOR OVERALL TEXT



METHOD STUDY 2

Participants

In Study 1, participants were asked to recall prior service experiences in a laboratory setting. In Study 2, perceptions of service quality were investigated using actual customer ratings and comments taken from online customer websites. Nine hundred customer comments were analyzed across three types of service providers.

Design and Procedures

To replicate and extend the results of Study 1, three types of services providers were investigated in this research: airlines, cellular phone companies, and restaurants. First, comprehensive lists of United States based companies in each service category were identified using www.WhistleOut.com, www.nrn.com, and www.wikipedia.org, respectively. To ensure consistency in selected providers, the selection of airlines was limited to airlines with primarily domestic flights, cellular phone providers to traditional carriers with contracts and monthly-based payment plans, and restaurants to those considered casual-dining establishments.

A random number generator was used to select specific service providers from each category to be included in the analysis (e.g., Delta, Verizon, Ruby Tuesdays; note that these companies were not included in this study). Ten airlines were randomly selected from the complete listing of U.S. airlines. Similarly, 10 traditional cellular phone providers were randomly selected for inclusion. The selection of restaurants was a multiple step process. First, 10 casual-dining establishments were randomly selected. Then, the locations of each restaurant were identified using www.menuism.com. This website lists each restaurant, the states in which they are located in the U.S., and the specific locations within each state. To facilitate accessing customer comments, it was necessary to identify specific restaurant locations. Thus, a random number generator was used to select three states where each restaurant was located and then again to select a specific location from each state. The resultant list of restaurants included three different locations of each of 10 casual-dining restaurants for a total of 30 specific locations.

Once service providers were identified, customer ratings and comments were accessed from popular online review websites: Trip Advisor, Consumer Affairs, and Yelp for each of the selected airlines, cellular phone providers, and restaurant locations, respectively. The 30 most recent ratings were selected for each of the 10 airlines and 10 cellular phone providers. The 10 most recent ratings were selected from each of the 30 specific restaurant locations. This resulted in 900 customer comments for analysis. Each customer review website had a numeric rating system of 1 to 5 to accompany qualitative reviews, with one being lowest rating. Using this system, customer comments were divided into two categories: ratings from 1 – 3 were grouped into a negative service experience condition and ratings of 4 – 5 were considered positive service experiences.

Data were downloaded and saved as six separate conditions to facilitate analysis: (1) Positive airline experience, (2) Negative airline experience, (3) Positive cellular experience, (4) Negative cellular experience, (5) Positive restaurant experience, and (6) Negative restaurant experience.

RESULTS-STUDY 2

A text analysis was conducted by three independent raters to determine if each comment (1) described a service failure, and (2) if the failure was resolved. Table 3 contains the percentage of problems by industry and the percentage of problems resolved. Figure 14 reports the percentage of problems and resolutions reported across conditions (industry) as evaluated by the independent raters.

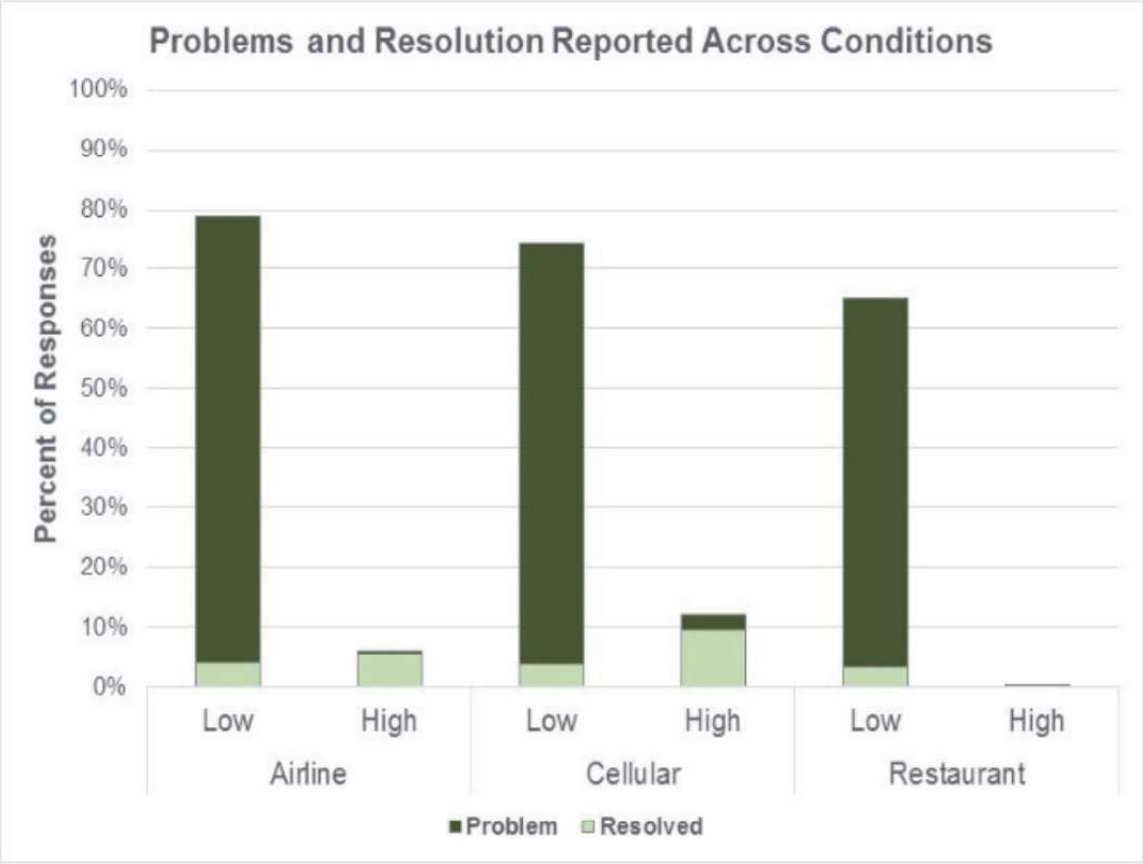
A chi square analysis was conducted across the rated comments. Low service comments described significantly more failures than high service comments across industries. $\chi 2$ (1, N=899) = 405.27, p <.001. The few failures described in positive comments were resolved at a significantly higher rate compared to low comments across industries. $\chi 2$(1, N=354) = 169.08, p <.001

