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Brand content diffusion on Social Networking Sites: Exploring the triadic relationship between the brand, the individual, and the community

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The background features a large, abstract graphic composed of solid black and white shapes. A prominent white shape, resembling a stylized 'S' or a large bracket, curves from the top left towards the center. A large black shape, resembling a stylized '2' or a large comma, curves from the top right towards the bottom left. In the bottom right corner, there is a smaller black shape that looks like a stylized arrowhead or a triangle pointing towards the center.

CHAPTER 2

The influence of the network

Chapter 2: The influence of the network

This chapter has been submitted as:

Araujo, T., Neijens, P.C., & Vliegenthart, R. Brand Content Diffusion on Twitter: The Role of Influentials, Information Brokers and Strong Ties in Retweeting.

The version presented here has been adapted to follow the overall standards and terminology included in the other chapters of the dissertation.

ABSTRACT

Using a sample of over 5,300 tweets from top global brands, this study investigated how different types of users can influence brand content diffusion via retweets. Twitter users who influenced followers to retweet brand content were categorized as (a) influentials, because of their above average ability to influence others to retweet their tweets (in general), (b) information brokers, because of their position connecting groups of users or (c) having strong ties, because of their high percentage of friends in common and a mutual friend–follower relationship with the influenced follower. The results indicate that influentials and information brokers are associated with larger number of retweets for brand content. In addition, although information brokers have a larger overall influence on retweeting, they are more prone to do so when influentials are mentioned in the brand tweet, providing support for the strategy that aims to associate the brand with influential users.

The influence of the network

While targeting influential members or opinion leaders is not new within marketing communication, the emergence of social media and large-scale data collection and analysis capabilities – i.e. ‘big data’ – has led to much discussion on renewed opportunities for this aspect of viral marketing. On Twitter, for example, marketers are now able to collect information about user behavior, monitor interactions between consumers and analyze the messages that consumers write about brands. All these data could be used to identify and target influential users, who in turn could help maximize the diffusion of brand-generated information.

Twitter may be considered an ideal space for brands to explore the opportunities afforded by viral marketing, as users actively talk about brands (Jansen et al., 2009) and subscribe to updates from an average of five or more brands (Schreiner, 2013). Moreover, one of the key mechanisms of information diffusion on Twitter is the process of retweeting, by which a user passes along a message written by someone else (Boyd et al., 2010). Brands can monitor the process of retweeting, and identify not only how many times a given message was retweeted, but also the users who have the highest levels of influence on brand content diffusion.

Understanding how certain users can influence brand content diffusion on Twitter is a particularly pressing subject for several

reasons. Firstly, the use of Twitter (and of social media in general) continues to grow. In the USA, for example, 23% of online adults use Twitter (Pew Research Center, 2015). Secondly, an increasing amount of word-of-mouth is taking place online, with over 70% of social media users discussing experiences of products (Nielsen, 2012). Thirdly, consumers who retweet brand messages demonstrate more positive brand attitudes such as identification, commitment, trust or community membership intention compared to those who do not retweet brand content (Kim et al., 2014). Finally, and perhaps most importantly, when consumers decide to retweet the brand content, they help expose the brand message to users who do not receive direct updates from the brand on Twitter and they also associate themselves with the brand message. This association may also increase the credibility of the brand message.

Emerging research on the topic is yet to provide conclusive results on whether and, if so, how marketers can identify influential users who could accelerate the diffusion of brand content via retweets. Although practitioner studies suggest that brands should identify and target influential individuals on social media (e.g. Bughin, Doogan, & Vetvik, 2010; Harrysson, Metayer, & Sarrazin, 2012), they often do not clarify how the concept of influential users is defined or measured. These studies are also not clear whether such an influence is consistent across time, topics or brands. Academic researchers have also begun to investigate the role of influential users on information diffusion on Twitter (Bakshy et al., 2011; Cha et al., 2010; Kwak, Lee, Park, & Moon, 2010; Petrovic et al., 2011; Weng, Lim, Jiang, & He, 2010), but they usually analyze all types of messages from all types of users, including news organizations, politicians, celebrities and conversations between regular Twitter users. Such a diverse sample is

not specific enough to draw conclusions focused on brand content. Moreover, earlier research generally does not clearly distinguish the scope of influence. Being able to stimulate others to retweet your own message is one thing; being able to stimulate others to retweet a message created by a third party, for example a brand, is another matter. It remains to be seen whether these influential users are actually able to transfer their influence to brand content, and stimulate others to retweet messages created by brands.

