Customer Service on Social Media: The Effect of Customer Popularity and Sentiment on Airline Response

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Abstract

Many companies are now providing customer service through social media, helping and engaging their customers on a real-time basis. To study this increasingly popular practice, we examine how major airlines respond to customer comments on Twitter by exploiting a large data set containing all Twitter exchanges between customers and four major airlines from June 2013 to August 2014. We find that these airlines pay significantly more attention to Twitter users with more followers, suggesting that companies literarily discriminate customers based on their social influence. Moreover, our findings suggest that companies in the digital age are increasingly more sensitive to the need to answer both customer complaints and customer compliments.

1. Introduction

On Saturday, February 13, 2010, filmmaker Kevin Smith, after being told by Southwest Airlines to leave a plane he boarded, angrily sent out a tweet to his 1.6 million Twitter followers claiming that he had been kicked off a Southwest Airlines flight for being “too fat”. Sixteen minutes later, Southwest Airlines, which had over 1 million Twitter followers, responded and started to de-escalate the crisis.

Aside from airlines’ controversial policies on “customer of size”, Southwest’s handling of the situation is certainly prompt and commendable. But what if Kevin Smith were not some celebrity with millions of Twitter followers vigorously complaining on Twitter? Would he get a response in sixteen minutes? Or, would he even get a response?

Clearly, the answers hinge on a company’s social media strategy, which is becoming increasingly important for the reputation of a brand. Empowered by the popularization of social media and smart phones, customers nowadays are no longer limited to a passive role in their relationships with a brand. They can easily express and distribute their endorsements or complaints publicly to a large audience in real time, significantly raising the bar of customer service in the age of social media. United Airlines learnt this the hard way when the famous protest song “United Breaks Guitars” went viral on YouTube in 2009. While most people probably would not bother writing a song or making a video to share their experience, more and more people are turning to Twitter by simply tweeting publicly towards corporate Twitter accounts through mention (i.e., @)². According to a recent New York Times article, such a public approach may actually work out better for consumers than spending time on the phone³. In response, companies are scrambling to monitor and respond to consumer mentions on Twitter, making real-time interaction a standard practice⁴.

To better understand this growing phenomenon of using social media as customer service, this paper empirically examines how brands manage customers’ “requests” for engagement on social media. In particular, we focus on the following research

1 https://www.youtube.com/watch?v=5YGc4zOqozo

2 For example, in September 2013, people sent 37,028 tweets directly and publicly to AmericanAir, the official Twitter account of American Airlines. In the same month, people sent 34,280 tweets directly and publicly to united, the official Twitter account of United Airlines.

3 In the most recent General Motors (G.M.) vehicle recall, Lauren Munhoven, a customer in Ketchikan, Alaska, turned to Twitter after wasting an hour on the phone with G.M. trying to get help with her 2006 Saturn Ion. After she wrote the public tweet “@GM your agents keep telling me to take my car to a GM dealer for the recall, after I’ve explained I live on an island in Alaska! Help!!!!”, a member of G.M.’s Twitter team helped and the company agreed to pay the $600 cost of a round-trip ferry to ship Ms. Munhoven’s car to the nearest dealer, about 300 miles away in Juneau, and pay for a rental car for the time she is without the Saturn. For detailed report, please see: http://www.nytimes.com/2014/03/24/business/after-huge-recall-gm-speaks-to-customers-through-social-media.html?_r=0.

4 Many companies are hiring consultants and specialized firms like HootSuite Media Inc. and SocialOomph.com to deal effectively with online critics. See the recent Wall Street Journal article: http://online.wsj.com/article/SB200014240527020303949704579461412963008056?mod=index_to_people
question: Does a customer’s popularity on social media and sentiment towards a brand affect whether the brand responds to the customer’s “request” for engagement?

To address this research question, we select Twitter as the social media platform and focus on the airline industry because Twitter is one of the most popular social media platforms and the airline industry has extensively leveraged Twitter for real-time customer service. Based on data collected by us, at least 63 of the major airlines in the world have their verified accounts set up on Twitter.