TABLE 3
PERCENTAGE OF PROBLEMS AND RESOLUTIONS REPORTED

		No Problem		Problem		Resolution*	
Industry	Service	n	%	n	%	n	%
Airline	Low	23	21.5%	84	78.5%	4	4.8%
	High	181	93.8%	12	6.2%	11	91.7%
Cellular	Low	47	26.3%	132	73.7%	6	4.5%
	High	107	88.4%	14	11.6%	11	78.6%
Restaurant	Low	59	34.7%	111	65.3%	5	4.5%
	High	128	99.2%	1	.8%	1	100%
Total	Low	129	28.3%	327	71.7%	15	4.6%
	High	416	93.9%	27	6.1%	23	85.2%

*Percentage of problems resolved

FIGURE 14
PERCENTAGE OF PROBLEMS AND RESOLUTIONS REPORTED



Since the data in study 2 were drawn from a sample of realistic comments placed on a variety of websites the researchers eschewed conducting a log ratio analysis and instead focused on text mining for top terms used, topic modeling, and tf-idf. The data from the sites was cleaned and analyzed using the 'tidytext' package in R. Figure 15 indicates the most common terms across industries (airline, phone, and restaurant) The most common term across industries was the term *service*. All three industries are service industries and the reviews reflected service. The other common terms were *flight, phone, time* and *food.*