The present study investigated whether certain types of users can influence the diffusion of brand content on Twitter, and if so, how. For the purposes of our study, we defined 'brand content diffusion' as the process of retweeting a message created by a brand, and 'influence' as the ability of a user to stimulate someone else to retweet a message created by a brand. The objectives and scope of this study fill a series of important gaps in earlier research. Firstly, we focused specifically on the diffusion, via retweets, of messages created by brands, rather than on all messages created by all types of users. This focus allowed us to draw conclusions specifically for brand and marketing communication. Secondly, we tested whether one's own influence on Twitter is actually transferable to brand content. This is important, as it can help brands focus their efforts on the users who can actually help extend the reach of the brand message. Finally, drawing from electronic word-of-mouth (eWOM) and opinion leadership literature, we distinguished between three types of influence processes, namely: (1) the ability of highly influential users, such as celebrities, to transfer their influence to a brand and stimulate their followers to retweet brand messages; (2) the ability that information brokers have to connect groups and bring novel information to users who may be interested in brand content but do not follow the brand;

and (3) the ability that users may have to stimulate close friends to retweet brand content. This advances earlier findings by testing which of the influence processes actually contributes to brand content diffusion via retweets.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

BRAND-RELATED ACTIVITIES ON TWITTER

Brands often establish a presence in social media, creating online profiles and promoting them on the brand website (Araujo & Neijens, 2012). They engage with consumers on Twitter (Kwon & Sung, 2011), with most Fortune 500 companies employing strategies that aim to establish a dialogue with consumers and stakeholders on their activities (Rybalko & Seltzer, 2010). Brand-related information, links and, to a lesser extent, product-related information are the most common types of information that brands publish on Twitter (Kwon & Sung, 2011).

Brand-related activities on Twitter are initiated not only by brands. Consumers also create, share and contribute to brand-related content in social media (Muntinga et al., 2011). Consumers seek social interaction, incentives and information from their preferred brands (Kwon et al., 2015) and often mention brands in their messages (Jansen et al., 2009).

Consumers not only create messages about brands on Twitter, but also retweet messages created by brands. This process of brand content diffusion helps extend the reach of the brand, as consumers expose the brand message to new audiences. Research has shown that message characteristics influence the retweeting of brand messages:

when a brand message is highly informational and combined with emotion, consumers are more likely to retweet it (Araujo, Neijens, & Vliegenthart, 2015). Our study advanced this line of research by investigating whether certain types of users are also able to stimulate others to retweet messages created by brands.

WORD-OF-MOUTH AND OPINION LEADERSHIP PROCESSES

Viral marketing is based on the premise that targeting influential members of networks can trigger higher levels of information diffusion and product adoption (Kempe, Kleinberg, & Tardos, 2003). One of the earliest studies to deal with the concept of interpersonal influence and its relevance to information diffusion was conducted by Katz and Lazarsfeld (2006; originally published in 1955). The study identifies the existence of opinion leaders, positioning them as information brokers between the mass media and the general population, and as active participants in word-of-mouth (WOM) processes. Opinion leaders influence others because they have expertise (Brooks, 1957) and a strategic social location within the community (Katz, 1957).

The role of strategic social location is also found in innovation diffusion research (for a comprehensive overview, see Rogers, 2003), the aim of which is to explain why certain new products or ideas are adopted quicker or more widely than others. Influencers or opinion leaders have generally been described in diffusion literature as people who are able to influence others because of their central position in communication networks (Rogers, 2003). This line of research not only discusses the individual characteristics that may turn someone into an opinion leader, but also highlights the

importance of communication networks, and their use by opinion leaders, in influencing someone's decision to adopt an innovation or new idea.

Moving to online environments, several studies have investigated the role of opinion leaders or communication networks in eWOM, information diffusion and product purchase. Research has explored network characteristics and influence processes either by using computer simulations to investigate eWOM diffusion (Goldenberg, Libai, & Muller, 2001; Watts & Dodds, 2007) or by analyzing empirical data from discussions in online communities (Huffaker, 2010) and email networks (Iribarren & Moro, 2011; Leskovec, Adamic, & Huberman, 2007).

Our study extended earlier research by testing how different types of users influence others to retweet brand content. Drawing from eWOM and emerging research on Twitter general information diffusion, we proposed three types of users who may influence the diffusion of brand content via retweeting: (1) influentials, (2) information brokers and (3) users with strong ties. These users are discussed below.

MEANING TRANSFER AND THE ROLE OF INFLUENTIALS

Brands associate themselves with other people, places, events or experiences via marketing communications (Keller, 2009). These associations help establish brand image, which is defined as the consumer's perceptions of a brand reflected by the brand associations in the consumer's memory (Keller, 1993). One common way to build brand image and differentiate the brand is to use endorsements by celebrities or public figures (Erdogan, 1999). Celebrities or public

figures acquire powerful symbolic meanings from their roles – in show business, military, sports or other careers – and transfer these meanings when they endorse products or brands through the process of meaning transfer (McCracken, 1989).

Research has shown that celebrities can influence purchase intention, brand attitudes and attitudes towards an advertisement depending on their level of trustworthiness, expertise and attractiveness (Amos, Holmes, & Strutton, 2008). Moreover, celebrity endorsements in advertisements also influence WOM intentions, for example with sports brands (Bush, Martin, & Bush, 2004). Recent research into Twitter indicates that celebrities with a large number of followers can influence consumer's purchase intentions and brand attitudes when they tweet about brands (Jin & Phua, 2014).