Our data is collected from Twitter using their public API. In particular, we collected tweets from June 1st 2013 to August 31st 2014, sent to and by American Airlines (@AmericanAir), Delta Airlines (@Delta), Southwest Airlines (@SouthwestAir) and United Airlines (@united), which are among the largest airlines in North America in terms of the number of enplaned passengers in 2013. Such tweets carry a variety of content including both endorsements and complaints. We use text mining to classify tweets sent to airlines into three categories: complaints, compliments, or neutral tweets.

Interestingly, not all tweets sent to airlines are responded. For example, among the 1,251,072 tweets sent to American Airlines during this period, 353,693 were responded, and among the 433,809 tweets sent to Delta Airlines, 1,394 were responded. Among the 269,688 tweets sent to Southwest Airlines, 7,562 were responded and among the 618,175 tweets sent to United Airlines, 177,842 were responded. Moreover, conditional on being responded, it takes 13 minutes, 212 minutes, 63 minutes and 124 minutes on average for a tweet to be responded by American Airlines, Delta Airlines, Southwest Airlines and United Airlines respectively.

We use binary choice models to examine how customer’s popularity on Twitter affects the chance of his or her tweet being responded by airlines. Estimation results show that all airlines are more likely to respond to tweets sent by customers with a higher number of followers, suggesting that airlines, strategically or not, do take into account of a consumer’s popularity on social media when determining whether to respond or not. One plausible explanation for this finding is that airlines recognize the higher risk of antagonizing opinion leaders on social media but may have limited resource to handle all requests for engagement. We also find all airlines except Delta Airlines more likely to respond to complaints. This finding not only hints about a hidden strategy of emphasizing prudence for “high risk” tweets, but also in-line with the previous research literature [1] which highlights the value of complaints both as a communication device and as a means of giving the firm a chance to turn a dissatisfied customer into a satisfied and loyal customer. As for Delta Airlines, we believe that the gap is due to the multiple accounts they have on Twitter (i.e. @Delta and @DeltaAssist) on which they interact with their customers. Moreover, we find that all airlines are more likely to respond to consumer compliments, which can be due to the perceived easiness of responding to customer compliments, which are inherently nice in nature and also due to the need to stimulate consumers’ desire to make positive product recommendations to others.

This paper is among the first in the Information Systems (IS) literature to study this growing trend of using social media for customer service and our findings suggest social media as customer service may be a double-edged sword for both customers and brands. While customers popular on social media may get a “premium” customer service over social media, less connected customers may be “popularity-discriminated” by brands. On the other hands, brands with limited resource for social media may have to carefully walk the line between optimally allocating its attention to customers highly influential on social media and not antagonizing its less influential but large customer base.

The rest of the paper is organized as follows. We first review relevant literature and then develop the hypotheses for our research question. After that, we describe our data, followed by the description of the econometric models and the estimation results. We conclude the paper by discussing the implications of the findings and pointing out future research directions.

2. Literature Review

Our study is related to a rich array of literature that examines the evolution of consumer power in the digital age. Sen and Sinha [2] define Customer Relationship Management (CRM) as the overall process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction. The rise of social media which has connected and empowered customers, challenges this fundamental notion of CRM process as customers are no longer limited to a passive role in his or her relationship with a company [3]. Customers can easily express and distribute their opinions to large audiences, and organizations find it increasingly difficult to manage the information that
customers receive about their products or services [4].

On the other hand, the emergence of social media has opened up new opportunities for business organizations to listen and to engage with their customers and potentially to encourage them to become advocates for their products [3]. This can also be potentially detrimental to a business organization as customers can spread negative word of mouth (WOM) about the brand or the company. Regardless of how excellent the service a company delivers, every company often makes mistakes in meeting the expectations of customers [5]. Previous studies indicate that failures themselves do not necessarily lead to customer dissatisfaction, since most customers accept that things may sometimes go wrong [6]. Instead, the service provider’s response to the failure or lack of response is the most likely cause of dissatisfaction [7].

Gu and Ye [8] studied the impact of management responses on customer satisfaction using data retrieved from a major online travel agency in China. They found that online management responses are highly effective among low satisfaction customers but have limited influence on other customers. Moreover, they discovered that while online management responses increase future satisfaction of the complaining customers who receive the responses, they decrease future satisfaction of complaining customers who observe but do not receive management responses.