FIGURE 15
MOST COMMON TERMS ACROSS INDUSTRY

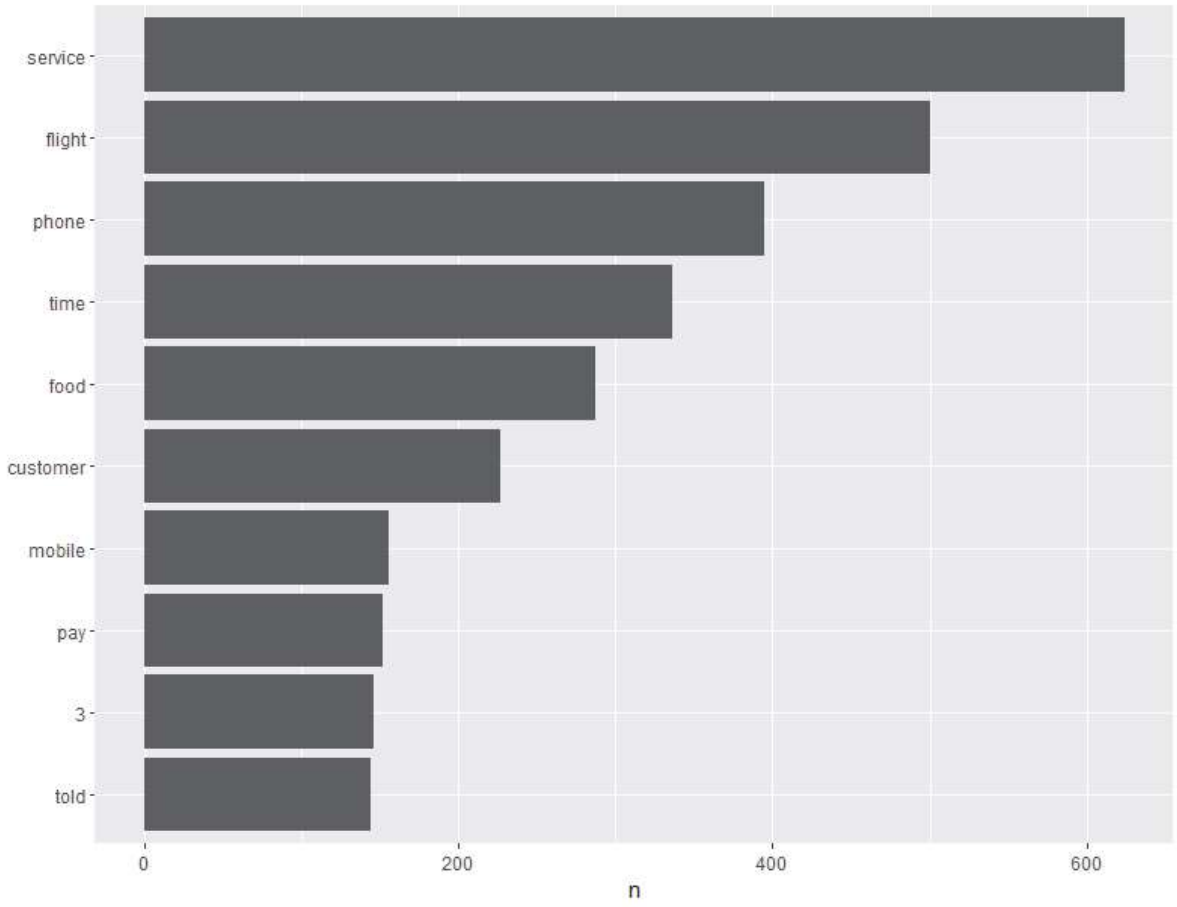


Figure 16 shows the sentiment distribution by industry using bing dictionary in R. Sentiment distribution allows us to understand the topics that arise from a corpus of text. Table 4 indicates the ratio in the distribution. Restaurant and airline industries contributed more to the overall sentiment distribution than the phone industry. This seems to indicate that the strength of customer reactions in the restaurant and airline industries is much more affectively powerful than within the phone industry. This may indicate some service differences where the restaurant and airline industries have clearly demarcated products and deliverables while the phone industry is a continuing service. This type of continuous services may result in less distinct service experiences and customers may not respond as strongly in their written comments.

