STARTUPS' USE OF TWITTER: A CONTENT ANALYSIS OF ENGAGEMENT TOOLS AND ONE-WAY VERSUS TWO-WAY COMMUNICATION

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ABSTRACT

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With the increased use of social media as a marketing tool, marketing strategies and the way brands communicate with customers is changing. Due to its low cost and characteristic short length of messages, Twitter is an especially beneficial marketing tool. Twitter is free and consists of making posts that are easy to compose and easy to consume, which makes it an ideal way for companies, such as startups, to reach customers without having to use many resources. However, companies should be strategic in their use of Twitter and no data exists on the best practices for startup companies as they develop Twitter marketing plans. This study sought to address this issue and explored different methods for engaging followers and which of these methods were the most effective for technology-oriented startups to use. A content analysis revealed that engagement tools, such as media, hashtags, URLs, and mentions serve their intended purpose for tech startups and were related to engagement. However, using conversational, two-way communication, as suggested by marketing companies and literature, proved to not be positively related to engagement rates. One-way, promotional language that is typically advised against was more related to higher engagement. Thus, startup tech companies should continue to prioritize engaging followers with engagement tools but should focus on non-conversational topics, such as their products, events, news, and updates.

INTRODUCTION

Companies' use of social media to communicate with customers, clients, and audiences is continuously increasing (Moseley, 2015; Neiger, Thackeray, Burton, Giraud-Carrier, & Fagen, 2013). In fact, over 96% of businesses use at least one form of social media to market themselves (Phua, Jin, & Kim, 2017). Social media has become an integral part of contemporary marketing. Because of this, not only has marketing changed, the strategic methods for creating marketing content that can be considered effective have also transformed (Hanna, Rohm, & Crittenden, 2011; Lovejoy, Waters, & Saxton, 2012).

Social media can be extremely valuable to organizations promoting their services - effective use can increase brand exposure, attract followers to companies' websites, develop a loyal customer base, and gain marketplace intelligence (Stelzner, 2015). However, social media marketing requires a different skillset from traditional media marketing; gone with the days of one-way messaging, companies can no longer simply "own and orchestrate their brands" (Hanna et al., 2011,p. 266). In other words, social media, which is designed to create conversations among audiences (Lovejoy et al., 2012; Neiger et al., 2013), allows customers and users to join in the dialogue about the companies they interact with. Additionally, social media has a plethora of tools, such as the inclusion of hashtags, URLs, and mentions, to further drive interactions between company and customer.

Many social media sites exist through which companies can market their products, services, and brands (Phua et al., 2017). Twitter, specifically, offers unique marketing opportunities. The social networking site is low-cost and does not require great time commitments to rapidly send easy-to-consume messages to followers. Given this, Twitter may be an ideal tool for companies with limited resources, such as startup companies. However, despite the benefits using Twitter may offer a company that cannot dedicate a great deal of time or money to marketing, there is a shortage of data and understanding on the best practices for startups on Twitter. Current, but lacking, literature suggests the effective use of Twitter for marketing centers around the art of engaging users by using engagement tools, such as media, URLs, hashtags, and mentions, and creating conversations (Lovejoy et al., 2012; Neiger et al., 2013; Porter, Anderson, & Nhotsavang, 2015). Yet, existing studies have inconsistent results and no studies yet exist that focus on how startup companies use or should be using Twitter.

With the goal of closing this gap in the literature, this study addresses one overarching question: *How should startup companies utilize Twitter as a marketing tool?* Specifically, technology-oriented startup companies were studied. Not only do the results offer implications for marketing theory involving one-way and two-way communication, they offer practical insights that may be used to guide the social media marketing strategies of startup tech companies. First, the paper reviews existing literature, from both academic and marketing sources. Twitter and its marketing benefits are outlined, as well as tools that may be used to increase engagement. Then, one-way and two-way communication are defined, and I hypothesize the use of engagement tools and the use of two-way communication may be best practices for startup companies looking to drive engagement.

A content analysis was conducted on a sample of 2,472 Tweets from twenty startup organizations to understand what practices were most related to high levels of engagement. The results suggest that although engagement tools are effective, two-way communication may not be as important to engagement as the literature suggests. Based on this, a discussion on startups' use of Twitter proposes best practices for marketing strategy. Finally, limitations are discussed and suggestions for future research are made.

LITERATURE REVIEW

Twitter and Engagement Rates

Twitter

Before discussing techniques for increasing engagement on Twitter, let's first review what Twitter is and what purpose it serves. According to the site itself, "Twitter is what's happening in the world and what people are talking about right now" (Twitter | About, 2019). Founded in 2006, Twitter began as an SMS-based communication platform, where "groups of friends could keep tabs on what each other were doing," based on status updates posted from their phones (MacArther, 2018). Over the past thirteen years, Twitter has evolved. Today, it is an online site, used primarily for news and social networking, and has over 326 million active users (Gil, 2018; "Twitter: number of active users 2010-2018," n.d.). Users post short messages, called Tweets. These posts are viewed by a user's followers, who are other users that subscribe to their profile, usually because they are friends, or find that user useful or interesting (Gil, 2018).

Twitter has gained popularity for a number of reasons, one being ease of use (Lovejoy, Waters, & Saxton, 2012). Anyone who has access to internet can use the site, at no cost. Users create an account and a Twitter name, which is signified by an @ symbol, then may send Tweets as frequently as they like. Accounts can represent an individual or an organization. A user's followers will see their Tweets. However, followers may also "Retweet," or post the user's Tweet to their timeline as well, meaning that account's followers will also see the Tweet on their timelines. Users may choose what kinds of Tweets show up on their timeline by searching accounts – whether they be celebrity, friends, news organizations, brands, or so on – and following them, which is essentially subscribing to their Tweets (Gil, 2018; Twitter Help Center, n.d.). See Appendix A for definitions of Twitter-related terms.

Another reason for Twitter's popularity is its rapidity of information dissemination (Gil, 2018; Graham, Jackson, & Broersma, 2016; Jansen, Zhang, Sobel, & Chowdury, 2009; Lovejoy et al., 2012). Due to Twitter's characteristic short character limit (280 characters), it is considered a form of microblogging. (Lovejoy et al., 2012; Nations, 2018). Microblogging is "a combination of blogging and instant messaging that allows users to create short messages to be

posted and shared with an audience online" (Nations, 2018). Microblogging, which can "amplify the rapidity of information exchange" (Lovejoy et al., 2012), allows people to join in on conversations, or engage, with organizations from anywhere, to anyone, on a large scale. The short length of microblogs, or in this case, Tweets, makes messages easy to produce and consume (Jansen et al., 2009). Nations (2018) calls this Twitter's big appeal; it is "scan-friendly." This means users can track hundreds of accounts and read and engage with their content quickly.

Twitter as a Marketing Tool

Since its creation in 2006, it took less than three years for Twitter to become the most used social media application for marketing campaigns (Stelzner, 2009). While it is advisable for companies to utilize multiple forms of social media to engage all possible audiences (Hanna, Rohm, & Crittenden, 2011), Twitter offers unique possibilities in terms of social media marketing that make it stand out from other social media channels.

It may seem tempting for companies to focus their efforts on social media sites with the most users. While Twitter has 326 million active users, it still doesn't boast as many as other sites; as of October 2018, Facebook claimed approximately 2.2 billion active users and Instagram claimed 1 billion (Statista, 2018). Furthermore, according to a 2016 Pew Center study (Greenwood, Perrin, & Duggan), 24% of Americans who use the internet use Twitter, while 79% have Facebook profiles. However, it is advisable for companies to prioritize Twitter, as it has unique opportunities and is extremely valuable for an organization looking to market a product or brand.

First, the microblogging quality of Twitter makes the site a beneficial tool for companies (Lovejoy et al., 2012). Not only is Twitter low-cost for organizations and their followers to operate, Tweets don't take much time to create and have the potential to reach large audiences, who can consume them and respond or interact easily. In other words, companies can reach a large a number of stakeholders at a rapid rate while garnering a great deal of engagement at a relatively low cost, in terms of time and resources (Ravindran & Garg, 2015).