3. Hypotheses Development

Correspondence with customers has long been recognized as an important aspect in doing business, for number of reasons. Among them are the cost effectiveness of keeping existing customers rather than trying to win new ones [9], increased sales to current customers and new customer attraction [10], less potential for negative WOM communication [11] and the ability to listen to customers for new ideas [12]. The same business motivation applies to companies thriving for customer service excellence on social media. Based on previous research literature, in the next few sections, we establish the theoretical basis necessary to construct our hypotheses.

Influence diffusion through social networks has a long history in the social sciences and attracted much attention from many fields including marketing science, computer science, statistics and applied physics [13]. The traditional view of influence diffusion assumes that a minority of members in a society possesses qualities that make them exceptionally persuasive in spreading ideas to others [14]. They are called the Opinion Leaders in the Two-Step Flow Theory [15], Innovators in the Diffusion of Innovations Theory [16] and Hubs, Connectors, or Mavens in other work [17]. By targeting the most influential individuals in a network, a chain reaction of influence driven by WOM can be activated such that a very large portion of the network can be reached with a very small marketing cost [13].

A more modern view of influence diffusion argues that people’s decision to purchase a product is strongly influenced by their peers and friends rather than the influential [18]. Using a series of computer simulations of interpersonal influence processes, Watts and Dodds [19] found that large cascades of influence are driven not by influential but by a critical mass of easily influenced individuals. The findings of Cha et. al. [14] on user influence on Twitter indicate that popular users who have high in-degree (number of followers) are not necessarily influential in terms of spawning retweets or mentions but can hold significant influence over a variety of topics.

On Twitter, users interact by following people who post interesting tweets and the number of followers of a user directly represents the size of the audience that particular user has. Both the traditional and the modern views of influence diffusion are relevant in this case since a tweet posted by a user who is influential at least in terms of followers, is instantaneously received by a large number of followers who would potentially spread the information further across the social network in the cascading periods. Hence, to prevent an influential customer from spreading bad word of mouth, companies may have a stronger incentive to respond to such customers. Therefore, we expect the following hypothesis to hold:

**Hypothesis 1**: A company is more likely to respond to a tweet sent to it by a customer with a higher number of followers.

To construct our next two hypotheses, we bring together complementary research traditions addressing the psychology of post-purchase consumer responses, along with the empirical research findings on organizational responsiveness to consumer complaints and compliments.

Consumer post-purchase behavior has been an active area of research especially in the fields of Consumer Psychology and Marketing. After Cardozo’s [20] seminal work on customer effort, expectation and satisfaction, several conceptual and
empirical work has been undertaken to define and model consumer satisfaction as an important construct in consumer behavior. Customer satisfaction is conceptually viewed as a specific post-purchase evaluative judgment with both cognitive and affective counterparts [21]. Various theories have been developed to explain customer satisfaction and these theories suggest that consumer satisfaction is a relative concept, which is always judged in relation to a standard [22]. Among these, the Expectancy-Disconfirmation Paradigm (EDP) proposed by Oliver [23, 24] stands out as the most promising theoretical framework for the assessment of consumer satisfaction. This theory posits that consumer satisfaction is associated with the size and direction of the disconfirmation experience, where disconfirmation is defined as the difference between the consumer’s pre-purchase expectations about the anticipated performance and the perceived performance of the product/service. As a result of this positive or negative difference between expectations and outcomes, a customer can be either satisfied or dissatisfied. For instance, when the consumer’s product/service experience is better than expected, positive disconfirmation occurs resulting in satisfaction and when the consumer’s product/service experience is not as good as initially expected, negative disconfirmation occurs resulting in dissatisfaction. However, work from Social Psychology [25] brought evidence that EDP’s direct link from disconfirmation to satisfaction which connotes a disconfirmation-driven satisfaction response may omit an important psychological stage, failing to identify the locus of causality for consumption cognitions.