FIGURE 16
SENTIMENT DISTRIBUTION BY INDUSTRY

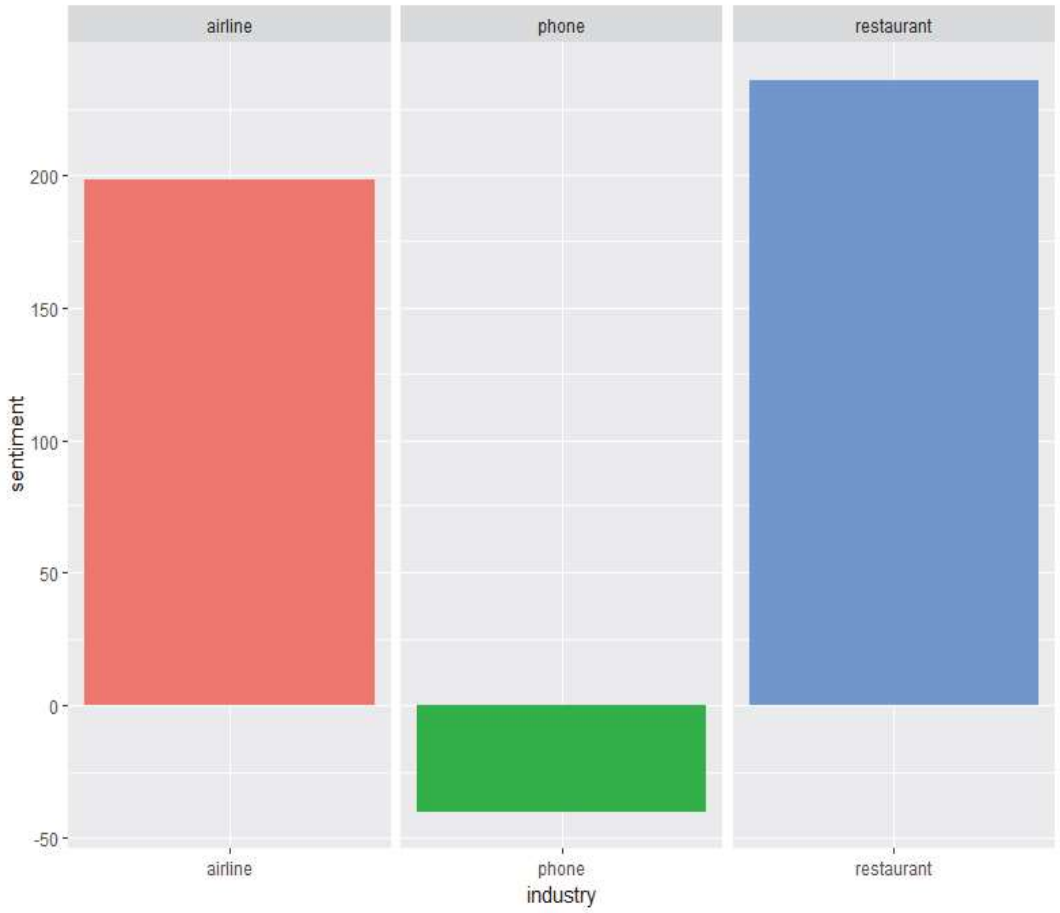
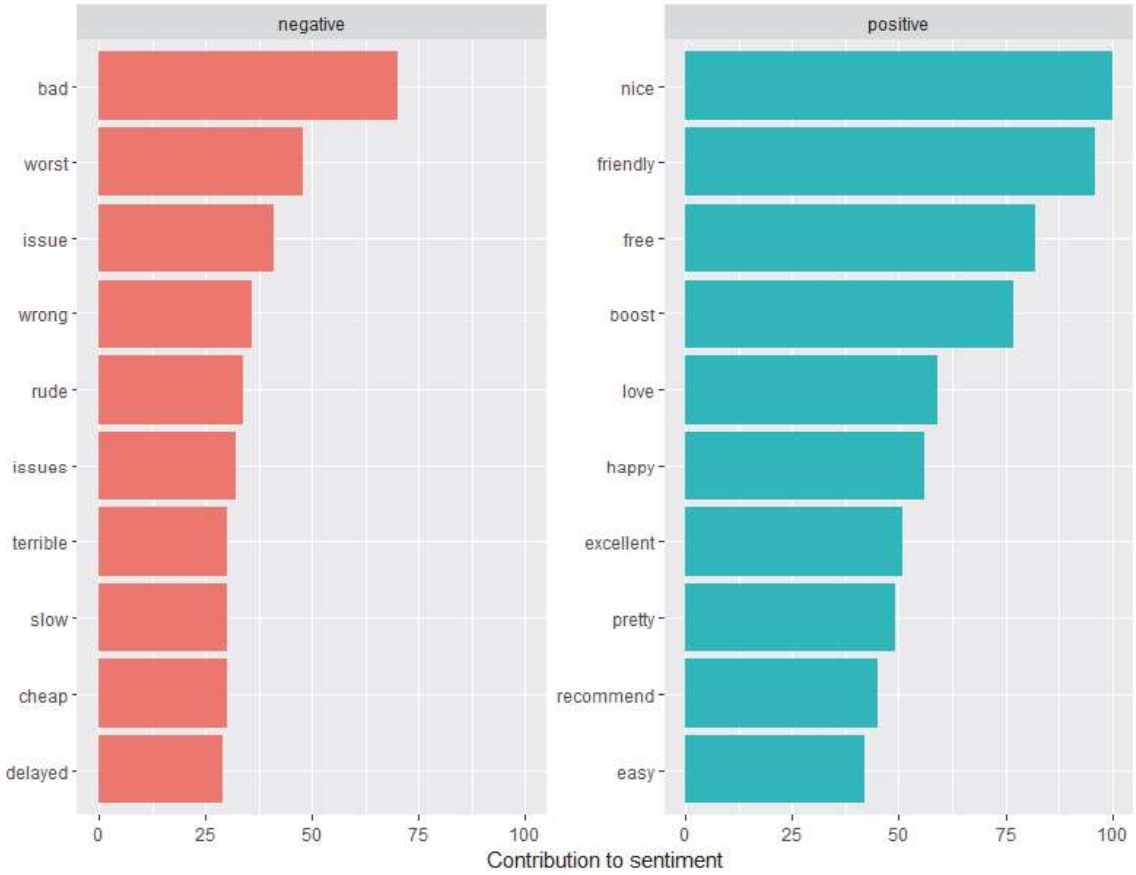


TABLE 4
RATIO OF WORDS BY INDUSTRY

Industry	Negative	Positive	Total Sentiment Ratio
Airline	700	898	198
Phone	678	638	-40
Restaurant	622	858	236

Figure 17 shows the top terms in both positive and negative reviews. The top negative terms were *bad, worst, issue,* and *wrong*. The top positive terms were *nice, friendly, free, boost, love, happy,* and *excellent*. These terms are mostly affective based indicating that service experiences as written in online reviews can best be seen as an emotional experience for customers rather than just objective satisfaction with a product or problem resolution.