Additionally, people use Twitter to engage with brands more than other social media platforms. Phua. et al. (2017) reported that of social media users who follow brands, Twitter users had the highest "brand community identification and membership intention" of the four

most used social media sites (Twitter, Facebook, Instagram, Snapchat [no order]), meaning on Twitter, users are more likely to identify with brands and intend on engaging with them. Furthermore, marketing company Convince&Convert found that Twitter users are three times more likely to follow brands than Facebook users: 49% of monthly Twitter users follow a brand or company, compared to the 16% on Facebook (Baer, n.d.). Forty-two percent of Twitter users learn about products and services via Twitter, 67% are more likely to buy from the brands they follow on Twitter than ones they don't, and 37% will purchase from a brand they follow (Baer, n.d.; Frasco, n.d.).

According to a study conducted by Twitter (Midha, 2014), 80% of users surveyed mentioned a brand in at least one of their Tweets, but perhaps more importantly, 54% of respondents reported that they have taken some kind of action after seeing a brand mentioned in a Tweet. The top five actions that users reported taking were visiting a website (23% of users), visiting the brand's account (20%), searching the brand online (20%), consider trying the brand (19%), and Retweeting Tweets that mention the brand (18%). Of the users surveyed, 32% reported seeing Tweets about brands from brand-sources, such as a company's Twitter account, 33% saw Tweets from non-brand-sources, such as a friend who uses the brand, and 35% saw Tweets from both brand- and non-brand-sources. Interestingly, 45% of the users who saw Tweets from brand-sources reported taking action, while 63% of the users who saw Tweets from non-brand-sources and 79% who saw Tweets from both reported taking action (Midha, 2014). This illustrates that if a company successfully engages and gets other followers talking about them or their brand, more users are likely to take action. Twitter serves as a valuable tool in not only creating brand awareness, but generating action related to brands.

Startup Companies

Twitter is also a beneficial tool for startup companies to use. Before elaborating on this further, let's first discuss what a startup company is. There are many vague definitions of the term (McGowan, 2018; Robehmed, 2013). According to Robehmen (2013, para. 9), "a startup is a company designed to scale very quickly." They typically have only one office, revenues of less than $20 million, less than eighty employees, less than five members on the board, and their founders have never personally sold shares (Robehmed, 2013). Essentially, a startup is a private, for-profit company in the early stages of development. "These entrepreneurial ventures are

typically started by 1-3 founders who focus on capitalizing upon a perceived market demand by developing a viable product, service, or platform" (McGowan, 2018, para. 10). It is important to note that as the name suggests, startup companies are doing just that: starting up. Companies such as Uber, for example, are often referred to as startups because they were once a startup but have moved past the classification. This study will be focusing on tech startups, or startups companies that sell products or services related to technology or research.

Given startups' focus on growth, it makes sense that using social media to engage potential followers can be incredibly advantageous (Lucs, n.d.). Perotti and Yu (2015) found that in terms of social media networks, the better startups are connected online with other startup companies, the more successful they are. Another study on European startups found that organizations that had at least 100 Tweets received significantly more investments than those that did not (Lugovic & Ahmed, 2015).

Marketing companies have published many blogs on suggestions for startup companies. Some of these suggestions include promoting other accounts, being focused on the company's niche, responding quickly to mentions, using concise language, including images, using hashtags strategically, and including information that is interesting and non-promotional (Banerjee, 2017; Patel, n.d.; Widrech, n.d.). Although the marketing companies make a lot of suggestions, these tips are not based on evidence. There is a lack of data on how startup companies should use Twitter. Because of startups' limited resources and Twitter's low cost to disseminate many messages to users, it is particularly attractive to startup companies. However, using Twitter isn't enough. A company or brand's success depends on *how* the organization utilizes the site and interacts with followers (Petronzio, 2013). Thus, the question remains: *How can startup companies use Twitter effectively to best engage followers and potential customers?*

Increasing Engagement Rates

Engagements measure how effectively messages make followers feel connected enough with the organization to react, which makes them an important tool in assessing social media marketing efforts; when building brand or customer loyalty, a company should want to have followers connecting with them. Different ways of engaging with Tweets include Retweeting, liking, or responding to the post, following the user, or clicking on a URL or hashtag in the Tweet (Twitter Help Center, n.d.). Engagement rates measure how effectively a Tweet gains

engagement: it is the number of engagements divided by the number of users that see the Tweet on their timeline.

Because of the importance to social media marketing, there have been a number of studies conducted on different types of Twitter content to see what might best engage audiences. For example, in a study done on Twitter's highest performing brands, Malhotra et al. (2012) found that hard-selling, "in your face" marketing, asking questions, promoting contests, embedding links, contests, and surprisingly, the inclusion of hashtags decrease the likelihood of receiving Retweets. The report also suggested that Tweets that are short in length, begin with attention words, and offer deals were likely to receive more Retweets.

Semiz and Burger (2017)) conducted a case study on a Turkish woman's empowerment organization to analyze engagement rates and found that the inclusion of media, such as photos or videos, was the most predictive of high engagement, as well as mentioning other users. Semiz and Burger also reported that hashtags were not related to engagement and that Tweets including URLs had low engagement rates. Twitter engagement has also been studied in terms of academia: a study analyzing an academic journal's Tweets revealed including an image increased the engagement rate twenty-nine times and contradictory to Semiz and Burger, hashtags increased engagement rate three times (Wadhwa, Latimer, Chatterjee, McCarty, & Fitzgerald, 2017).

Marketing companies have also studied factors related to engagement rates. Convince&Convert, a media company that does social media consulting, conducted a study on one of the Twitter accounts they manage and found Tweets that included an image received 150% more Retweets and 89% more likes than Tweets without one (Widrich, n.d.). SproutSocial also recommends including media (images, videos) in Tweets to increase engagement, based on their research on Twitter influencers (Barker, 2018). CoSchedule (2016) found that including Memes and GIFs in Tweets not only communicated brand personality but received more engagements than regular images and that including videos in Tweets increase engagement by 28%. CoSchedule also reported that pinning a Tweet (choosing a Tweet to display at the top of one's profile) with an image can boost Retweets by 35% or pinning a Tweet with a URL can boost engagement by 86%. Quicksprout (2014) reported that Tweets with hashtags double engagement rate – this contradicts studies previously discussed.

Published studies on the topic have made conflicting recommendations. Should a company use hashtags in Tweets? Should they include URLs? Based on the existing literature, the answer is not clear. This is perhaps because users follow and interact with different accounts for different reasons and each study had a different context: Malhotra et al. (2012) studied brands that were already successful, beyond Twitter. Semiz and Burger (2017) studied an empowerment group and Wadhwa et al. (2017), an academic journal. Marketing companies reported on brands that were paying them for marketing expertise, as well as influencers, who have large social media followings. It cannot be assumed that Twitter users use the site to engage with different accounts in similar ways. For example, Twitter users likely follow popular celebrity and influencer who is known for her makeup line, fashion choices, and dramatic family, Kylie Jenner (@kyliejenner), for totally different reasons than organizations such as the American Red Cross (@redcross). Despite the Red Cross being one of the most iconic and recognizable brands (Carson, 2018), Kylie Jenner outperforms the organization in terms of Twitter engagement rates. Therefore, comparing engagement rates from both of these accounts and trying to determine best practices for one based on the other would be ineffective. Thus, to understand best practices for startup tech companies, analyzing Tweets from startup companies as opposed to other types of organizations is essential.

Additionally, by going solely off of types of content, like URLs, media, and hashtags, to predict engagement rates, there is not much guidance when it comes to what the actual written content of a Tweet should say. For example, the results on whether or not to include hashtags were contradictory (Malhotra et al., 2012; Semiz & Burger, 2017; Wadhwa et al., 2017), but even if there were consistent findings on whether to include hashtags, there were no suggestions on what the hashtags should be – what should they say? Additionally, what should be the subject or purpose? Beyond types of content, what should the bulk of text being saying in a Tweet to increase engagement?