In connecting EDP’s consumer disconfirmation experience with the consumer responses to product/service outcomes, we find the Attribution Theory [26] useful, where consumers are regarded as rational processors of information who seek out reasons to explain why a purchase outcome has occurred [27]. According to this model, the disconfirmation experience regarding the product/service, engages the consumer in an attributional process in order to search for the cause of disconfirmation where these attributions can be linked to specific emotions further mediating the satisfaction response. More specifically, Attribution Theory assumes that consumers tend to look for causes for product/service successes or failures along three dimensions. The first dimension is *locus* which evaluates whether the cause is attributed either to the consumer (internal) or to the firm or some environmental or situational factor (external). For example, a set of bookshelves might collapse because the consumer assembled them incorrectly or because the manufacturer made a defective product [27]. The second dimension is *stability* which evaluated whether the causes are relatively temporary/ﬂuctuating or fairly permanent over time. The third dimension is *controllability* which evaluates whether the causes are volitional (can involve choice) or non-volitional (under constraints). This classification of attribution-dependent emotions for success and failure attracted the attention of researchers because of its natural linkage to behavioral consequences. These causal dimensions play a key role in the emotion process where each dimension is uniquely related to a set of feelings such as gratitude, appreciation, bitterness, sadness and fury [28], which can be antecedents to satisfaction judgments and subsequent consumer complaining or complimenting behavior.

Next, we discuss the related literature on consumer complaining behavior and the organizational responsiveness towards such consumer correspondence.

Post-purchase complaint behavior consists of consumer initiated communication to marketers, their channel members or public agencies to obtain remedy or reinstitution for purchase or usage related problems in particular market transactions [29]. Folkes [27] used Attribution Theory to study the consumer reactions to product failure specifically in order to develop a theoretical model to predict consumer complaining behavior. Her findings suggest that the reasons for product failure influenced reactions such as desiring a refund or an exchange for the product, perceiving that an apology is owed to the consumer, and wanting to hurt the firm’s business. She emphasizes on the importance of recognizing when consumers have post-purchase responses such as feeling angry, feeling they are owed an apology and feeling they deserve a refund, as these feelings probably can be manifested in other behaviors, such as store loyalty and personal communication about the product.

For decades, Hirschman’s [30] Theory of Exit, Voice, and Loyalty has been the foundation for many of the customer complaint behavior based studies in Economics and Marketing. Hirschman [30] suggested that the customers consider two distinct but somewhat interrelated factors in deciding whether to complain. Singh [31] evaluates these as the Perceived Probability of Successful Complaint and the Worthwhileness of Complaint. The former suggests that a dissatisfied customer would tend to choose voice actions if he/she is convinced that such actions would effectively bring the desired outcomes.
The latter is about the balance between the costs and benefits of complaining where the costs and benefits can include both economic and psychological components. For example, refunds, exchanged products, satisfaction derived from complaining itself, time invested in creating the complaint and the feelings of embarrassment, stress and confrontation may all include in the economic and psychological benefits and costs of complaining.

The value of complaints both as a communication device and as a means of giving the firm a chance to turn a dissatisfied customer into a satisfied and loyal customer has been recognized by researchers decades ago [1]. In fact, Complaint Management refers to the strategies used to resolve disputes and to improve ineffective products or services in order to establish a firm’s reliability in the eyes of the customers [32]. Fornell and Wernerfelt [33], in evaluating the potential of consumer complaint management as a defensive marketing strategy assert that firms must first identify their dissatisfied customers and then persuade them to remain loyal in order to prevent adverse brand switching or exit. According to Fornell and Westbrook [34], effective complaint management has a dramatic impact on customer retention, deflects potential negative word-of-mouth, and improves profitability.

Social media has offered consumers and companies with a free and informal yet immensely powerful platform to complain in public and recommend remedies openly, regardless of how bitter the truth can be. When dissatisfied customers decide to complain they are actually offering companies a second chance for remedial action. The power of abundant information in the digital age and the current market situations where competitors are known and easily accessible, may oblige companies to be even more sensitive and respondent to customer complaints. On these grounds we raise the question whether consumer complaints on social media stimulate company’s choice to respond as opposed to other types of consumer requests for engagement. Accordingly, we expect the following hypothesis to hold:

**Hypothesis 2**: A company is more likely to respond to a complaining tweet than to a neutral tweet.

Next, we discuss the related literature on consumer complimenting behavior and the organizational responsiveness towards such consumer correspondence.