For Twitter in particular, a stream of empirical studies also suggests that a small number of users have an extraordinary amount of influence and are able to stimulate several others to retweet content by endorsing that content (e.g. Cha et al., 2010; Kwak et al., 2010). These highly influential users are often news media, celebrities or public figures (Cha et al., 2010), and they select links or content that they recommend to their followers – often by retweeting – to 'provide value to their fan base and to emphasize commonalities between the practitioner and his or her followers' (Marwick & Boyd, 2011b, p. 147).

Drawing from these earlier findings, we adopted the term 'influentials' to categorize people with extraordinary influence, such as public figures or celebrities, and proposed that, due to their status, they are able to influence others to retweet brand content. We also proposed that someone could be influenced by influentials in two separate processes on Twitter: by receiving a brand message (1)

retweeted by an influential or (2) in which an influential is mentioned. In the first process, the influential retweets the brand message, effectively endorsing it. In the second process, the brand makes a reference to the influential by mentioning him or her in the brand message itself. In both cases, the followers of the influential attach meaning to the brand message in accordance with the image of the endorser, and are more likely to retweet the brand message. We proposed two hypotheses to test these processes:

H1: The greater the number of influentials who retweet the brand content, the greater the number of retweets the brand content receives.

H2: Brand messages that mention influentials are associated with a higher number of retweets compared to other brand messages.

BRIDGING INFLUENCE AND THE ROLE OF INFORMATION BROKERS

A second type of influence comes from users who are characterized not by their status as celebrities, but by their position in the network and their ability to act as information brokers between two groups. In summary, structural holes appear when members of one group are generally not connected to members of another group (Burt, 2000). Because of these structural holes, people in these two groups have access to different types of information and circulate different types of ideas. Information brokers have relationships with members of both groups and are able to bridge the structural hole between both groups and enable the circulation of information. This bridging influence does not necessarily stem from their unique or

exceptional interpersonal influence or credibility, but rather from their unique position in the network (Bakshy et al., 2012).

Studies into Twitter (Bakshy et al., 2011; van Liere, 2010) and YouTube (Liu-Thompkins & Rogerson, 2012) argue that information brokers are the most important type of user for information diffusion in social media. Even if an information broker has average or below average influence, targeting a large set of users in a bridging position allows information to reach larger sets of people (Bakshy et al., 2011). We adopted the term ‘information brokers’ for individuals who facilitate information diffusion by their ability to connect two groups in the network, and proposed the following hypothesis:

H3: The greater the number of information brokers who retweet the brand content, the greater the number of retweets the brand content receives.

THE ROLE OF STRONG TIES

Empirical research into social media has also suggested that the strength of the relationship between two users may influence information diffusion or the adoption of new behavior (Bakshy, Karrer, & Adamic, 2009; Bakshy et al., 2012). On Facebook, for example, people are more likely to be influenced to share content by individuals with whom they have stronger ties – defined as a high number of friends in common and a high frequency of contacts – although such an influence happens less often on SNSs because weak ties are more frequent (Bakshy et al., 2012). This is aligned with earlier findings from WOM research that indicate that people with whom one has strong ties are more influential in decision making (J. J. Brown

& Reingen, 1987). Moreover, earlier research on viral advertising indicates that consumers are more willing to open and disseminate email messages (Chiu et al., 2007; Phelps et al., 2004), and are more influenced by viral SNS campaigns (van Noort et al., 2012) when they come from close personal sources.

The effect of opinion leadership processes due to tie strength between users had not yet been tested for retweeting brand content on Twitter, so we adopted the term ‘strong ties’ to define individuals who influence other users with whom they have strong relationships, and proposed the following hypothesis:

H4: The greater the number of individuals with strong ties who retweet the brand content, the greater the number of retweets the brand content receives.

The different types of opinion leadership processes are summarized in Figure 1.

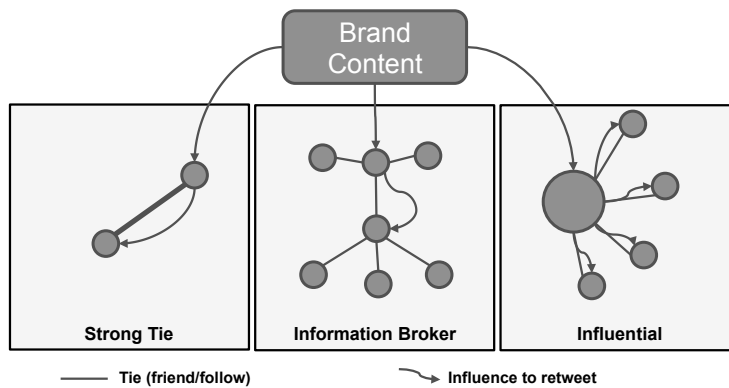


Figure 1. Types of influence

METHODS

SAMPLE

We selected 30 top global brands according to an annual brand ranking¹ and covered 10 market segments (three brands per market segment). This sampling strategy was adopted to allow for the investigation of influence processes across various market segments and thus provide more generalizable results. The selection of top brands ensured similar levels of brand equity in the sample, minimizing the effects of consumers' knowledge of the brand or of drastic variations in brand equity. The brands are shown in Table 1.