Social Media Marketing

Creating Conversations: Two-Way Versus One-Way Communication

According to Hanna et al. (2011), the “new 21st century marketplace” is one that is driven by customer connectivity and interactivity. *Cluetrain Manifesto* (Levine, Locke, Searle, &

Weinberger, 2001) was an early insight into this concept and asserted that social media marketing is not about messages, but about conversation. Conversations are the products that are being marketed to consumers, who no longer want to simply be fed messages about products being sold. “Marketing can no longer solely be about capturing attention via reach; instead, marketers must focus on both capturing and continuing attention via engagement” (Hanna et al., 2011, p. 267).

In addition to types of content, Tweets’ effectiveness should be analyzed in terms of one-way and two-way communication (often also called dialogue). One-way communication is what was used in traditional media marketing. One-way messages simply promote a product and don’t give users a reason to want to engage; the company dominates the dialogue (Petronzio, 2013; Thackeray, Neiger, Smith, & Van Wagenen, 2012). Two-way communication, on the other hand, is conversation oriented. According to Petronzio (2013), when it comes to brands and companies, two-way communication “embodies a very specific marketing strategy: personification.” Instead of “age-old press releases and ads,” using two-way communication allows personable and natural interactions between users/potential customers and companies/brands (Petronzio, 2013).

In other words, two-way communication on Twitter is “content that elicits interaction” (Jaramillo, 2017). The most obvious form of two-way communication is responding to follower’s Tweets and mentions (Lovejoy et al., 2012). For example, Wendy’s, a fast food chain whose Twitter account generates lots of attention (@Wendys) (Cheng, 2018), is primarily known for their witty Tweets. However, the chain also constantly responds to Tweets they are tagged in. These responses may not always receive the engagements that Wendy’s most popular Tweets do, but some of them do become Wendy’s signature “sassy” Tweets. Regardless, Wendy’s followers have a lot of brand loyalty and are very engaged in the account’s Tweets, and part of this can be because of the chain’s responses to their followers and customers.

In addition to responding to Tweets, getting users to like or Retweet posts can also constitute two-way communication as these users then become part of the “conversation” and get more involved than simply scrolling past a post about the organization – almost as if the users themselves are promoting the organization (Edgecomb, 2017). While companies could focus on studies mentioned previously for tips on how to drive Retweets and likes, marketing company IMPACT published a list of suggestions for other ways to implement two-way messaging to create dialogue with potential customers (Edgecomb, 2017). This list includes becoming part of

existing conversations already taking place online, using humor to break the ice, creating surveys, utilizing live video, and being consistent with posting. Instead of one-way promotional posts, all of these suggestions involve creating content that allows natural interaction. Sinha (2018) elaborated on these suggestions: in addition to engaging and interacting with potential customers, he noted the importance to be part of trending topics. He suggested companies "be active in the conversation as well as encourage other to share their voice too" and to use hashtags as a tool to spot relevant topics (Sinha, 2018).

One-way and two-way communication have been studied in terms of Twitter marketing. For example, Neiger et al. (2013) studied social media use in health campaigns and reported that one-way communication can be effective for simply creating a social media presence and communicating information to an audience, but this results in low engagement, which leads to followers who are not particularly loyal or identified with the organization. Yet, campaigns studied still used one-way communication. Lovejoy et al. (2013) studied the Twitter accounts of seventy-three nonprofit organizations and found that less than 20% of Tweets demonstrated conversations; nonprofits tended to use Twitter as a one-way communication channel to promote themselves instead of getting followers involved. A study on museums' Twitter accounts showed that although they did use some two-way messaging on Twitter, by having conversations with followers, inviting followers to share their experiences, and sharing stories that their audience might find interesting, the most common type of Tweets were promotional (Jaramillo, 2017). Furthermore, according to a study reported on by marketing company 24KCreative, less than 50% of retail brands engage with tagged mentions on Twitter (Carter, 2018). Despite social media allowing marketers the ability to "move consumers from awareness to engagement, consideration, loyalty, and advocacy" (Hanna et al., 2011), organizations do not get these benefits as they still mostly use one-way communication in their social media marketing efforts.

The studies mentioned above show that two-way communication is not being prioritized in social media efforts. Yet, Colliander, Dahlén, and Modig (2015), found that two-way messaging is more successful than one-way messaging. The study compared "responses from consumers exposed to company Twitter feeds that used only one-way communication, as well as the responses from consumers exposed to company Twitters that used dialogue," dialogue meaning two-way communication (p. 186). Colliander et al. found that using two-way communication led to a stronger brand attitude and higher purchasing intentions than using one-

way communication in terms of Swedish brands, likely because with conversation-based messages, customers had a more positive Twitter experience, so they appreciate the brand and are more inclined to reward it with their business. Additionally, the study revealed that "the perceived effort and care signaled to customers through [two-way communication] will mediate the positive effect found on brand attitude and purchase intention" (p. 186). It can be assumed that adopted a two-way, non-promotional social media marketing strategy would be valuable to an organization's Twitter efforts.

The 80/20 Rule

Social media marketing is marketing, after all. While two-way messaging has been deemed effective, brands still need to promote the products and services they sell – how many promotional Tweets should a company make in comparison to conversational ones? Omaha Media Group (2018) addressed this and reported on the 80/20 rule of social media marketing. The 80/20 rule comes from Italian economist, Vilfredo Pareto and essentially states that 20% of causes are responsible for 80% of the effect (Lipovetsky, 2009), or that a majority of wealth is controlled by 20% of the population. This has been adopted for social media marketing: only 20% of marketing efforts should be self-promotional and brand related, which means talking about products, services, and discounts, or using calls to action. The other 80% of posts, according to Omaha Media Group, should be entertaining, educational, or informative at the benefit of an organization's followers. This other 80%, the posts that should focus on what followers are likely interested in seeing, can also be considered two-way communication, as they are posts that are conversational and that followers will want to interact with. This rule illustrates the idea that a majority of posts should be two-way rather than one-way. However, the ratio, 80/20, is fairly arbitrary and there is a lack of data explaining whether these portions are truly ideal. This study will address that.

Examples

For examples of what can be considered promotional, and what is considered two-way, let's look at the Twitter account of what used to be a startup, Bird (@BirdRide). Bird, an electric scooter rental service, is by no means a superior company in terms of Twitter use, but has helpful examples of what blatant promotion, as well as conversation-starting Tweets look like. On

December 17, 2018, the company tweeted, “Start your week off right: Replace your commute with Bird! Cut emissions while beating traffic. #MondayMood #BeFreeWithBird.” Although the company used what might be a relevant hashtag, #MondayMood, it is promotional. It doesn’t invite engagement or conversation but instructs followers to pay for their product. On the other hand, on December 27, 2018, Bird Tweeted, “When everyone’s talking about #BirdBox and we’re over here like…” with an attached image of a box-shaped parking space meant for Bird Scooters (see Image 1). The Tweet was using humor and talking about a movie that was trending at the time. This is conversational and does not just promote the company – it is something the trendy company’s young audience would find interesting, timely, and funny.

Promotional Tweet:

Non-Promotional Tweet:

Figure 1: Examples of Bird Tweets

Another example in London-based startup company Goodlord (@sogoodlord). This organization found success in adopting two-way techniques in their Twitter marketing efforts. According to a Twitter Business Blog (n.d.) about the organization, Goodlord was looking to increase the number of people signing up to receive notifications of new blog posts. It is notable that the company did pay to promote Tweets, but they also began providing relevant content to audiences, by prioritizing topics that would be interesting to their followers and creating content that was relevant to industry news. The startup saw a 30% increase in blog sign-ups.

