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Effects of Source and Content on the Retransmission of Rumor, Information, and Misinformation on Social Media

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Abstract

In recent years, the use of social media has become a fact of life for civil society. While social media can be used to provide up-to-date, locally relevant information, making it an effective coordination tool in social movements, it also can be used to spread fake messages that can harm individuals, organizations, and even society. To date, research on social media use has focused on sharing general information; there is a significant need to extend our understanding of message retransmission on social media that accounts for the full spectrum of possibilities (information, misinformation and rumor). This research-in-progress paper proposes a model and a planned empirical approach that can provide such an integrative account. Our starting point is the observation that the presentation of a message—particularly the presentation of message source and content—is a key driver of message retransmission. Our work offers potentially important implications for research and practice.

Keywords

Social media, User-generated content, Message retransmission, Rumor, Misinformation, Information Sharing

INTRODUCTION

In recent years, the use of social media—Internet-based applications that carry user-generated content (Xiang and Gretzel 2009)—has become a fact of life for civil society and their constituents, including regular citizens, activists, nongovernmental organizations, firms, mass media, and governments (Shirky 2011). Unlike carefully controlled corporate systems, message propagation on social media involves a "mixture of fact and opinion, impression and sentiment, founded and unfounded tidbits, experiences, and even rumor" (Blackshaw and Nazzaro 2006). While social media can be (and is) used to provide up-to-date, locally relevant information, making it an effective coordination tool in social movements (Shirky 2011), it has a dark side. It also can be (and is) used to diffuse fake messages (Mintz 2002) that can harm individuals, organizations, and even society at large (Zhou and Zhang 2007). False message in social crises can spread needless alarm, raise extravagant and false hopes, and create national safety concerns (Rosnow 1991). To date, research on social media use has focused on sharing general information; there is a significant need to extend our understanding of message retransmission on social media that accounts for the full spectrum of possibilities (true messages, false messages, and uncertain messages, i.e., rumor). In this paper, we try to propose a model and a planned empirical approach that can provide such an integrative account.

Our starting point is the observation that the presentation of a message—particularly the presentation of message source and content—is a key driver of message retransmission (Zimbardo and Leippe 1991). It is known that individuals judge different types of messages differently (Flanagin and Metzger 2000). Sometimes, individuals will scrutinize the content carefully, while in other cases they may focus more on the source of the message and merely give a quick glance at the content (Petty and Cacioppo 1986). This research-in-progress paper focuses on how the effects of source and content differ in terms of three different types of message on social media: information, rumor and misinformation. In the next section, we define these three types of message and then we present related works on the effects of source and content on message retransmission. Subsequently, we provide several hypotheses and discuss the research methods we plan to use to test the hypotheses. Finally, we discuss potential implications and contributions of our work.

RUMOR, INFORMATION AND MISINFORMATION RETRANSMISSION

Some online messages are just emotional expressions, but others include actual experience, observation, or facts learnt from other sources. However, these online messages may not always be true, sometimes they are distorted, and sometimes these messages are neither correct nor incorrect, they are just unverified. It is therefore important to differentiate rumor, information, and misinformation. To do so, we use Figure 1, which shows two dimensions (message content and cognition) and three types of online message. The cognition dimension (capability of judging) is represented by the horizontal axis, while the content dimension (content correctness) is represented by the vertical axis.

Rumor refers to content that is currently unsubstantiated by the message receiver (Marett and Joshi 2009). When there is absence of verified information, individuals lack the capability to judge whether the received message is true or not. For example, in the early stage of a disaster, when authorities have not yet responded, it may be hard to know the true nature of the facts. In other cases, authorities may have publicized the truth, but the message recipient may not be aware of it yet and therefore may still lack the capability to judge fact from falsehood. Rather than a message being deemed to be rumor based on its objective truth or falsity (e.g., determined by authorities), a message is rumor if message receivers are *unable to judge* whether it is true. That is, it depends on the eyes of the message receiver; their retransmission of an unverified message is considered *rumor retransmission*.