From Positive Psychology point of view, complimenting is a simple yet powerful human interaction, which expresses basic human kindness that can create a powerful interaction between people [35]. Holmes [36] defines a compliment as a speech act which explicitly or implicitly attributes credit to someone other than the speaker, usually the person addressed, for some good which is positively valued by the speaker and the hearer. There are relatively few studies which examined the role of attribution-dependent emotions of the consumer, upon successful product/service outcomes. Curren and Folkes [37] find that the consumers are most likely to compliment and recommend products to others, upon experiencing successful outcomes that are seller controlled and stable.

Satisfied customers are presumed to have had a better than anticipated experience in the original transaction [38]. In terms of Equity Theory, delighted customers perceive their transaction to be much in their favor that they feel the procedural justice need to voice their pleasure. In doing so, they invest their time and effort necessary to construct complimentary communication and may seek to provide something to the organization. Findings of Robinson and Berl [39] suggest that the motives for complimenting behavior are more socio-psychological than economic. Kraft and Martin [40] examined consumer feedback and presented a set of motivations including delight, expected benefits, involvement, social norms and personal and situational factors to explain consumer complimenting behavior. Payne et. al. [41] found that consumer compliments are most frequently due to seeking positive response from seller, great satisfaction and enjoying giving compliments, flattery and ingratiaton.

Compliment management seems to offer profound opportunities to initiate and establish long-term relationships and to reinforce the consuming tendencies of a group with expressed and favorable predispositions towards loyalty [42]. The most motivated, vocal and satisfied customers are natural choices from which to begin constructing long-term and personalized relationships [43]. Considering the dynamic and ongoing nature of these relationships [44], the firm must be careful to add further value whenever it has interactions with the customer. Thus, when a compliment is received, it seems imperative that the consumer be acknowledged since the costs of complimenting may have not only eliminated any discrepancy perceived by the customer but also put the organization in the debtor position [42]. Since compliments can be excellent indications that the organization’s actions have led to customers’ satisfaction, compliments should be encouraged, recognized, understood and acted upon [40].
Smart and Martin [45] examined 300 consumers’ responses to actual manufacturers’ letters addressing complaints and compliments, in order to find out the specific steps businesses can take to satisfy the customers. They found that the respondents tended to evaluate manufacturers’ responses to praise letters more favorably than those to complaint letters, suggesting that it was probably easier for a manufacturer to reinforce positive attitudes of a consumer already satisfied, than to placate a dissatisfied consumer.

In traditional settings, even though customers would travel that extra mile to make a complaint, it is more than likely that they were reluctant to go into the same trouble to compliment the brand, even if they would continue to stay silently loyal. Social media has changed this and empowered the consumers to contact the brand on social media in real time, perhaps while enjoying their praiseworthy experience with the brand. This is something which was less likely in the pre-social media era, where the companies took days to send a letter of appreciation to the customer. As Erickson and Eckrich [42] suggest, complimenting, brand-loyal, motivated customer who feels brushed-off by an organization can become unnecessarily dissatisfied customer who will never be recovered. On these grounds we raise the question whether consumer compliments on social media stimulate company’s choice to respond as opposed to other types of consumer requests for engagement. Accordingly, we expect the following hypothesis to hold:

**Hypothesis 3**: A company is more likely to respond to a compliment tweet than to a neutral tweet.

4. Data

In this study, user tweets were defined as the tweets posted by Twitter users while airline tweets were defined as the tweets posted by the respective airlines. We used Twitter API to collect all tweets mentioning the official Twitter accounts of American Airlines (@AmericanAir), Delta Airlines (@Delta), Southwest Airlines (@SouthwestAir) and United Airlines (@united) during June 1st 2013 and August 31st 2014. After removing the self-created tweets, for American Airlines, 1,251,072 user tweets, for Delta Airlines, 433,809 user tweets, for Southwest Airlines, 269,686 user tweets and for United Airlines, 618,175 user tweets were available for analysis.

In order to determine whether a particular user tweet was responded by the respective airline, each airline tweet was matched with the respective parent user tweet based on twitter meta-data. When a user tweet is matched with one or more replies from the airline, it was considered responded. For American Airlines, 353,693 tweets, for Delta Airlines, 1,394 tweets, for Southwest Airlines, 7,562 tweets and for United Airlines, 177,842 tweets out of the respective total user tweets were recognized as responded.