FIGURE 17
TOP TERMS BY SENTIMENT



Figures 18, 19, and 20 show word clouds by the airline, restaurant, and phone industries. Airline industry positive terms included *friendly, comfortable, nice,* and *free*. Negative terms in the airline industry included *delay, delayed, bad, cheap,* and *rude*. The negative terminology relates to unmet expectations in timing based on delays whereas the positive terminology reflects emotional experiences that customers have. Positive terms for the phone industry include *boost, support,* and *unlimited*. Negative terms for the phone industry include *issue, bad, poor* and *trouble*. These terms indicate that the positive experiences seem related to support received from employees or the amount of a service received (i.e. unlimited) whereas the majority of negative terms indicate issues with the service or product itself. In the restaurant industry we see some commonality with study 1 terms where terms such as *nice, delicious,* and *friendly* are the most common positive terms and negative terms such as *cold, bad, dirty,* and *terrible*.

FIGURE 18
WORD CLOUD OF AIRLINE INDUSTRY

FIGURE 19
WORD CLOUD OF PHONE INDUSTRY

FIGURE 20
WORD CLOUD OF RESTAURANT INDUSTRY

Figure 21 displays the tf-idf or the most important terms in each industry using the R package ‘stm’. In the airline industry the term *flight* is the most important by far. The most important terms in the phone industry are *Boost, Verizon, credo, mobile,* and *data* are the most important terms. For the restaurant industry the most important terms are *chicken, food, salad, server, waitress,* and *steak*. The contrast between industries is readily apparent with the airline industry being greatly affected by flights whereas the brand of the cellular phone company and their data and mobile offerings have the largest impact for phone services. Restaurant ratings are driven primarily by food and service.