Information and misinformation are different from rumor because their truth or falsity can be verified. *Information* refers to content that is posted on social media but can be readily verified by message receivers. *Misinformation*, i.e., a lie (Covacio 2003), refers to content that can be proved false by the message receivers. For instance, individuals can often learn what is true and false from reading official sources publicized on social media or other sources, such as newspapers or TV, and thereby gain the capability to judge whether messages received on a particular topic are true or misleading. If receivers deem a message to be true and then retransmit it, their behavior can be defined as *information retransmission*, while if they deem a message to be erroneous but still spread it deliberatively (whether to mislead others or just for fun) (DePaulo et al. 1996), their behavior is *misinformation retransmission*. In the past, some researchers have distinguished between the intentional and unintentional retransmission of fake messages (DePaulo et al. 1996), where unintentional retransmission occurs when a person unknowingly sends a false message. Consistent with our definitions above, we capture such unintentional retransmission under rumor retransmission. In contrast, misinformation retransmission occurs when message receivers know that the message is false but they intentionally retransmit it anyway.

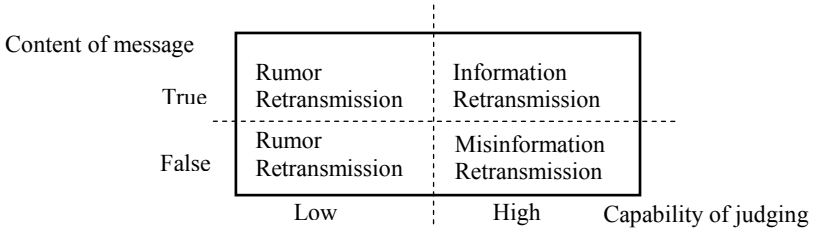

Figure 1. Rumor, Information and Misinformation Retransmission

In short, rumor, information, and misinformation retransmission are three different manifestation of message retransmission. There are not yet any integrative accounts that can explain the determinants of these different types of retransmission on social media. Providing such an account is important because of the critical role that social media now plays in communication (Zhao and Rosson 2009). This paper focuses on the relationships between the presentation of each type of messages and their retransmission.

RELATED WORKS

An extensive literature suggests that the presentation of a message—in particular, its source and content—is the key driver of whether individuals transmit or retransmit a message (Petty and Cacioppo 1986).

Many studies have investigated the influence of source and content on online information adoption or sharing. Some research focuses on the reliability or credibility of information sources (Nöteberg et al. 2003; Taraborelli 2008; Steffes and Burgee 2009), others discuss the influences of online content (Kim and Benbasat 2006), while still others emphasize both aspects (Sundar 1999; Zhang and Watts 2008; Metzger et al. 2010). The Elaboration Likelihood Model (ELM) is a well-known "dual process" model that considers both source and content effects (Petty and Cacioppo 1986). It explains how message recipients vary in the extent to which they cognitively elaborate on messages received. Specifically, content effect, represented by argument quality, is the primary *central cue* and determinant of high levels of elaboration (Petty and Cacioppo 1986). In contrast, when individuals lack the motivation or ability to process contents completely, they turn to *peripheral cues*, such as

source credibility (Lord et al. 1995), and conduct less thoughtful thinking. Sussman and Siegal (2003) developed an Information Adoption Model based on the Technology Acceptance Model (TAM) (Davis 1989) and ELM (Petty and Cacioppo 1986). In line with ELM, Sussman and Siegal (2003) found that under conditions of high elaboration likelihood, content (specifically, argument quality) is the key determinant of information adoption, whereas when elaboration likelihood is low, source credibility is stronger determinant of individuals' judgments.

Few studies have investigated the influence of source and content on rumor retransmission. The limited research that exists suggests that the believability of the source and content are critical (Rosnow 1991). For instance, Kim and Bock (2011) found that source credibility and argument strength were key determinants of online rumor spreading. Oh et al. (forthcoming) also studied the effects of content ambiguity and source ambiguity on rumor retransmission, but they found no effects for content ambiguity.

To our knowledge, no studies have investigated the influence of source and content on misinformation retransmission. In fact, the few studies that exist in this area have referred to misinformation as false rumor (DiFonzo and Bordia 2007). This is somewhat misleading because misinformation and rumor are different, as noted above. People may send a message with unsubstantiated data (rumor) because they think it is trustworthy (Rosnow 1991) or simply to vent and express their emotions, fears, and hopes regarding anticipated outcomes (Allport and Postman 1947; Festinger 1957). In contrast, the motivation to retransmit misinformation may be to intentionally mislead or entertain others (DePaulo et al. 1996).