A random sample of 2,000 user tweets extracted from both airlines was manually analyzed first by the researchers to understand the nature of information exchange between the users and the airlines. It was observed that user tweets come in variety of types such as complaints, compliments, personal updates, information seeking and information sharing. In our data, the complaints are mainly due to flight delays and misplaced baggage. Compliments mostly included the cases where the consumer received excellent customer service or when the consumer is excited about particular sales promotions or rewards.

Table 1. Classifier precisions and recalls

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<th>Type</th>
<th>Precision</th>
<th>Recall</th>
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<tbody>
<tr>
<td>Complaints</td>
<td>80.00</td>
<td>70.59</td>
</tr>
<tr>
<td>Compliments</td>
<td>67.74</td>
<td>77.78</td>
</tr>
<tr>
<td>Neutral</td>
<td>71.79</td>
<td>71.79</td>
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For this study, complaints and compliments were considered particularly important as they intend direct correspondence between user and the airline. From the sample, complaints and compliments were recognized accordingly and two comprehensive lists of words most commonly used by the users to express either complaints or compliments were prepared. Each list contained both unigrams and N-grams to better reflect the nature of user complaints and compliments. A program was developed to process the user tweets and to determine whether each tweet was a complaint, a compliment or a neutral tweet. The precisions and recalls of this tweet type classifier are presented in Table 1. Table 2 lists the descriptions of the key variables used.

Table 2. Variable definitions

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<th>Variable</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Responded</td>
<td>Whether the airline responded to the user tweet</td>
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<tr>
<td>Followers</td>
<td>Number of followers for the user</td>
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<tr>
<td>Followings</td>
<td>Number of followings (friends) for the user</td>
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<tr>
<td>Updates</td>
<td>Number of tweets posted by the user since the user account creation</td>
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<td>Mentions</td>
<td>Number of username mentions present in the tweet</td>
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and @Delta Airlines, which tweet out the original tweet. For Delta Airlines, the company has a higher chance of response from the airline. Moreover, the number of followers for the consumer is associated with a positive and significant effects on airline’s choice to respond, which suggests that companies are more likely to respond to complaints. Considering the fact that Delta Airlines is among the top airlines in North America, we find this to be a counter-intuitive finding. We believe that this gap is probably due to the multiple accounts Delta Airlines maintain on Twitter (i.e. @Delta and @DeltaAssist) on which they interact with their customers. We further believe that acquiring data from both accounts may bring more illuminating insights about Delta Airlines, which would be an interesting investigation in future. Moreover, for all airlines, Complaint shows positive and significant effects on airline’s choice to respond, which suggests that companies are more likely to respond to consumer compliments.

Therefore the above results provide evidence supporting the Hypotheses 1, 2 and 3 for all airlines except Delta Airlines. For Delta Airlines, Hypotheses 1 and 3 are supported while providing evidence to support the alternative of Hypothesis 2.

For all airlines, the control variables, ln(Updates), Retweet and Mentions show negative and significant effects on all airlines’ probability to respond. Clearly, it makes sense that companies are less likely to respond to a consumer tweet if it is a retweet because in such a case the author of the tweet is not the customer who sent out the original tweet. For all airlines, Extrovert indicates positive effects suggesting that companies are more likely to respond to tweets from the customers who reveal more information about themselves on Twitter.

### 5. Analysis

We assume the perceived value of responding to consumer tweet i created by customer j is $Y_{ij}$ where

$$Y_{ij} = \beta_0 + C_j + T_i + \epsilon_{ij}$$

Here $C_j$ refers to the vector of observable characteristics of customer j at the creation of tweet i, including the natural log of the customer’s number of followers, followings, updates, and the variable Extrovert which is measured as the sum of whether the customer has a URL, bio, or location on Twitter. $T_i$ refers to the vector of observable characteristics of tweet i, including whether the tweet is a complaint or a compliment, whether the tweet is a retweet, whether the tweet is sent over the weekend and the number of username mentions present in the tweet. $\epsilon$ is the error term with cumulative distribution function $G$ such that $G(x) = 1 - G(-x)$. The company chooses to respond to the tweet if the perceived value of responding $Y_{ij} \geq 0$. For simplicity, we use i as the subscript since the unit of observation in our sample is a tweet. We denote the tweet and consumer characteristics and the constant terms as $X_i = [1, T, C]$. Let $Y_{ij} = 1$ if the company responded to the consumer tweet and 0 otherwise. Hence, the log likelihood for a sample of N tweets is given by

$$L(\beta) = \sum_{i=1}^{N} Y_i \log[G(X_i, \beta)] + (1 - Y_i) \log[1 - G(X_i, \beta)]$$