FIGURE 21
TF-IDF BY INDUSTRY

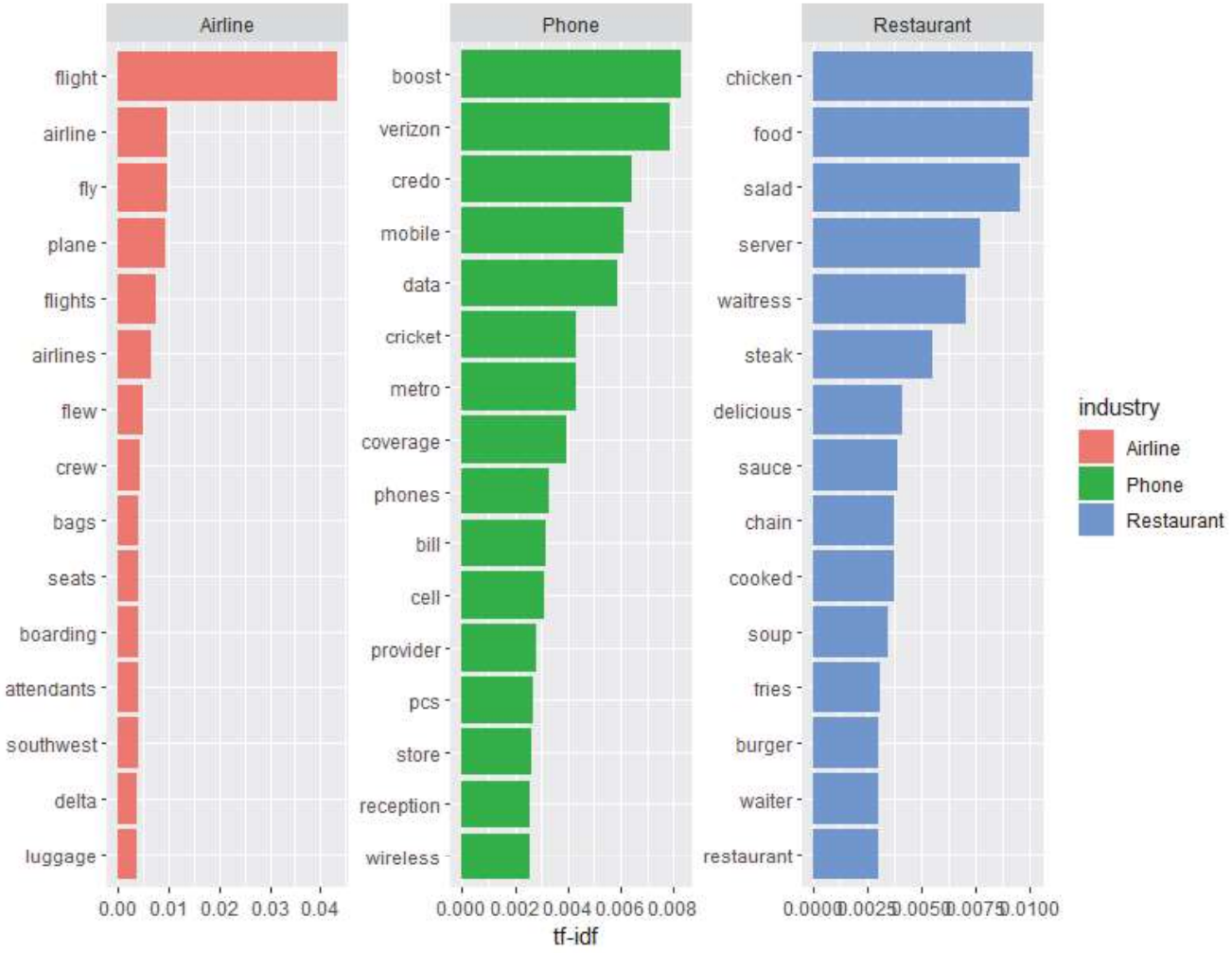


Figure 22 shows the LDA topic modeling done using "topic modeling" package in R. The topics fell into three distinct categories confirming the key differences between the phone, restaurant, and airline industries. The phone industry category has high probability terms like *phone, service,* and *mobile*. The restaurant category has high probability terms such as *food, service,* and *good*. The airline category has *flight* and *service* as key terms. The tidy method, originally from the broom package (Silge & Robinson 2017) has been used for tidying model objects prior to data analysis. The 'tidytext' package provides this method for extracting the per-topic-per-word probabilities, called β ("beta"), from the model. For example, the term "service" has around a 3% probability of being generated from topic 1, but a 1% probability of being generated from topic 2.