Research Objectives and Questions

While engagement rates are easily-measurable indicators that followers are interacting with Tweets, one-way versus two-way communication could be the reason followers are engaging with some Tweets more than others. Rather than focusing entirely on types of engaging content, like hashtags and URLs, focus needs to be on what the Tweets are saying and whether it is conversational, as evidence suggests two-way communication is under-utilized, yet effective. Studies on two-way communication from a social-media marketing perspective are limited as it is, but do not begin to cover startup tech companies. As already addressed, to understand how startup companies should use Twitter, startup companies need to be studied. Therefore, this study will analyze startup organizations' Tweets. First, Tweets will be collected from technology-oriented startup companies and engagement rates will be calculated. Then, a content analysis will be conducted to address types of engagement tools and to assess whether one-way or two-way communication is being used and whether that is related to the effectiveness, or engagement rate, of Tweets.

Based on the reviewed information, two research questions were developed. The first question is linked to basic practices and is based on types of content related to engagement rates.

> RQ1: Is the utilization of engagement tools (hashtags, media, URLs, mentions) related to engagement rates of Tweets from startup tech companies?

It was hypothesized that the inclusion of media, such as images and videos would be more common in high-performing Tweets, because that was the only consistent finding in the literature presented. Due to inconsistent results regarding URLs and hashtags, there may not be significant findings in terms of startup tech companies. Additionally, use of mentions will be analyzed.

These were not studied in the literature cited, but it is hypothesized they will be positively related to engagement since they are a way to directly engage multiple other users.

RQ2: Is type of communication, one-way or two-way, related to engagement rates of Tweets from startup companies?

It was investigated whether Tweets use one-way or two-way communication. Two-way communication was identified in Tweets that add to conversations, or trending topics on Twitter (current events, holidays), use humor, or respond to and invite responses from followers (Edgecomb, 2017; Lovejoy et al., 2012). One-way communication will be identified in Tweets that are promoting their brand or product and not inviting conversation. Because two-way communication is centered around conversation and engagement, and based on the 80/20 rule, it was hypothesized that tech startup Tweets that perform well will utilize two-way communication techniques more than low-performing Tweets, or that two-way communication is related to high engagement rates.

METHODOLOGY

A hand-coded content analysis was conducted on 2,472 Tweets from twenty startup organizations that are survey, technology or research-oriented. This will be described in detail below.

Sample

Using crunchbase, a platform for finding business information on public and private companies, a list of survey, technology, or research-oriented startups was compiled, based on their self-identified categories. Going off of what was possible to search, Robehman's definition provided basic parameters that were used to determine whether or not the organization could be considered a startup: only one office, revenues of less than $20 million, and less than 80 employees, (Robehmed, 2013). Also, only private companies that were labeled as "Early Stage Venture" (description of funding received) were included to ensure all organizations had similar resources available. Finally, the companies had to be located in the United States to ensure similar followers.

Additionally, to be included, organizations needed to have an active Twitter account. Twitter defines an "active" user as someone who follows at least thirty other accounts and has at least one-third of these accounts following them back (Twitter Help Center, n.d.). However, with the goal of analyzing and comparing multiple Tweets, this did not work and the definition of "active" was changed to fit the needs of the study. To be included and ensure sufficient data, companies needed to Tweet original content at least once a week. All companies that met inclusion requirements were compiled (there were over 400 companies identified). Then, twenty were randomly selected for inclusion. This number allowed for a manageable amount of data yet provided enough variation for the Tweets collected to be generalizable to technology-oriented startup companies.

After the companies were identified, six months of Tweets from each organization were collected (Aug. 28, 2018 through Feb. 28, 2019), using Google's TAGS v6.1 Twitter Archiving tool. In total, 11,476 Tweets were collected. From this, 3,000 Tweets were randomly selected for inclusion in the content analysis. After the sample was identified, Retweets were removed (due

to lack of tools to investigate their ability to drive engagement), resulting in a total sample of 2,472 Tweets. These Tweets consisted of 1,901 posts that were original content, 485 posts that were replies, and 86 posts that were quote tweets, or the organization quoting, then adding to another account's posts. The sample's mean engagement rate was 0.00140, with a standard deviation of 0.00321. Calculation of engagement rate will be discussed below.

Calculating Engagement Rate

Each company's Tweets were analyzed based on the engagement tools and type of communication used to assess whether these methods were related to engagement rates. Before describing this, let's first discuss how engagement rate was calculated.

According to Twitter, engagement rate is "the number of engagements divided by impressions" (Twitter Help Center, 2019b). To break this down, Twitter defines engagement as the "total number of times a user interacted with a Tweet," which includes "clicks anywhere on the Tweet, including Retweets, replies, follows, likes, links, cards, hashtags, embedded media, username, profile photo, or Tweet expansion" and impressions as the number "of times a user is served a Tweet in a timeline of search results" (Twitter Help Center, 2019b). In other words, according to Twitter, engagement rate is simply the interactions a Tweet gets divided by how many people see it.

However, although it is possible to access one's own business's analytics of total engagements and impressions (Semiz & Berger, 2017), Twitter does not allow other users to collect this information. Thus, the method of calculating engagement rate needed altered for me to be able to analyze the engagement rates of the startups' accounts based on information that is made available. Scrunch, an influencer marketing company that blogs about its data-driven insights on effective social media marketing, worked around this problem and were able to assess engagement rates of influencer's Twitter posts by adding all engagement data available (Retweets, likes, replies), and then dividing it by the total number of influencer's followers (Newman, 2017). This way of calculating engagement rate, while not consistent with Twitter's definition, has been used effectively by marketing companies, such as Scrunch and ITP Live (Kell, 2018).

Using data available, Scruch's method for calculating engagement rate was adopted as it fits the needs of this study. Therefore, engagement rate for the purposes of this study was

calculated by adding the number Retweets, likes, and replies of each Tweet, then dividing by the number of followers:

$$\text{engagement rate} = \frac{Retweets + likes + replies}{number\ of\ followers}$$

These metrics are related to Twitter's definition of engagement, as in, if favorites, Retweets, and responses are high, it is likely total engagement is high, as well (Twitter, n.d.).

Procedure

Once the sample was identified and engagement rates were calculated for each Tweet, a hand-coded content analysis was conducted, using four coders (me and three research assistants). The unit of analysis was each Tweet and the context unit of analysis was the context in which the Tweet occurred – this may mean reading earlier Tweets to understand to what it might have been responding (Graham et al., 2016; Krippendorff, 2012). This most commonly happened when analyzing replies – coders had to click on the tweet to which the organization was replying to understand the nature of the response.

The coding scheme contained six main categories, based on the literature and observations from reading through the Twitter timelines of each organization included in the study. For each code, other than ones where engagement tools were counted, the integer *1* was used to indicate the presence of a characteristic and the integer *0* was used to indicate no presence. The first category was type of Tweet: whether the post was original content, a reply, or a quote Tweet. The next category was types of promotional, one-way communication. Tweets that were promotional were coded based on the following characteristics, which were not mutually exclusive: product/service, podcast, website, job, event, news/update about the organization, and other. The third category was types of conversational, two-way communication, which again, were not mutually exclusive: useful information (still one-way), useful information that was not about the organization, holidays, humor, questions, and other (See Table 1). Coders were trained on the second and third categories.

The fourth category was types of engagement tools – this category was large, but objective (coders did not need to receive training). It was broken into several sub-categories: media, URLs, hashtags, and mentions. For media, it was recorded whether the Tweet included media and if so, the type of media: a photo, organization graphic, stock photo, GIF/Meme, video,

or livestream. For URLs, it was recorded whether the Tweet included a URL, or a link to an outside source, and if so, if it was a link to the organization's website or a link to a website mentioning the organization. For hashtags, it was recorded whether the Tweet contained a hashtag, and if so, how many were included, as well as whether the hashtags were branded, meaning they were related to a product/service or event, keywords, or trending. Finally, for mentions, it was recorded whether the Tweet mentioned another user, and if so, how many. If at least one other account was tagged, it was noted whether the mention was a way to promote others, promote a member of the organization, promote an organizational partner, or thanking another user for following the organization's account.