Overall, researchers have devoted most of their efforts to examining factors affecting information retransmission; only a few studies have examined source and content effects on rumor retransmission, and to our knowledge, no studies have tested the effects of source and content on the retransmission of misinformation online. Thus, there is a major need for a balanced treatment and comparison of the retransmission of information, rumor, and misinformation on social media. Another important issue in current literatures is that most past research concentrate only on one type of source effects, *source credibility* (e.g. Sundar 1999; Sussman and Siegal 2003; Kim and Bock 2011), other potential source effects have largely been ignored. To address the above research gaps, in the next section, we split source effects into three separate effects, and we propose a set of hypotheses to provide a comprehensive account of the relationship between source and content effects on social media message retransmission.

HYPOTHESIS DEVELOPMENT

Figure 2 summarizes our research model. As shown in the figure, we are primarily interested in the links between source/content effects and message retransmission. In particular, we are interested in the relative strength of these links for three types of message retransmission: rumor, information and misinformation. To capture an integrated picture of source effects on social media, we further divide source effects into three dimensions: source credibility, message richness, and normative influence. In the ensuing sections, we proved five hypotheses based on the conceptual framework. H1-H4 concerns the effects on all three types of message retransmission, while H5 compares the different types.

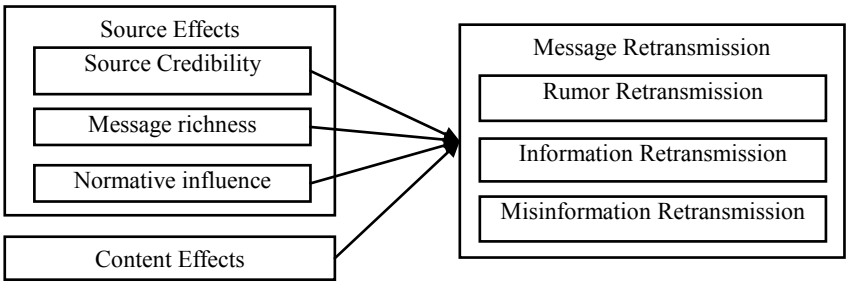

Figure 2. Research Model

Source Effects

Wilson and Sherrell (1993) classify source effects into three groups: expertise, attractiveness, and similarity. Expertise, also called credibility or reputation, reflects the cognitive base for receiver's image of the source (Simons et al. 1970). It means whether the source is credible (versus non-credible) or trustworthy (versus non-trustworthy). Attractiveness is the affective base of receiver's image of the source (Simons et al. 1970). Individuals may be more likely to identify with, and hence adopt, the opinions of attractive sources compared to unattractive sources (Wilson and Sherrell 1993). Similarity, also called membership-group similarities (Wilson and Sherrell 1993), refers to shared subjective states such as shared interests, beliefs, and feelings among members of a group (Brembeck and Howell 1952).

We draw on Wilson and Sherrell (1993)'s framework to operationalize source effects on social media from three perspectives: source credibility, message richness, and normative influence. Source credibility reflects the expertise of the message sources, message richness indicates whether the message are attractive or not, and normative influence suggests whether the peers on social media have similar attitude toward a certain topic.

Source credibility

Source credibility in our model is the same as expertise in Wilson and Sherrell (1993)'s framework, and refers to the extent to which sources of information are perceived to be competent, trustworthy, and reputable (Bhattacherjee and Sanford 2006; Pornpitakpan 2004). Briefly, it means whether the source is qualified to provide the message (Perloff 1993). For example, Twitter users can sometimes judge the credibility of a tweet source by checking the source's name and associated image (Morris et al. 2012).

Source credibility can influence the retransmission of a message online because it can generate inferences or expectancies about its probable validity and reliability (Chaiken and Maheswaran 1994). For example, it has been observed that social media users have more confidence in contents from established and reputable sources (such as news media) even before reading them (Zhao and Rosson 2009) and even though credible sources like these sometimes engage in rumor mongering to make their stories more eye-catching (Rosnow 1991). Hence, we predict that source credibility is related with message retransmission on social media.