We analyzed the messages posted by the main official profile of each brand. When a brand had more than one profile, we selected the profile that (a) had just the brand name (rather than the name of a product from the brand), (b) had the largest number of followers compared to the brand's other profiles and (c) was preferably a verified profile (i.e. had a confirmation from Twitter that it belonged to the brand). Brands not on Twitter were replaced by the next top brand in the same segment to ensure each segment had three brands. We selected brand profiles in the English language. While there was no focus on a particular country, most data came from the United States.

¹ Forbes World's Most Powerful Brands 2012, <http://www.forbes.com/powerful-brands/list/>, accessed on 8 February 2013.

THE INFLUENCE OF THE NETWORK

Table 1

Brands included in the sample

Brand	Segment	Brand	Segment
Adidas	Apparel	McDonald's	Restaurants
American Express	Financial Services	Mercedes Benz	Automotive
BMW	Automotive	Microsoft	Technology
Coach	Luxury	Nescafé	Beverages
Coca-Cola	Beverages	Nestlé	Cons. Packaged Goods
General Electric	Diversified	Nike	Apparel
Gillette	Cons. Packaged Goods	Pepsi	Beverages
Google	Technology	Philips	Diversified
Gucci	Luxury	Ralph Lauren	Apparel
H&M	Retailing	Siemens	Diversified
IBM	Technology	Starbucks	Restaurants
Ikea	Retailing	Subway	Restaurants
L'Oreal Paris	Cons. Packaged Goods	Toyota	Automotive
Louis Vuitton	Luxury	Visa	Financial Services
MasterCard	Financial Services	Walmart	Retailing

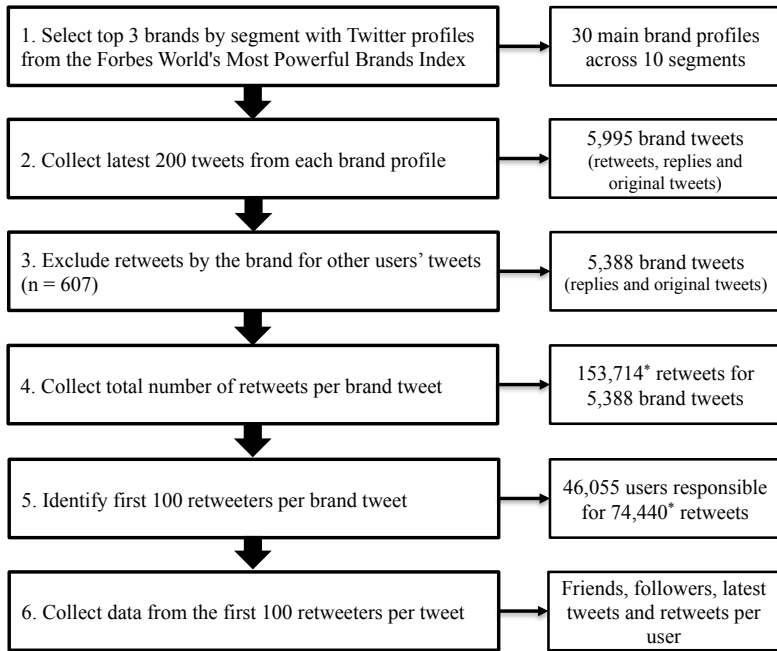
BRAND CONTENT DIFFUSION ON SNSs

The sample consisted of the latest 200 tweets published from each brand profile. Because not all brand profiles had 200 tweets, the total sample was 5,995 tweets. From those tweets, 607 were messages that the brands had retweeted from other users, that is, not messages written by the brand itself. These 607 messages were removed from the sample, leading to 5,388 unique messages. The oldest tweet collected was from 31 August 2011 and the most recent was from 19 February 2013. For each tweet, we collected the number of retweets, along with additional information such as date posted, whether it was a reply to another user or an original message, etc. Finally, we collected data on each user who had retweeted each brand tweet. Twitter limits this data to the first 100 users who retweeted each tweet. In total, we identified 46,055 Twitter users, of which data could be retrieved for 45,810 users. The data included the latest tweets from the user, along with the number of retweets, who followed the user and who the user followed on Twitter. The data collection steps are summarized in Figure 2.

DEPENDENT VARIABLE

The dependent variable was the number of retweets each brand tweet received. We collected this number when extracting the last 200 messages from the brand on Twitter, and updated it two weeks after the initial data collection. This ensured that all brand tweets, even the most recent, had an accurate number of retweets.

THE INFLUENCE OF THE NETWORK



* The 5,388 brand tweets received a total of 153,714 retweets. Twitter however only makes available personal data of the first 100 retweeters per tweet that had public profiles. This limitation allowed the study to identify 46,055 users responsible for a total of 74,440 retweets. Only 5% of the 5,388 brand tweets had over 100 retweets and would therefore be affected by the limitation.

Figure 2. Data collection process

INDEPENDENT VARIABLES

The main model of this study included, as independent variables, the number of influentials, information brokers and strong ties who retweeted each brand tweet, and whether the brand tweet mentioned an influential.² We removed all advertising agencies and other profiles of the brand on Twitter from the list of users.