Replies and quote tweets also were coded in their own categories (the fifth and sixth), for which coders received training. For replies, it was assessed whether the organization was replying to another account as customer service, joining in a conversation already taking place, to promote themselves, or to thank another account. For quote tweets, it was assessed whether the organization was quoting a Tweet as ac customer service, to join a conversation, to promote another account, or to promote themselves. Once coded, then each characteristic being analyzed was correlated with engagement rate to determine whether a relationship exists. Table 1 contains definitions and examples of each code for which coders were trained.

Table 1: Code Definitions and Examples

Code	Definition	Example
One-Way		
Code 1: Product/Service	Tweet promotes a product or service that the company offers	"Send asynchronous requests with Postman's PM API https://t.co/cpsE5wNh5V #PostmanClient #PostmanPro #API #APITesting"
Code 2: Podcast	Tweet promotes a podcast made by the organization	"On todays episode, Chad Prevost talks weather with Nick Austin about weekend weather, and John Paul Hampstead about volumes."
Code 3: Website	Tweet actively encourages follower to go to organization's website	"Canada Cup – Canada's BIGGEST FGC event – is back, and it's here with fantasy! #CC2018 🎮 Play here: https://t.co/aaa6VdWggj"

Table 1 continued

Code 4: Job	Tweet promotes a position (organization is hiring)	Join us in our mission to secure the agile enterprise. StackRox is hiring! Check out our job postings today. https://t.co/NsEJPDNBoT #containersecurity #career #hiring
Code 5: Event	Tweet promotes an event put on by/sponsored by organization	"Join us in SF on June 7th for the first Postman Conference - POST / CON. If you're looking to step up your Postman game, come to the pre-conference workshop on June 6th to get Postman certified!"
Code 6: News/Update About Organization	Tweet is about a new feature/product/service offered by the organization OR news about the organization	"See how we've updated our StackRox threat-detection platform with new capabilities designed to safeguard #Kubernetes deployments."
Two-Way		
Code 7: Useful information	Information in Tweet is useful or interesting to followers (may be about organization)	"No appointment needed. Just find your closest b8ta store, come on in, and talk with someone on our team. They'll get you gliding."
Code 8: Useful information that is not about product/service	Information in Tweet is useful or interesting to followers, and also does not mention organization	"Trump going the wrong way on trade, FedEx founder says. #Trump #trade"
Code 9: Holiday	Tweet references a holiday	Happy MLK day from all of us here at https://t.co/11BJ0OgGpA!
Code 10: Humor	Tweet uses humor	We are getting ready for this holiday season... Lola parties are snow joke ❄️ 😉 https://t.co/1gTobDXLyR
Code 11: Question	Tweet poses a question	So, what's the most unique thing you've ever loaded onto your truck? #trucking #freight #transportation
Replies		
Code 12: Customer Service	Tweets seeks to help a customer solve a problem	"@BobJWerner Hi Bob, these steps should put you back on track: https://t.co/kSrAz8TLUI -Sara"
Code 13: Joining in conversation	Tweet is responding to a conversation about a non-promotional topic	"@MikeMartin604 @dsolsona Love it! Dark launchers all over the world. 🚀"

Table 1 continued

Code 14: Promoting self	Tweet is responding to a conversation to self-promote	"@jsfranklin221 @abarrallen @abarrallen, we think you may 💗 our embedded email polls/surveys -- https://t.co/r8rCSQByib. We offer a guilt-free (no cc) 14-day trial, so you can kick the tires."
Code 15: Thanking	Tweet thanks another user	"@JuggleRob Thanks so much Rob! Simply great to work with you 😄"
Quote Tweet		
Code 16: Customer service	Tweet seeks to help a customer solve a problem	"Thanks for asking!... We're keeping a tight pulse on the community's thoughts, and aim to trim rulesets in line with how things progress. https://t.co/Jneze8uEK9"
Code 17: Joining in conversation	Tweet is responding to a conversation about a non-promotional topic	"This warms our hearts. Shout-outs to supportive parents in esports everywhere 💟 https://t.co/5G4FGmJ8pa"
Code 18: Promoting other	Tweet is promoting another account	"The #GiveAtlanta campaign is amazing! We love your mission and your campaign goal. Keep up the great work! Next time we're in Atlanta we will stop to check out your new yurt. https://t.co/brVvV8xtA3"
Code 19: Promoting self	Tweet is promoting organization	"HEADS UP: You have ONE DAY left to register for #BroadcasterRoyale Season 2! 👀⏰ https://t.co/OaVwlVrJZc"

Reliability

Coding was completed by four coders: me and three hired undergraduate communication students. The research assistants were trained prior to coding and supervised while doing their first round of Tweets. First, they were given definitions of each code. Then, together, all four of us coded twenty Tweets that were collected but not chosen as the sample so I could explain how each Tweet was coded to make sure the research assistants understood. They were then assigned another set of Tweets that were collected but not chosen as the sample, but this time the research

assistants coded the same set individually. I also coded the set. At first reliability was not met for multiple codes, so the research assistants were retrained, and the process was repeated. The second time, reliability was established for each code using Krippendorff's alpha ($\alpha > .67$).

Data analysis of the sample began and the coders were each randomly assigned approximately one-fourth of the collected Tweets (Graham et al., 2016). I coded 50 Tweets that each of the research assistants were assigned, and re-calculated interrater reliability using Krippendorff's alpha to ensure reliability between me and each assistant for the coding of the sample included in the study (Krippendorff, 2012). According to Krippendorff, 0.8 is considered strong interrater reliability, but 0.67 or higher is acceptable (2012). Most instances received very high reliability (1.0), but all codes included in the study had interrater reliability of at least 0.7 (See Appendix B).

RESULTS

This section reports the results of the content analysis conducted and how they are related to engagement rate.

Of the 2,472 Tweets analyzed, 1,901 were original content, 485 were replies, and 86 were quote Tweets. As stated previously, the mean engagement rate was 0.00140, with a standard deviation of 0.00321. The highest engagement rate was 0.0591 and 466 Tweets had an engagement rate of zero, meaning they received no engagements. The data was not normal with a skewness of 7.22 and kurtosis of 81.1.The data needed to be normalized to run analyses to test relationships. First, a value of one was added to each score. Then, a log transformation, which cannot be run on scores of zero, was conducted. The results were still not normal, so a second transformation was conducted, as well. The resulting scores were used in all subsequent analyses. The transformed mean was -0.04339, with a standard deviation of 0.0863. The results, although still not normal, had greatly reduced skewness (1.41) and kurtosis (1.72). The transformed data was correlated with the original data, using Pearson's r, and there was a perfect relationship (1.0). This shows that although transformed to be normalized, the data that was analyzed was still representative of the original dataset.

In terms of engagement tools, URLs were the most commonly used. Sixty-nine percent of Tweets studied contained a URL; 51.8% of Tweets included a URL to the organization's website, 12.4% included a URL to a site that mentioned the organization. The next most commonly used engagement tools were hashtags, with 43.2% of Tweets including at least one; 11.8% included at least one branded hashtag, 5% included at least one trending hashtag, and 31.6% included at least one keyword as a hashtag (these were not mutually exclusive). Of the sample, 29.4% of the Tweets contained media: 4.4% included a photo, 19.3% included an organization graphic, 2.9% included a GIF or meme, 1.9% included a video, and <0.01% included a stock photo. Twenty-eight percent of the Tweets mentioned at least one other user; 8.2% mentioned another user not affiliated with the organization, 13.2% promoted a partner, 6.6% promoted a member of the organization, and 0.08% thanked another account for following the organization.

For one-way communication, 19.8% of Tweets promoted a product or service, 0.08% promoted a podcast, 11.2% promoted the organization's website, 1.1% promoted a job, 8.8%

promoted an event, 5.4% promoted news or an update about the organization, and 3.6% promoted "other." For two-way communication, 72.7% of Tweets provided useful or interesting information to followers, but only 31.1% of Tweets provided useful or interesting information that was not about the organization. Additionally, 1.3% of Tweets referenced a holiday, 2.3% used humor, and 10.4% included a question. See Table 2 for a breakdown of the percentage of tweets of the sample in which each characteristic was used.