H1: Higher source credibility will increase message retransmission on social media.

Message richness

Message richness is a concept that built on media richness. Media richness is defined as the amount of multiple cues allowed to be retransmitted in a given time interval (Kaplan and Haenlein 2010). Social media, such as Facebook and Twitter, can be seen as richer channels compared with email and newspaper, since social media allows users to post image, audio and video, and encourages interaction and feedback (Kaplan and Haenlein 2010). Rich media can create a multi-media experience for users by providing richer messages (Keenan and Shiri 2009). Different messages on the same social media can also vary in richness. Higher message richness make the message receivers feel the messages are more attractive and emotion-evoking. Thus, message richness operationalizes attractiveness in Wilson and Sherrell (1993)'s framework of source effects.

According to Allen et al. (2004), message richness influences message retransmission by affecting the amount and type of cues available to receivers. For instances, on Twitter, tweets combining image or video with text provides multiple cues to convey meaning and emotions, and may lead to more positive judgments (Cho et al. 2009). Even though some messages delivered through social media could be rumor or misinformation, messages with image or video are more are inclined to be regarded as providing greater expertise and knowledge (Allen et al. 2004), and are likely to be forwarded by recipients.

H2: Higher message richness will increase message retransmission on social media.

Normative influence

Normative influence is defined as an influence to conform to expectations of oneself, another person or group (Deutsch and Gerard 1955), which is consistent with the definition of similarity in Wilson and Sherrell (1993)'s framework of source effects.

Individuals automatically tend to believe in the message that were either recommended by known others or that come from aggregated testimonials, reviews, or ratings (Chaiken 1987), even if it is not true (Kim and Bock 2011), as individual encompasses a referent's belief into his/her own belief structure (Warshaw 1980; Liao et al. 2007). On social media, normative influence can come from anyone connected by a virtual social tie. If a person finds that other people on social media share or comment on a message with a positive attitude, he/she will have more confidence in the content of the message, and tend to retransmit it. For instance, on Twitter, tweets with high level of retweets tend to be considered as having high level of normative influence and are more liable to be retweeted again than other tweets, since people may think those tweets with high number of retweets have been commonly believed.

H3: Higher normative influence will increase message retransmission on social media.

Content effects

We follow past research in viewing content effects in terms of information quality, specifically, the message's accuracy (Fisher and Kingma 2001) where accuracy refers to its conformity with the real-world fact or value (Ballou and Pazer 1985; Fisher and Kingma 2001). Wang and Strong (1996) proposed four dimensions used in assessing information quality (IQ), and emphasize that accuracy is a key dimension of what they called intrinsic IQ. Nelson et al. (2005) further extended the definition of accuracy by bringing in some notions from intrinsic IQ. In their research, accuracy refers to not only lack of errors, but also to the unambiguous, objective,

meaningful, and believable nature of the message (Nelson et al. 2005). Butler (1999) found that trust expectations led to information sharing and accuracy is a key determinant of trust (Chiu et al. 2006). Based on these literatures, we expect that messages on social media are more likely to be retransmitted if they are perceived to be more accurate. This should apply irrespective of the *actual* accuracy of the message (whether it is information, misinformation, or rumor). Even a lie is more likely to succeed if resembles the truth.

H4: Content effects (specifically higher perceived accuracy) will increase message retransmission on social media.

Different Effects on Rumor, Information and Misinformation Retransmission

According to the elaboration likelihood model (ELM) (Petty and Cacioppo 1986), individuals elaborate upon the evidence in a message when it is important to them. In the case of rumor mongering, there is lack of available evidence. Thus, according to ELM, individuals in such cases will resort to the only evidence available—peripheral cues, such as message source—to evaluate the message's credibility. Message source (Petty et al. 1983), as a peripheral cue, therefore, should have a greater impact on the attitude toward the received message in the context of rumors.

H5a: Source effects will be more significant than content effects on rumor retransmission.

However, in contexts where message receivers have already received a set of verified information to help them judge the veracity of a message, they will be more able to elaborate upon the evidence in a message when it is important to them, in line with ELM's predictions (Petty and Cacioppo 1986; Stiff and Boster 1987). Hence, when recipients carefully consider the issues presented by the message, content effects will play an increasingly important role in information sharing.