The first step was to identify the influentials. In line with earlier research, we defined influentials as users with above average ability to stimulate retweets to their own messages (Cha et al., 2010; Kwak et al., 2010). A user was considered influential if the average number of retweets of his or her own tweets was three standard deviations above the mean number of retweets of all other users in the sample who had been able to influence someone else to retweet brand content. The mean retweets per post from each user who had at least one follower retweeting brand content was 2.32 ($SD = 17.23$). Seventeen users were considered influentials.

Of the 17 influentials, 82% had verified accounts, indicating that they are famous enough to receive a special verification from Twitter. Most of the users could be considered celebrities, as they were associated with sports (4), acting and modeling (3), music (2) or television shows (2). The accounts of the White House, a Japanese astronaut, two social media applications and two non-verified regular users completed this group. This led to the first independent variable, namely the number of influentials. This variable measured the number of influentials who retweeted a brand tweet, and was used for H1.

² To be considered an influential, information broker or strong ties, at least one follower of the user must have retweeted the brand content after the user, and this follower must not have been a follower of the brand.

We identified a second group of influentials by extracting every user mention made by the brands in their tweets. Of the 2,897 users mentioned in brand tweets, 77 met the same criteria used for the first group of influentials. This led to the second independent variable: mentions of influentials. This variable indicates which of the brand tweets mentions influentials in the text, and was used for H2.

The next step was to identify information brokers and users with strong ties. Information brokers were defined as users who connect the group of the influenced follower with another group of users, and strong ties were defined as users who have the majority of their friends in common with the influenced follower. While the identification of influentials focused on the intrinsic characteristic of someone being able to generate a lot of retweets of their own content, the analysis for strong ties or information brokers focused on the relationship between the user and the follower who was influenced. This means that a user can be an information broker with one influenced follower, and have strong ties with another influenced follower. In other words, the same user could have influenced follower A because of strong ties, and follower B because of information brokerage.

We considered a user to have strong ties with an influenced follower if: (a) the user had mutual ties with the follower (i.e. the user also subscribed to updates from the follower on Twitter) and (b) the percentage of friends in common with the follower was above 50%. A total of 66 users met the criteria of having strong ties with at least one of their followers. User–follower relationships that did not meet these criteria were then tested to check whether they belonged to the information brokers category.

BRAND CONTENT DIFFUSION ON SNSs

Information brokerage was measured by creating a network containing all the friends and followers of both the user and the influenced follower, and measuring the betweenness centrality of the user. Betweenness centrality is a measure that is often used to identify brokerage in social networks, as it indicates how often a given person is in the shortest path connecting two other users (Bruggeman, 2008). We used the NetworkX package (Hagberg, Schult, & Swart, 2008) from Python to perform the analysis, and selected only users who had betweenness centrality measures two standard deviations above the mean of all other users.³ A total of 669 users qualified as information brokers in relation to at least one of their followers.

CONTROL VARIABLES

We controlled for the presence of links or hashtags in the brand message, to account for differences in message characteristics that also influence retweeting behavior (Araujo et al., 2015; Suh et al., 2010). We also included the number of followers and the brand value of each brand as control variables, to account for the possibility that brands may have a higher number of retweets simply because their audience is larger or because they have higher brand equity.

³ The criterion of two standard deviations was selected to ensure that only users with higher levels of betweenness centrality would be considered information brokers, without however being too restrictive. If three standard deviations above the mean had been selected, only one user would have been considered an information broker.

TYPES OF BRAND TWEETS

Brand tweets were divided into two groups: original tweets (messages created by the brand aimed at all Twitter users) and replies (public responses from the brand to specific users). We analyzed original tweets and replies separately because of the large differences in the number of retweets that each type of message received. Original tweets were retweeted, on average, 40.74 times ($SD = 70.77$), while replies were retweeted, on average, 0.54 times ($SD = 1.97$). Table 2 shows the descriptive statistics for the main variables.

Table 2
Dependent and Independent Variables

Variable	Only Original Tweets ($N = 2,623$)	Only Replies ($N = 2,757$)
<i>Retweets</i> per brand tweet	40.74 (70.77)	0.54 (1.97)
<i>Influentials</i> per brand tweet	0.01 (0.11)	0.0004 (0.02)
Information Brokers per brand tweet	0.25 (1.24)	0.02 (0.2)
<i>Strong Ties</i> per brand tweet	0.03 (0.26)	0.002 (0.07)
Mentions of <i>Influentials</i>	5.49%	1.27%
Brand tweets with Hashtag	56%	23%
Brand tweets with URL	81%	17%
Brand Profile Followers	660,029 (1,368,599)	657,872 (885,667)
Brand Equity (USD, billions)	20.11 (13.53)	18.58 (12.82)

Notes: Standard Deviations in parentheses. A total of 8 brand tweets were considered outliers as they had over 1,090 retweets (3 standard deviations above the mean retweets from the sample), and were removed from the analysis. The numbers of *influentials*, *information brokers* or *strong ties* shown above are the average number of each of these users that retweeted each tweet. Brand Equity measured as the brand value indicated by the ranking of the world's most valuable brands used for this study.