Table 2: Characteristic Rates

Characteristic	Percentage of Tweets
Engagement Tools	
URL	69%
URL to organization's website	51.8%
URL to website mentioning organization	12.4%
Hashtag(s)	43.2%
Branded hashtag(s)	11.8%
Trending hashtag(s)	5%
Keyword hashtag(s)	31.6%
Media	29.4%
Photo	4.4%
Organization graphic	19.3%
GIF/Meme	2.9%
Video	1.9%
Stock photo	<0.01%
Mention	28%
Mention user not affiliated with organization	8.2%
Promoted partner of organization	13.2%
Promoted member of organization	6.6%
Thanked another account for following	0.08%
One- or Two-Way Communication	
Product or service	19.8%
Podcast	0.08%
Website	11.2%
Job	1.1%

Table 2 continued

Event	8.8%
News/Update	5.4%
Useful/Interesting information	72.7%
Useful/Interesting information not about organization	31.1%
Holiday	1.3%
Humor	2.3%
Question	10.4%

The presence of Tweet characteristics was correlated with engagement rates, using Pearson's r to determine whether relationships existed. Results will be discussed by research question.

Results for RQ1

RQ1 addressed whether the utilization of engagement tools (hashtags, media, URLs, mentions) was related to engagement rates of Tweets from startup tech companies. It was hypothesized that media would be related to engagement, but due to inconsistent literature, it was not possible to predict the relationship between other tools and engagement. Was also hypothesized that mentions would be related to engagement. Ultimately, the correlation between each engagement tool and engagement rate was small, but significant.

Broken down, the inclusion of most types of media (photos, organization graphic, video) was positively and significantly related to engagement. Stock photos did not have a significant relationship, and the inclusion of a GIF or meme had a small, but negative relationship with engagement (see Table 3).

Table 3: Correlation Matrix - Media

	Engagement	**Media**	**Photo**	**Org Graphic**	**Stock**	**GIF/meme**	**Video**
Engagement	—	0.293 ***	0.193 ***	0.220 ***	0.020	-0.041 *	0.081***
Media		—	0.333 ***	0.759 ***	0.143 ***	0.266 ***	0.218***
Photo			—	-0.100 ***	-0.020	-0.037	-0.030
Org Graphic				—	-0.045 *	-0.084 ***	-0.069***
Stock					—	-0.016	-0.013
GIF/meme						—	-0.024
Video							—

Note. * p < .05, ** p < .01, *** p < .001

The inclusion of a URL had a significant relationship with engagement, but it was very small. Links to the organization's website were negatively related to engagement, while links to sites mentioning the organization were positively related (see Table 4).

Table 4 Correlation Matrix - URL

	Engagement	**URL**	**Org Website**	**Site Mentioning Org**
Engagement	—	0.061 **	-0.057 **	0.126 ***
URL		—	0.693 ***	0.252 ***
Org Website			—	-0.386 ***
Site Mentioning Org				—

Note. * p < .05, ** p < .01, *** p < .001

Hashtags were positively and significantly related to engagement, and hashtag count was related to engagement, but only slightly, meaning including one hashtag was more related to engagement than including multiple. Branded and trending hashtags were also significant; keywords were not (see Table 5).

Table 5: Correlation Matrix - Hashtag

	Engagement	**Hashtag**	**Hashtag Count**	**Branded**	**Trending**	**Keywords**
Engagement	—	0.138 ***	0.087 ***	0.136 ***	0.106 ***	0.024
Hashtag		—	0.788 ***	0.410 ***	0.263 ***	0.769 ***
Hashtag Count			—	0.354 ***	0.138 ***	0.717 ***
Branded				—	-0.043 *	0.010
Trending					—	-0.020
Keywords						—

Note. * p < .05, ** p < .01, *** p < .001

Finally, mentions were the most significantly and positively related to engagement. As the number of mentions increased, so did engagement. Thanking other users was not significantly related to engagement, but all other types of mentions were related: promoting partners and members of the organization, more so than promoting an outside party (see Table 6).

Table 6: Correlation Matrix - Mentions

Table 6: Correlation Matrix - Mention

	Engagement	Mention	Mention Count	Thanks	Promoting Other	Promoting Member	Promoting Partner
Engagement	—	0.314 ***	0.333 ***	-0.034	0.091 ***	0.229 ***	0.238 ***
Mention		—	0.740 ***	0.126 ***	0.483 ***	0.429 ***	0.631 ***
Mention Count			—	0.107 ***	0.389 ***	0.421 ***	0.500 ***
Thanks				—	-0.027	-0.024	-0.035
Promoting Other					—	0.070 ***	-0.099 ***
Promoting Member						—	0.158 ***
Promoting Partner							—

Note. * p < .05, ** p < .01, *** p < .001

Results for RQ2

RQ2 addressed the core issue of the study: whether type of communication, one-way or two-way was related to engagement rates in Tweets. It was predicted that because of the engaging nature of two-way communication, using conversational messaging as opposed to promotional would be beneficial in producing higher engagement rates. Results actually contradicted this; one-way messaging techniques were more related to engagement rates than two-way messaging.

For one-way messaging, although the correlations were small, they were mostly significant. All types of promotional messaging other than podcasts were positively related to engagement, with promoting products or service, events, and news or updates having the strongest relationships (see Table 7).

Table 7: Correlation Matrix – One-Way Communication

	Engagement	**Product/ Service**	**Podcast**	**Website**	**Job**	**Event**	**News/ Update**
Engagement	—	0.120 ***	-0.010	0.055 **	0.046 *	0.117 ***	0.219 ***
Product/ Service		—	-0.020	0.055 **	-0.033	-0.067 ***	0.083 ***
Podcast			—	-0.031	-0.009	-0.027	-0.001
Website				—	-0.000	-0.069 ***	0.006
Job					—	-0.033	-0.008
Event						—	-0.055 **
News/ Update							—

Note. * p < .05, ** p < .01, *** p < .001

For two-way communication, there was a small, positive, significant relationship between useful or interesting information and engagement, but the relationship between non-promotional useful information and engagement was negative. Humor and questions were not

related to engagement and the mention of holidays had a very small, but significant relationship (see Table 8).

Table 8: Correlation Matrix – Two-Way Communication

	Engagement	**Useful Info**	**Useful Info (No Promo)**	**Holiday**	**Humor**	**Question**
Engagement	—	0.096 ***	-0.124 ***	0.070 ***	-0.002	0.024
Useful Info		—	0.413 ***	-0.138 ***	-0.181 ***	-0.128 ***
Useful Info (No Promo)			—	-0.064 **	-0.093 ***	-0.151 ***
Holiday				—	0.119 ***	0.005
Humor					—	0.009
Question						—

Note. * p < .05, ** p < .01, *** p < .001

DISCUSSION

In this section, I discuss the meaning the results may have for startup companies developing a social media marketing strategy, in terms of what it means to be an effective Twitter user and what types of Tweets they should create. I conclude with limitations and suggestions for future studies.

Effective Tweeting

First and foremost, this study offers implications as to what it means to use Twitter effectively, from a marketing perspective. According to the literature presented, effective Tweets are ones that have "high" engagement rates, which is incredibly vague. Marketing companies have attempted to address this. In a blog post for marketing company Scrunch, Newman (2017) reported that the company used a scientific approach to define "good engagement rate." The engagement rate of millions of data points, or Tweets, were analyzed using percentile ranks. The analysis showed the average, or 50th percentile, engagement rate is around 0.06%, and the top 1%, or 99th percentile, is only around 2.7%. This means to be "average" at engaging followers, a business needs to get six engagements per 1,000 followers. Based on these percentiles, Scrunch found that engagement rates between 0 and 0.02 are considered *poor*, those between 0.02 and 0.09 are *good*, those between 0.09 and 0.33 are *high*, and those between 0.33 and 1.0 are *very high* (Mee, 2017).