After parameterization of $G$, the coefficients $\beta$ can be obtained from Maximum Likelihood Estimation.

We estimate both the Logit specification and the Probit specification for each airline and report the estimation results in Table 3. For all airlines, ln(Followers) has positive and significant effects on airline’s probability to respond, which suggests that holding other factors fixed, a higher number of followers for the consumer is associated with a higher chance of response from the airline. Moreover, for all airlines except for Delta Airlines, Complaint has positive and significant effects, which suggests that companies are more likely to respond to consumer complaints. This result is consistent with the research literature [32, 33], which emphasizes the importance of effective consumer complaint management. In contrast, for Delta Airlines Complaint shows negative and significant results suggesting that they are less likely to respond to consumer complaints. Therefore the above results provide evidence supporting the Hypotheses 1, 2 and 3 for all airlines except Delta Airlines. For Delta Airlines, Hypotheses 1 and 3 are supported while providing evidence to support the alternative of Hypothesis 2.

For all airlines, the control variables, ln(Updates), Retweet and Mentions show negative and significant effects on all airlines’ probability to respond. Clearly, it makes sense that companies are less likely to respond to a consumer tweet if it is a retweet because in such a case the author of the tweet is not the customer who sent out the original tweet. For all airlines, Extrovert indicates positive effects suggesting that companies are more likely to respond to tweets from the customers who reveal more information about themselves on Twitter.

### 6. Conclusion

Motivated by the increasingly popular trend of running customer service through social media, we collected all tweets sent to and by four major airlines in North America to examine whether a customer’s popularity on social media and sentiment towards a brand affect the chance of being responded by the brand after the customer’s “request for engagement”.

Our findings show that companies are more likely to respond to tweets from customers with a higher number of followers, effectively discriminating customers based on their popularity on social media. The most plausible explanation for this finding is that companies strategically allocate more...
resources to handle possibly influential customers in order to minimize the risk of becoming the casualty of a social media flub.

We find that American Airlines, Southwest Airlines and United Airlines are more likely to respond to consumer complaints. This finding not only hints about a hidden strategy of emphasizing prudence for “high risk” tweets, but is also in-line with the previous research literature which highlights the value of complaints both as a communication device and as a means of giving the firm a chance to turn a dissatisfied customer into a satisfied and loyal customer [1]. We find that airlines are more likely to respond to consumer compliments. This also makes sense because compliments are inherently nice in nature and do not require thorough evaluation or remedial action. Hence, considering the perceived easiness of responding to consumer compliments and also the need to stimulate consumers’ desire for product recommendations to others, companies are more likely to respond to consumer compliments.

Unlike in the traditional organizational settings, thriving customer service excellence on social media can bring enormous challenges to a business organization today. Traditionally, the customers entered into the organizational customer care process by directly contacting the dedicated customer care teams that process the customer request, coordinating with relevant business entities. Also, the communication with the customer was always kept private and confidential and a third party almost never had access to the relevant records. In contrast, social media have enabled the customers to publicly report their requests online directly to the brand and brand’s dedicated social media team enters into conversation with the customer openly. Nevertheless, customer service on social media is still in its infancy such that companies can experiment with different strategies, usually unaware of the potential strategies that are used by other companies in similar business contexts.