FIGURE 22
LDA TOPIC MODELING

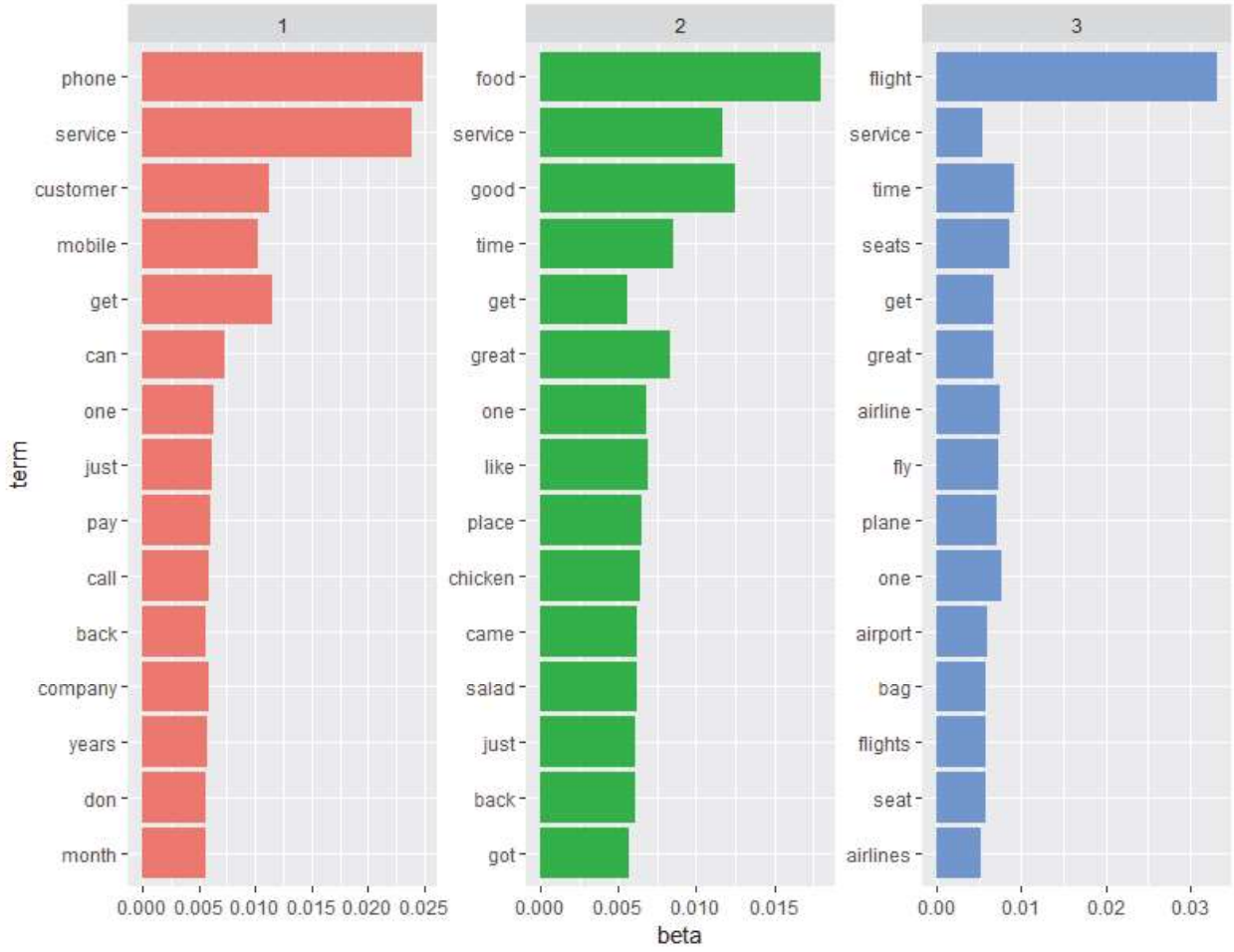
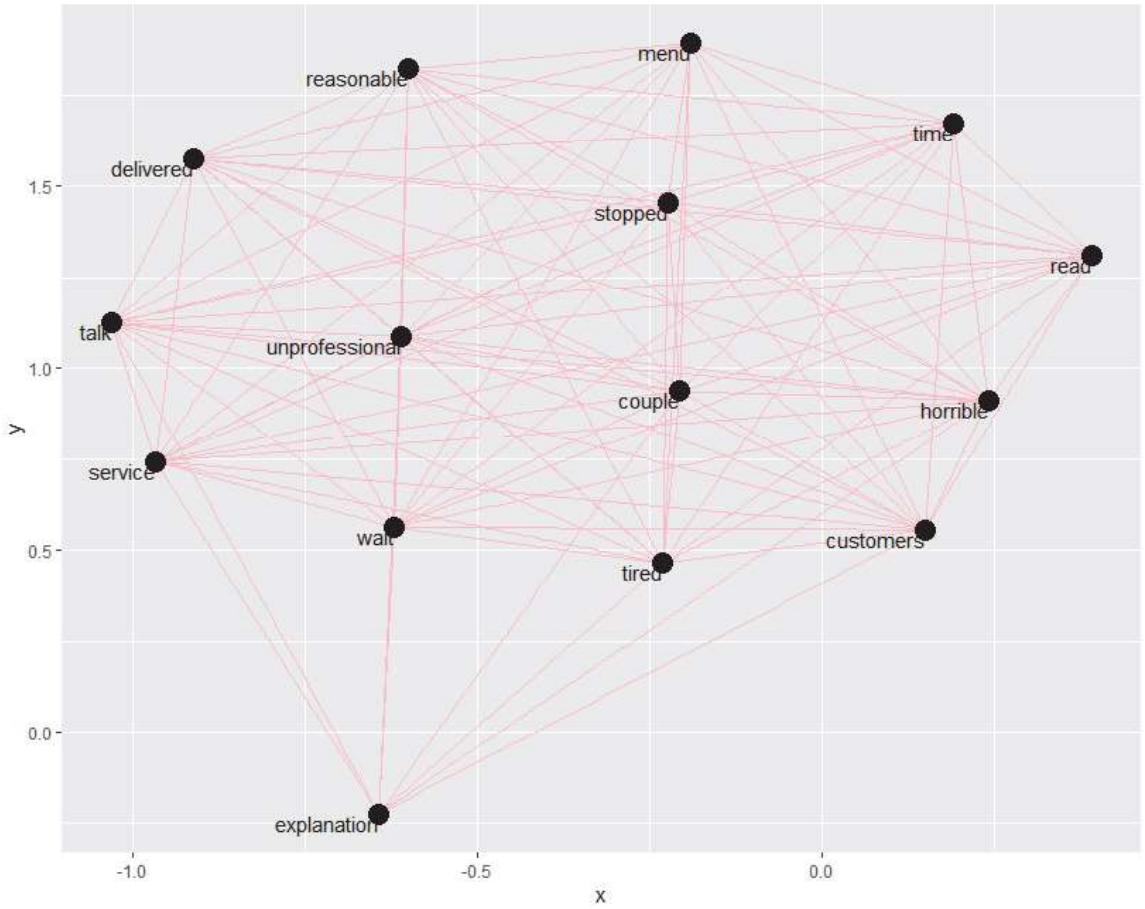


Figure 23 was produced using the "tidyr" package and visualized correlations between the different words in word pairs. All the words in Figure 23 correlate with each other with a correlation coefficient alpha greater than .9. Some of the central terminology include the terms *unprofessional, service, delivered, mend, horrible,* and *customers*. One of the most important terms is explanation which is strongly related to the concept of customer service recovery. Figure 23 clearly indicates the term *explanation* as being one related to a variety of customer experiences.

FIGURE 23
PAIRWISE CORRELATION OF TWO WORDS



Across these two studies it is apparent that the language that drives customer service and customer service recovery varies across industry. In the airline industry flights and flight times are the most salient factor. In the phone industry the service and product quality affect the ratings most. Finally, in the food service industry, food quality and service quality are weighted about the same in the comments that are made by customers. Some key differences that were noted are that cell phone brand names such as Boost, Verizon, etc. were more prominently used in the social media comments mostly due to the nature of review websites. Whereas in study 1, the language was more general and reflective of a generalized type of experience that individual customers had experienced.