If every company were to use this definition, though, that means every Tweet included in this study was below average, as the highest engagement rate included was 0.0591. While Scrunch's definition of good engagement is a helpful starting point, they are a marketing company that helps brands find influencers to promote them – their research was done on influencer's tweets. Influencers are individuals who "create virality by starting movements, creating hashtags and populating the trending board" or "create virality by sharing relative content and connecting related groups" (Patel, 2014). They create content that gets lots of engagement and are often social media experts or celebrities. Thus, it is unfair to assume tech startups, or any niche industry for that matter, should be able to perform similarly; startups need to be evaluated as a different context. This study highlights that keeping context in mind is

important. The average engagement rate for the sample of this study was 0.00140, or approximately 1.4 engagements per 1,000 Tweets. To be average as a startup means a different thing. These findings suggest Twitter users interact with different accounts for different reasons. Although startup companies should still be interested in gaining engagements and interactions with followers, they should not feel disheartened if they do not produce results marketing specialists and influencers deem as acceptable. Moving forward, it is helpful for startups to have realistic expectations of what a high performing Tweet looks like, and how this varies from context to context.

Using Two-Way Communication

Additionally, the results from this study challenge the widely-accepted notion that two-way, conversational communication should be the goal of all social media marketing campaigns. An overwhelming amount of literature, both from academic and marketing sources, condemned the use of one-way, promotional messaging while strongly advocating for the use of two-way communication in social media marketing campaigns. However, as this study illustrates, communication style in social media marketing is not one-size-fits-all. Although other industries or types of social media users may benefit from using current events, interesting information, holidays, humor, and questions to engage their audiences, this did not appear to be the case for technology-oriented startup companies. In fact, it appeared that tech startups should do the opposite.

Not only did conversational strategies have less significant relationships with engagement, some were in fact negatively related to engagement. Again, these results suggest that Twitter users do not go on Twitter to interact with these companies the same way that they interact with other accounts. Useful or interesting information that was about the organization was positively related to engagement rates, while useful or interesting information that was not about the organization was negatively related. Also, one-way communication, such as promoting products and services, events, and updates about the organization were related to engagement, which is extremely contradictory to the whole notion of two-way communication being centered around interaction. Thus, it is likely that Twitter users who follow technology-oriented startups are really only following the accounts because they want to keep updated on the product or organization whose product or service they are using, not because they want to

interact with them about current events. Ultimately, when crafting a strategic social media marketing plan, companies need to keep context in mind and consider why users are truly following them and adjust communication style accordingly, not blindly follow a theory that has not been tested on every industry or type of Twitter user.

These results also contradict the 80/20 rule. The rule, which already is based on arbitrary numbers that don't seem based on evidence, would significantly misguide a startup tech company. If a startup tech company is aiming for higher engagement rates, self-promoting will drive these results more than conversational language. This means that more emphasis should be put on promotional language, as opposed to 80% of posts being two-way, as stated by the rule.

Engagement Tools

Unlike two-way communication, engagement tools were positively related to engagement. This makes sense, as these tools are used on Twitter specifically to drive engagement (Twitter Help Center, n.d.). The results prove that for startups, these tools are serving their purpose. URLs had a very small relationship, which supports Semiz and Burger's (2017) claim that including URLs in Tweets does not lead to engagement. However, Semiz and Burger also found that hashtags were not related to engagement. Malhotra et al. (2012) even reported hashtags being negatively related to engagement, and this study's results found neither to be the case. Marketing companies emphasized the importance of media, and this study supported that claim. Again, lack of consistency in and with previous studies highlights the fact that Twitter is extremely contextual, and people interact with startups online differently than they interact with other accounts. Ultimately, startup companies should continue to use engagement tools, but should use them strategically, which will be outlined next.

Social Media Marketing Strategy

The overarching question of this study was *how should startup companies utilize Twitter as a marketing tool?* Although the results were not what was hypothesized, they still offer valuable insight to the answer to this question that technology-oriented startup companies should consider as they craft social media marketing strategies.

First, startups should take advantage of easy to use engagement tools. Mentioning other users had the strongest relationship with engagement. Startups should not mention other accounts

to thank them for following or interacting with their Tweets, rather they should tag other relevant accounts, especially members and partners of their organization that are related to the post being made. If they are promoting work done by members of their organization, they should tag that individual's account. If they are promoting an event, such as a conference, where they are partnering with other organizations, they should tag these organizations' accounts. Startups should also use hashtags but should not just use hashtags for the sake of including a hashtag. Branded hashtags, such as ones related to a product or event that the organization is promoting, and trending hashtags, such as those already commonly used across Twitter, should be considered. It is tempting for organizations to hashtag keywords in the body of their Tweet, but this should be avoided. Furthermore, they should only use one hashtag to add more emphasis. Finally, if a startup wishes to include a URL, they should include one that is not from their own website, but still mentions their organization. An example of this is promoting a news article from an outside source about the benefits of the organization's product or news about the organization receiving funding.

Focusing on promotion, as this study illustrated, does not mean a marketing plan is giving up on engagement. Although the topics associated with one-way communication performed well, it is still possible to use two-way communication, but in a promotional way. In fact, the study saw overlaps between one-way and two-way communication. Startups should aim to balance the two. By promoting their organization and services being sold, they are appealing to information followers want to receive, but by using engagement tools, they are adding a tool to get followers to engage. This means that startup tech companies should prioritize Tweeting about products, updates, events, and jobs, and avoid current events, holidays and humor. They should focus on interesting information relevant to their organization, not just information they feel that followers may consider interesting. Users are following the startup because they are interested in just that, the startup. Users are not interested in seeing funny pictures or Tweets about current events from a startup tech company. This should be emphasized in marketing plans.

Additionally, another way to engage with users while still talking about topics that are relevant to the followers of startup tech companies is to be sure to reply to tagged Tweets. The organizations in the study did well at this with 485 (17.6%) of the collected Tweets being replies. Most of the replies were used for customer service. This is a great use of Twitter as it is a fast and free way to interact with actual paying customers. Replies do not show up on follower's

timelines the same way original content posts do, so they receive less engagements in general (Twitter Help Center, n.d.), but it is a direct way to engage with a customer about information that is of paying customers' concerns and should be a priority. Few of the sampled Tweets were quote Tweets so it is hard to make claims about the value of quoting Tweets, but it is another opportunity to engage another user, while adding information of value to followers, so they should be kept in consideration.

Limitations

A major limitation of this study was having to use what data was available. First, the engagement rate equation had to be adapted and was not truly representative of the amount of engagements divided by the number of users who saw the Tweet on their timeline, as this information is not publicly available. Although the equation used generated an acceptable basic understanding, it is difficult to make statements about engagement rates without the actual engagement rate scores. For example, followers of the account may not have been active the day a Tweet was posted, meaning the number of people who saw the Tweets were actually much lower, which would lead to a higher engagement rate.

Additionally, there was no reliable way to collect engagement data automatically – it had to be done manually by research assistants, which was labor-intensive. Due to the timeframe of the study, analyzing more than the sample size would not have been possible. Although the sample size was large enough to be generalizable, as of 2016, there were an average of 6,000 Tweets posted per second (Sayce, 2016). The sample analyzed consisted of 2,473 Tweets, which is just a small snippet of everything happening on Twitter, even within the specific industry being studied, considering twenty organizations were randomly selected out of over 400 that fit the inclusion criteria. Adding to this, because of the importance of context highlighted by the study, the results are only applicable to other tech startup companies.

Furthermore, still related to a lack of available data, this study initially collected data on the Retweets made by the organizations included in the study. Due to lack of information publicly available about how Retweets generate engagement for the account reposting them, it was impossible to make claims about how Retweets were related to engagement. Retweets, which are sharing posts from another user, are conversational, so they could have been a tool where two-way communication was effective. There was, however, no way of investigating this.

Next, although the reliability met was very high for the most part, there was not perfect interrater reliability amongst me and my research assistants. This means that there were some disagreements between me and coders. If perfect reliability had been met, data would have been slightly altered. The relationships, which were small in most cases, could have been slightly larger, or slightly smaller, which would have affected significance.