ANALYTICAL STRATEGY

To summarize, our unit of analysis was the brand tweet. The dependent variable was the number of retweets each brand tweet received, and the independent variables were the number of times that (a) an influential, (b) an information broker and (c) a user with strong ties had retweeted the brand tweet, and whether the message (d) mentioned an influential. For each brand tweet, we also included the (e) number of followers of the brand profile, (f) the brand equity and whether the brand tweet contained (g) hashtags and (h) links.

We used a multilevel modeling approach to analyze the data (Rabe-Hesketh & Skrondal, 2008). We set the brand as the contextual level. We selected multilevel models to ensure brand differences would be controlled for, given their ability to split the variance of the dependent variable between (a) the individual characteristics of each tweet – namely the number of influentials, information brokers and strong ties, along with the control variables – and (b) group characteristics (contextual level), in this case differences among brands.

Because of the differences in the number of retweets, the data were analyzed in two models: the first model considered only original tweets from the brand, and the second model only considered replies from the brand to other users.

We were able to retrieve the total number of retweets that each brand tweet received but, because of Twitter restrictions, we were only able to gather data on the first 100 retweeters of each brand tweet. To ensure our results were consistent, we performed an additional check by re-running all the models with brand tweets that had received 100 or fewer retweets ($n = 5,100$) and found the same relationships between the independent and dependent variables.

Finally, we also investigated whether influentials had any additional influence on the retweeting behavior of information brokers. To do so, we conducted an ANCOVA with the number of retweets by information brokers as the dependent variable, and tested the differences between brand tweets that mentioned influentials and brand tweets that did not mention influentials. We included as covariates the number of retweets by influentials as well as the control variables (number of followers, brand equity, presence of URL and presence of hashtags).

RESULTS

The outcome of the analysis, which is summarized in Table 3, supports or partially supports the hypotheses associated with influentials. Hypothesis 1 was fully supported by the data: influentials (individuals with above average ability to trigger higher levels of retweeting of their own tweets) were also found to have the same influence as regards retweeting brand content, both for original brand tweets and for replies from the brand to other users. This means, for example, that each influential that retweeted an original tweet was associated with 20.25 additional overall retweets for the same tweet. Hypothesis 2 – namely that mentioning influentials in the brand message leads to higher levels of retweeting – was supported only in the case of replies.

Hypothesis 3 – that information brokers are associated with higher levels of retweeting – was also supported by the data. For example, each information broker who retweeted an original tweet was associated with 13.12 additional overall retweets for the same tweet. Hypothesis 4, however, was not supported: users with strong

ties were not significantly associated with higher levels of retweeting of original tweets, and actually seemed to be associated with significantly lower levels of overall retweeting of replies (where the brand is having a conversation with another user).

We also investigated which type of user had the strongest overall effect on levels of retweeting. While both influentials and information brokers were associated with higher levels of retweeting, it was important to establish which of these two types of users has the strongest influence on brand content diffusion. We therefore standardized the number of influentials, information brokers and users with strong ties, as well as mentions of influentials,⁴ and ran a new model, as shown in Table 4. The results indicate that information brokers are relatively more important to the diffusion of brand content than influentials. For original tweets, for example, the increase of information brokers by one standard deviation is associated with 11.85 additional retweets, versus 1.53 for influentials.

Finally, we investigated whether information brokers and influentials might somehow be connected, considering that both groups were found to significantly influence the number of overall retweets of brand tweets. The ANCOVA results (between-subjects factor: mention of influentials (present or not present); covariates: retweets by influentials, number of followers, brand equity, presence of URL and presence of hashtags) confirmed that original brand tweets that mention an influential were retweeted by significantly more information brokers compared to tweets that do not mention an influential, even when considering the covariates. The mean number

⁴ Each case value was subtracted from the mean of the original variable, and then divided by one standard deviation of the original variable.

of retweets by information brokers is significantly higher when influentials are mentioned in an original brand tweet ($M = 1.01$, $SD = 2.99$) compared to when an influential is not mentioned ($M = 0.21$, $SD = 1.04$), $F(1,2616) = 48.81$, $p < 0.001$. Among the covariates, there were no significant effects for retweets by influentials ($F(1,2616) = 0.37$, $p = 0.544$), brand equity ($F(1,2616) = 2.10$, $p = 0.147$) and presence of URL ($F(1,2616) = 0.47$, $p = 0.492$). All other covariates, including number of followers ($F(1,2616) = 36.33$, $p < 0.001$) and presence of hashtags ($F(1,2616) = 6.53$, $p < 0.05$), had significant effects on the number of retweets by information brokers on original brand tweets.