DICUSSION

The present research provides an exploratory analysis of customer service experiences. Specifically, how customers define quality service across industries and whether customer reviews are motivated by error-free service or successful recovery efforts. Unlike previous studies, the use of a qualitative methodology and computerized text analysis allows for a deeper understanding of customer experiences with service encounters. Consistent with the service recovery paradox and previous research, this study shows that quality service is not necessarily error-free and can be defined as the successful resolution of a problem (Gebauer, Fleish, & Friedli, 2005; Nieman-Gonder, Shapiro, and Matthew, 2009). Yet, organizations should be cautioned that although participants in previous research reported intentions to

spread positive word of mouth following a successful recovery effort, positive customer reviews online seem to be motivated by error-free service. Further many online reviews represented negative word of mouth, with customers more likely to report negative experiences. These results offer a different perspective on Michel, Bowen, and Johnston's (2009) conceptualization of justice in customer service and service recovery. Further research should be conducted to delineate the parameters of this relationship.

Industry specific expectations are especially salient given the present findings. The language and expectations of customers vary considerably depending on the industry. A combination of product qualities and employee actions seem to affect the experience of service. Especially in the travel and cell phone industries it appears that the quality of the product becomes embedded as a part of the service. Flights that are delayed become undesirable products and result in unmet customer expectations. Customer discussion of phone service and descriptions of experiences with the phones themselves serve as signs of customer satisfaction. Customers often used brand names for phones (i.e. iPhone) to describe positive experiences with the service itself. In the restaurant industry specific food items became driving forces for positive ratings. These results are especially important for product managers as they develop products for their respective industries. A deep understanding of customer needs and desires can help organizations design and deliver products that become embedded in the customer's service experience.

Employee behaviors also have an important impact on customers' experiences. While the common wisdom is that employee behavior affects customer experience, the present findings support this axiom with data from two separate sources. Whether experiences are recalled or written about on social media salient experiences with employees determine a customer's feeling towards a service encounter. Employee behaviors such as friendliness and kindness seemed especially important in the language used by customers. While customers may be frustrated with plans, products, or flights a positive experience with an employee may lead to a more positive social media post or a memory. Social media postings or comments from customers may be useful in training employees to better exhibit the types of behaviors that drive social media comments and positive customer experiences.

The approach used in the present research is one that many organizations may find useful. Organizations often find their social media branding (Auriemmo et al., 2018) of increasing importance and they may use the comments left on a variety of social media platforms to provide key insights into the perceptions of organizational processes and deliverables. An organization's brand management may now be included as a key factor in its customer service process. While Smith et al. (1999) used justice as a framework around recovery attempts, social media allows for a two-way transparent process around which customer service recovery can be conducted by organizations. In this conversation between service provider and customers, positive online reviews were motivated by error-free service, yet general reviews were predominantly negative. If organizations in the airline, restaurant, and phone industries wish to improve their social media rating, they need to focus on delivering error-free service to move the needle on social media commenting.

Some significant language differences were discovered regarding customer experiences between the two sources of data. This is an important finding for researchers to understand sampling strategies. The source of data may impact how the customer service experience is described. Data from a focus group may not match a self-reported experience that is posted on social media. These results seem to follow a similar pattern to what is seen in open ended versus close ended survey items (Reja et al., 2003). When allowed to speak on their own customers tend to describe experiences differently than when prompted. Thus, both techniques become important sources of customer experience data for organizations to use in their assessment of customer service.

Organizations can also use these types of language studies to categorize service failures. Especially organizations in highly competitive markets with small margins like cell phone, airline, and restaurant industries. Understanding when a customer service failure is seen as positive or negative can help the organization create protocols, training, and support around these types of experiences.

Limitations and Directions for Future Research

The present study uses an innovative approach to understand customer service and the experience of customer service however several limitations must be noted. Future research should look at the nature of social media posting behaviors by customers. Perhaps there are personality traits that drive posting choices. These may limit the effectiveness of reviewing customer feedback through a social media site such as Yelp. A deeper understanding of customer individual differences and their impact on posting may provide especially important detail about how and when to use customer comments in understanding service recoveries. There may be some value in identifying those customers who are habitually high raters and habitually low raters.

Future research should also attempt to use a variety of experimental techniques to evaluate customer service failure severity. While the present research used ratings from social media sites, more salient examples of service failures from a variety of types (high, medium, low) would allow industry to understand these experiences more effectively.

Increasing the use of qualitative and social media data in customer service research should be continued so that the models of customer service recovery can be refined. A timeline of customer service failure and recovery using qualitative data whether from a focus group, social media, or open-ended items can be especially important for organizations that wish to learn how best to fix issues for their organizations. Future research could use customer service call transcripts to further test the model created by Smith, et al.

The present research highlights some of the key service differences between the airline, cell phone, and restaurant industries. The use of text analysis allows for a deeper understanding of the key terminology driving reviews. Organizations should be mindful of the language their customers use. Those customers are providing them with a map by which organizations can provide more effective service.

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