Finally, as we were coding, my research assistants and I noticed that all twenty organizations used Twitter differently. Some organizations Tweeted multiple times a day and some of them only Tweeted a few times a week. Some organizations tried to make pop culture references, one only Tweeted links to news that they published (news was not the service that they sell), one spent most of its Twitter efforts thanking followers for interactions, and so on. A sample size of twenty organizations was chosen to allow for variability, but it didn't allow for a manageable breakdown of results by organization. The differences between organizations likely affected results, whereas if certain organizations were removed from the study, the results would have likely changed. Additionally, other characteristics of each organization, such as number of followers, frequency of posting, and amount of resources contributed to marketing, were not considered in this study and could have been related to effectiveness of Tweets and Twitter performance.

Future Studies

To address the limitations of having to use what data was available, future studies should consider purchasing data from Twitter. Had this study had more funding, engagement rate data would have been purchased, and a larger sample size would have been used. To be sure results are truly representative of engagement rates and that the results are generalizable, it would be beneficial for future work to have data that is assessing engagement rate according to Twitter's definition and to include more Tweets from more organizations. Additionally, purchasing data about how Retweets generate engagement for the organizations Retweeting them as opposed to the organization posting them originally would be beneficial to understanding potentially useful two-way strategies.

Future studies should also consider the differences between organizations. Results should be broken down by organization to understand the differences in each organization. In the opposite sense, to be more generalizable and to address variability, or to avoid doing an

organizational breakdown, studies should consider using more than twenty organizations. The other characteristics of each organization should be studied as well. It is possible that after a Twitter account gains a considerable about of followers or after users have been following the account for a longer period of time, two-way communication becomes more engaging. Frequency of Tweeting may also play a role; if a company Tweets dozens of times a week, perhaps relying on promotional communication becomes less effective. It is also possible that the amount of resources that are put into Twitter has an effect on how Tweets perform. In future studies, the engagement rates of Tweets that use one-way versus two-way communication should be analyzed in terms of number of followers, frequency of posting, and organization resources.

Finally, it is worth noting that this was a study about startup tech companies. The results were only meant to be applied to startup tech companies. If an organization that does not fit this description is interested in social media marketing strategy, or another niche industry wants to investigate best practices, a similar study should be replicated on Tweets from organizations in that industry. These results are not applicable to other types of organizations, due to the contextuality of Twitter.

Conclusion

In conclusion, there is no doubt that Twitter is a beneficial tool for companies with limited time and resources to allocate toward marketing efforts. The platform is free and features posts that are easy to compose and easy to consume, making it an ideal way to reach customers. This study explored different methods for engaging followers and which of these methods are the most effective for technology-oriented startups to use. A content analysis conducted on 2,473 Tweets revealed that engagement tools, such as media, hashtags, URLs, and mentions serve their intended purpose for tech startups and were related to engagement. However, using conversational, non-promotional communication, as suggested by marketing companies and literature, proved to not be positively related to engagement rates. Thus, while constructing social media marketing plans, startup tech companies should prioritize engaging followers with engagement tools but should focus on non-conversational topics with which their followers are clearly more concerned: their organization and its services.

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APPENDIX A

Twitter-Related Terms

Term	Definition
Engagements	"Total number of times a user interacted with a Tweet. Clicks anywhere on the Tweet, including Retweets, replies, follows, likes, links, cards, hashtags, embedded media, username, profile photo, or Tweet expansion" (Twitter, n.d.b).
Engagement rate	"Number of engagements divided by impressions" (Twitter, n.d.b).
Follows (in terms of engagement)	"Times a user followed [an account] directly from [their] Tweet" (Twitter, n.d.c).
Hashtag	"Written with a # symbol – is used to index keywords or topic on Twitter… was created on Twitter, and allows people to easily follow topics they are interested in" (Twitter, n.d.d).
Impressions	"Times a user is served a Tweet in timeline or search results" (Twitter, n.d.b).
Likes	"Represented by a small heart and are used to show appreciation for a Tweet or a Moment" (Twitter. n.d.c).
Replies	"A response to another person's Tweet… When two people are replying to one another, only relevant people, such as those who follow the person who replied and the person in the conversation, will see the reply in their timeline" (Twitter, n.d.a).
Retweet	"A re-posting of a Tweet. Twitter's Retweet feature helps [users] quickly share a Tweet with all [their] followers. [Users] can Retweet their own Tweets or Tweets from someone else" (Twitter, n.d.d).

APPENDIX B

Organization Descriptions

Organization	Twitter Handle	Description
8i	@8iReality	"8i is a virtual reality software development company focusing on creating life like humans in virtual reality" (crunchbase, 2019)
Abl Schools	@ablschools	"Abl Schools is building a new kind of school operations software that helps school leaders better manage their time and resources" (crunchbase, 2019).
b8ta	@b8ta	"B8ta is a software-powered retailed designer to make physical retail accessible for all" (crunchbase, 2019).
FreightWaves	@FreightWaves	"Freight waves is a provider of data for the freight markets" (crunchbase, 2019).
Funraise	@Funraise	"Nonprofit Fundraising Software" (crunchbase, 2019).
ABQid	@goABQid	"ABQid provides a rigorously mentored, 12-week program focused on customer delivery and validation" (crunchbase, 2019).
Abstract	@goabstract	"Abstract is a design and workflow platfrom that helps designers work together" (crunchbase, 2019).
Gong.io	@Gong_io	"Gong is the #1 conversation intelligence platform for sales. It gives you unfiltered visibility into your customer conversations" (crunchbase, 2019).
Ironclad	@ironclad_inc	"Ironclad provides an intelligent contract management system for in-house legal teams" (crunchbase, 2019).
KenSci	@KenSci	KenSci offers Healthcare AI platform & predication apps that work across Clinical workflows, Cost Mgmt, & Hospital Ops. #DeathVsDataScience" (crunchbase, 2019).
LaunchDarkly	@LaunchDarkly	"LaunchDarkly is a feature management platform that serves over 100 billion feature flags to help teams build better software, faster (crunchbase, 2019).
Lola.com	@LolaTravel	"Lola.com makes managing corporate travel easy, fast and agile" (crunchbase, 2019).
Mixmax	@Mixmax	"Mixmax offers software that enables its users to boos their productivity" (crunchbase, 2019).
GawkBox	@mygawkbox	"Gawkbox enables content creators to build a community with their audience" (crunchbox, 2019).
Postman	@postmanclient	"Postman is a complete API development environment: the only end-to-end solution with collaboration, documentation, mocks, and monitoring" (crunchbase, 2019).

Quidd	@quidd	"Quidd is a platform for buying, selling, and using premium, rare digital goods" (crunchbase, 2019).
Smash.gg	@smashgg	Smash.gg "provides software to improve the Smash experience for streamers, players, tournament attendees, and spectators and for registered users who are tournament organizers" (crunchbase, 2019).
StackRox	@stackrox	"StackRox offers a security platform using instrumentation and sophisticated machine learning to protect the agile enterprise" (crunchbase, 2019).
Tidelift	@tidelift	"Tidelift makes open source software work better – for everyone" (crunchbase, 2019).
Timescale	@TimescaleDB	"TimescaleDB is an open-source time-series database optimized for fast ingest and complex queries" (crunchbase, 2019).

APPENDIX C

Interrater Reliability

	Code number:	1	2	3	4	5	6	7	8	9	10
Coder 1		1.0	1.0	1.0	1.0	1.0	1.0	.0.96	1.0	1.0	1.0
Coder 2		0.96	1.0	0.88	1.0	1.0	0.70	0.92	0.96	1.0	1.0
Coder 3		0.94	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

	Code number:	11	12	13	14	15	16	17	18	19
Coder 1		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Coder 2		1.0	1.0	1.0	0.89	1.0	1.0	1.0	1.0	1.0
Coder 3		1.0	1.0	0.80	1.0	1.0	1.0	1.0	1.0	1.0