DISCUSSION

Our study investigated how different types of users can influence brand content diffusion via retweets. Drawing from research on information diffusion and eWOM, as well as from emerging literature on Twitter, we tested which types of users are actually able to stimulate others to retweet messages created by brands. One of the key strengths of our study is that we investigated the diffusion of real brand messages by actual consumers. We collected and analyzed data on over 5,300 messages from 30 top global brands across 10 market segments, and then reviewed the details of about 46,000 users who retweeted these brand messages. We set strict criteria to investigate this process as, unlike most earlier research, we focused only on messages created by brands and only considered cases when people who do not follow the brand were influenced to retweet by a certain user. These criteria distinguish our study from earlier studies on general content diffusion, as they ensure that the results are relevant to and valid for brand content diffusion.

BRAND CONTENT DIFFUSION ON SNSs

Table 3
Multilevel Model for Influence Type and Number of Retweets

	Only Original Tweets (N = 2,623)	Only Replies (N = 2,757)
Fixed effects		
Intercept	26.52 (19.79)	2.49 (1.85)
Number of Influentials	20.25* (10.04)	3.37* (1.57)
Mentions of <i>Influentials</i>	-1.64 (4.83)	1.4** (0.27)
Number of Information Brokers	13.12** (1.03)	3.77** (0.18)
Number of Strong Ties	-4.39 (4.89)	-2.89** (0.5)
Presence of Hashtag	0.97 (2.59)	0.11 (0.08)
Presence of URL	3.87 (2.98)	0.39** (0.09)
Brand Profile Followers	0.00004** (0)	0 (0)
Brand Equity	-0.24 (0.82)	-0.05 (0.07)
Random parameters		
Var (intercept e_{0i})	53.5(0.74)	1.52(0.02)
Var (u_i)	58.21(8.6)	5.01(0.73)
Rho	0.54(0.07)	0.92(0.02)
-2*log likelihood	28,446.26	10,287.18

Notes: Standard errors are in parentheses. A total of 8 brand tweets were considered outliers as they had over 1,090 retweets (3 standard deviations above the mean retweets from the sample), and were removed. Negative Binomial Multilevel Models were also ran and showed the same types of relationships between the dependent and independent variables. Multilevel Regression Models were selected because of their ease of interpretation. * $p < .05$, ** $p < 0.01$

THE INFLUENCE OF THE NETWORK

Table 4
Multilevel Model for Influence Type and Number of Retweets (Standardized Variables)^A

	Only Original Tweets (N = 2,623)	Only Replies (N = 2,757)
Fixed effects		
Intercept	28.29 (19.79)	3.02 (1.85)
Influentials (Standardized)	1.53* (0.76)	0.26* (0.12)
Mentions of Influentials (Standardized)	-0.29 (0.87)	0.25** (0.05)
Information Brokers (Standardized)	11.85** (0.92)	3.4** (0.16)
Strong Ties (Standardized)	-0.83 (0.92)	-0.54** (0.09)
Presence of Hashtag	0.97 (2.59)	0.11 (0.08)
Presence of URL	3.87 (2.98)	0.39** (0.09)
Brand Profile Followers	0.00004** (0)	0 (0)
Brand Equity	-0.24 (0.82)	-0.05 (0.07)
Random parameters		
Var (intercept e_{0i})	53.5(0.74)	1.52(0.02)
Var (u_i)	58.21(8.6)	5.01(0.73)
Rho	0.54(0.07)	0.92(0.02)
-2*log likelihood	28,446.26	10,287.18

Notes: Standard errors are in parentheses. A total of 8 brand tweets were considered outliers as they had over 1,090 retweets (3 standard deviations above the mean retweets from the sample), and were removed. * $p < .05$, ** $p < 0.01$ ^A Influentials, Information Brokers and Strong Ties were standardized. Each case value was subtracted from the mean, and then divided by one standard deviation of the original variable.

Our results indicate that certain types of users are able to stimulate others to retweet messages created by brands. In particular, the greater the number of influentials who retweet the brand content, the greater the number of retweets this content receives from other users. This was found for both original tweets and replies. These results demonstrate that highly influential users, who so far have been identified by their above average ability to trigger retweets of messages that they themselves created, are also able to stimulate retweets of messages created by brands. Moreover, the mere mention of an influential in the brand tweet triggered higher levels of retweeting in the case of replies.

Furthermore, the results indicate that information brokers are also associated with higher levels of retweeting of brand content. Even though one information broker may have average or below average ability to trigger retweets of his or her own tweets, all information brokers combined stimulate more users to retweet brand content than influentials.

It is striking, however, that influentials exert a dual type of influence when it comes to brand content. Firstly, influentials are associated with higher levels of overall retweeting when they retweet brand content. Secondly, information brokers retweet brand tweets more frequently when the brand tweets mention an influential. These findings shed a different light on the diffusion processes on Twitter for brand content. When an influential retweets a brand tweet, this content is associated with higher levels of overall retweeting. When a brand mentions an influential in its tweet, this content is associated with higher numbers of information brokers retweeting, which in turn is associated with higher levels of overall retweeting.