This research has important business implications for the companies experimenting and practicing various strategies of customer service on social media. Our research provides some illuminating insights for them by bringing empirically validated, qualitative comparison of social media strategies among the companies, with evidence from the airline industry. This information can be useful for industry practitioners and social media strategists in investigating the optimal mix of strategies towards effective customer correspondence on social media. However, any company that intends to set policies regarding who/what should get priority, needs to evaluate very carefully the aftermath of such policies in order to minimize the possibility that a customer feels discriminated, which can be detrimental for customer loyalty and future business success. For instance, there can be several loyal and powerful customers who may not be popular on social media, but who would request for engagement just for the mere purpose of contacting the brand one way or the other while having a difficult brand experience. If the chance that this customer gets a reply is fairly low on the basis of customer’s popularity on social media, there is a higher chance that these important customers would consider silently to discontinue patronage. Moreover, the story will even be shared with other powerful people in the society who are not necessarily active on social media. Losing such customers would cost the company a fortune in long term, since the costs of attracting such powerful customers with no active interest on social media will be much larger at a later stage.

Our research provides some important theoretical contribution to the stream of consumer correspondence handling literature. Although several previous studies examined organizational responsiveness to consumer correspondences of complaints and compliments, to the best of our knowledge, all these were conducted within the frame of traditional customer service. Our research reveals a new dimension of CRM research for the digital age and suggests that the traditional notions of CRM may be still relevant for customer service on social media.

The findings in this paper clearly open up more research questions. For example, are all major airlines following the same strategies as the airlines we investigated? Airlines of different business models and from different cultures may behave differently on Twitter. What about other industries? A direct extension is to study the Twitter conversation between consumers and companies in other industries to examine similarities and differences between companies’ Twitter strategies across industries and relate that to industry characteristics. We hope that our findings will stimulate more studies on the practice of running customer service on social media and also help practitioners to better use social media to improve customers’ experience in the digital age.

7. References

Dissatisfaction and Co
Feedback," Compliments as more than Complementary
Behavior
Measures of Consumer Satisfaction and Complaining
Complaints and Compliments," Compliments: A Follow-up Study on Customer
Consumer Research
Alternative Responses to Dissatisfaction,"
Dissatisfaction and Co
Feedback," Compliments as more than Complementary
Behavior
Measures of Consumer Satisfaction and Complaining
Complaints and Compliments," Compliments: A Follow-up Study on Customer
Consumer Research
Alternative Responses to Dissatisfaction,
Emotions,” (Order No. 3615263, Doctoral dissertation, The Chicago School of Professional
Psychology).

Table 3. Response choice model estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>American Airlines</th>
<th>United Airlines</th>
<th>Southwest Airlines</th>
<th>Delta Airlines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Logit</td>
<td>Probit</td>
<td>Logit</td>
<td>Probit</td>
</tr>
<tr>
<td>Ln(Followers)</td>
<td>0.034***</td>
<td>0.020***</td>
<td>0.040***</td>
<td>0.026***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.001)</td>
<td>(0.003)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Ln(Followings)</td>
<td>0.072***</td>
<td>0.045***</td>
<td>0.018***</td>
<td>0.011***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Ln(Updates)</td>
<td>-0.089***</td>
<td>-0.054***</td>
<td>-0.072***</td>
<td>-0.047***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Mentions</td>
<td>-0.420***</td>
<td>-0.212***</td>
<td>-1.077***</td>
<td>-0.561***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Retweet</td>
<td>-5.941***</td>
<td>-2.828***</td>
<td>-5.762***</td>
<td>-2.396***</td>
</tr>
<tr>
<td></td>
<td>(0.046)</td>
<td>(0.015)</td>
<td>(0.135)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Complaint</td>
<td>0.399***</td>
<td>0.248***</td>
<td>0.389***</td>
<td>0.239***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Compliment</td>
<td>0.596***</td>
<td>0.364***</td>
<td>0.308***</td>
<td>0.183***</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.004)</td>
<td>(0.008)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Weekend</td>
<td>0.177***</td>
<td>0.108***</td>
<td>0.007</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.005)</td>
<td>(0.009)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Extrovert</td>
<td>0.126***</td>
<td>0.073***</td>
<td>0.083***</td>
<td>0.051***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.006)</td>
<td>(0.011)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.591***</td>
<td>0.300***</td>
<td>0.698***</td>
<td>0.316***</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.007)</td>
<td>(0.015)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>Observations</td>
<td>1,251,072</td>
<td>1,251,072</td>
<td>618,175</td>
<td>618,175</td>
</tr>
</tbody>
</table>

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1