Finally, contrary to our hypothesis, users with strong ties were not found to be associated with higher levels of retweeting. If anything, these users were associated with significantly lower levels of retweeting of replies from the brand to other users. This indicates that information diffusion via retweets might not follow the same mechanism that it does on Facebook, where strong ties are also predictors of information sharing for general content (Bakshy et al., 2012), or for viral SNS campaigns (van Noort et al., 2012). One explanation may be that users assume that all their friends will have seen the brand message when a very close friend has already retweeted, and therefore decide not to retweet the message again. Even though our hypothesis was not supported, this finding is relevant to future research on the influence of homophily and strong ties on information diffusion, and also to brands wanting to prioritize their marketing communication strategies on Twitter. Further research should also investigate why strong ties are associated with lower numbers of retweets in the case of replies, and also consider other measures for identifying strong ties, beyond the ones used in this study.

THEORETICAL IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Our findings validate and extend earlier research on eWOM and marketing communications. The results provide evidence that an association with influentials, such as celebrities or public figures, can stimulate brand content diffusion on Twitter. This extends earlier research on advertising, specifically on celebrity endorsement, by demonstrating how the association with celebrities can also provide

benefits for the brand regarding eWOM and brand content diffusion. These findings also extend emerging literature on brand-related activities on Twitter: not only do celebrities influence brand attitudes when they tweet about brands (Jin & Phua, 2014), but they also stimulate brand content diffusion simply by retweeting the brand message or by being mentioned by the brand. Future research should investigate this mechanism further, especially to understand how consumers perceive the celebrity who is retweeting the brand message, the impact on brand attitudes of seeing the retweet, and whether consumers consider this activity a paid advertisement or simply a recommendation from the celebrity or public figure.

Our findings also confirm that the concept of bridging influence, as proposed by Burt (1999, 2000) and Granovetter (1973), is a relevant mechanism for brand content diffusion on Twitter via retweets. Information brokers are also responsible for most of the influence on brand content diffusion on Twitter, which corroborates earlier results on the diffusion of general content (Bakshy et al., 2011). Our findings validate and also extend current research, by demonstrating a linkage between influentials and information brokers: information brokers are more likely to retweet a brand message when an influential is mentioned. Future studies should explore this linkage further, and especially understand the motivations that information brokers have to retweet messages that mention influentials.

Finally, our study makes methodological contributions to advertising and marketing communication research. As demonstrated by our study, data extracted directly from social media such as Twitter can provide new and relevant insights for research on advertising and marketing communication. Brand content diffusion can now be measured and observed, and therefore be investigated in greater detail,

complementing and validating data that so far were only available from experiments and surveys. Large-scale data collection and analysis processes are now within reach of academic research. Our study, for example, not only collected data from brand profiles and about 46,000 users who retweeted brand content, but also identified which users they followed (26 million) and which users followed them (87 million). Future studies should consider these capabilities when investigating brand content diffusion, advertising and marketing communication, and use these capabilities to investigate how brand content diffusion may differ across cultures, languages or types of brands.

MANAGERIAL IMPLICATIONS

Some of the largest brands have millions of followers on Twitter, and these followers receive updates and messages from the brand. While this community of followers already provides a powerful space to communicate with consumers, brands should also consider the potential that certain types of users have to extend the reach of the brand message beyond the limits of this community. As indicated by our results, brands can achieve this in various ways. Firstly, they can identify and target influentials. These influentials can be celebrities or public figures, who acquire symbolic meaning through their roles in society, or they can be highly influential Twitter users who create content that is also often retweeted. Secondly, brands can also interact with the fan base of celebrities or public figures by mentioning them in brand messages, and thus draw the attention of users who do not belong to the brand community on Twitter. Finally, brands can continuously measure and analyze brand content diffusion on Twitter and determine which type of brand-specific information is retweeted

the most by information brokers, and prioritize these types of messages in future marketing communications on Twitter.

LIMITATIONS

The restrictions imposed by Twitter restricted the data collection to the first 100 retweeters of each brand tweet, therefore limiting the generalizability of these results. Even though the same relationships between the independent and dependent variables were found when running an additional analysis with brand tweets that had received 100 or fewer retweets, future studies could devise additional data collection procedures to overcome Twitter's limitations and gather all the retweeters from brand tweets and further investigate the complete retweeting cascade. For example, it would be interesting to understand whether the distance between the user and the brand (measured by the number of people unconnected to the brand who had retweeted the brand tweet before it reached the user) influences the user's decision to continue the cascade and retweet the brand tweet. Secondly, the sample was restricted to the top three global brands for each market segment. While this helped reduce concerns about differences in brand equity or brand awareness affecting the results at a general level, future studies could compare smaller with larger brands to determine whether these processes vary depending on brand equity or awareness factors.

Finally, this study used real brand tweets to measure retweeting behavior. While this in itself is an advantage due to the usage of observational data, it was not possible to ask retweeters why they retweeted the brand tweet, or how much influencers, information

brokers or strong ties influenced their decision to retweet. Future studies should investigate this further using experiments or surveys.

Notwithstanding these limitations, this study provided a strong set of findings about the relative importance of three different influence processes to brand content diffusion on Twitter. By investigating these processes specifically for brand content diffusion on Twitter, these findings also extend earlier literature and provide insights based on the actual retweeting of brand content.