H5b: Content effects will be more significant than source effects on information retransmission.

Misinformation retransmission also occurs when message receivers have received a set of verified information, and have the ability to identify those inaccurate messages. In the case of misinformation retransmission, however, the recipient is intent on retransmitting the information even though he or she knows it is false (e.g., to get attention or to deceive others). To facilitate the spread of such messages, we predict that the misinformation re-transmitter will choose messages that are attractive or seemingly real, such as fake messages with high level of message richness and source credibility, because these features make the misleading message more believable (Bhattacherjee and Sanford 2006; Cho et al. 2009).

H5c: Source effects will be more significant than content effects on misinformation retransmission.

METHODOLOGY

Our study is still in progress. We have developed our theory and are currently planning a multi-method approach for data collection, including online data analysis and lab experiments, discussed below.

Online Data Analysis

Online data collection will be performed using the Twitter Search API. Publicly available tweets containing case-insensitive search terms after extreme events, such as earthquakes, floods, wild fires, shooting and terrorism, will be collected. After extreme events occur, it takes time for authorities to confirm the damage or causes of a disaster, and usually there is a delay before the verified facts of the disaster are made public (Toft and Reynolds 1994). Therefore, we proposed to use a timeline (from the time of the disaster) to distinguish the period in which individuals are less capable of judging the true nature of the situation from the period in which more verified information is publicized and individuals are therefore more capable of judging true tweets from false tweets.

After data collection, we will use both manual and automatic text mining techniques to distinguish between tweets that express emotion only and tweets that express an observation, personal experience, or fact. The latter set of tweets will then be coded to measure independent variables: source credibility, message richness, and content effects. If the user name of the message sender is the name of an organization, government or disaster management official, these tweets will be coded as high credibility, otherwise, the credibility will be coded as low. If the tweets contain pictures, videos, or other external URLs, these tweets will be coded as high richness, while tweets that contain only text will be coded as low richness. If the content of a tweet is correct, the tweet will be coded as having high accuracy, otherwise it will be codes as having low accuracy. Further, the dependent variable, message retransmission, can be measured by the number of retweets. The model can then be tested using ordinary least squares (OLS) regression with each of the independent variables specified as a dummy variable (high/low).

However, it should be noted that H3, H5b and H5c cannot be tested using online data. Although normative influence can be reflected by the number of retweets using Twitter data only, we are unable to know the exact

number of retweets when individuals see the tweets they retransmit. Thus, H3 will not be tested using the online data (see our experiment below). Further, using the timeline of a disaster as a guide (as noted above), tweets sent *before* the point at which verified information is revealed will be coded as rumor. Tweets sent after the point at which verified information is revealed unfortunately cannot be coded as rumor, information, or misinformation because even if the true information is available, we cannot know whether any *particular* message sender knows the truth when they sending the tweet. Even though H3, H5b and H5c cannot be tested using objective Twitter data, scenario-based experiments can be conducted to examine all of the links in the research model, and allow us to verify the results from the twitter data for H1, H2, H4 and H5a.

Controlled Experiments

The experiments will be conducted on a platform that simulates an online social media environment such as Twitter. The experiment will be a 1 X 2 factorial design crossing two levels of capability of judging. Participants will be randomly assigned to one of two treatment groups. Group 1 will be shown a set of accurate news from mass media to inform them of the facts related to a chosen topic whereas Group 2 will not. Thus, participants in Group 1 have the ability to judge the correctness of the content posted on the platform, participants in Group 2 cannot. Then, all the participants will be shown a series of messages regarding the chosen topic. The messages posted on the platform will be manipulated as real tweets on Twitter. For each of the messages, participants will be asked to choose whether they are willing to retransmit the message if they saw the same message on Twitter.

To measure source effects, the following types of message will be provided: (1) messages posted by an authority, (2) messages posted by peers, (3) messages having pictures, (4) messages lacking pictures, (5) messages that have been retweeted by many other people, and (6) messages that have not been retweeted. To measure the content effects, the contents of some messages will be correct and consistent with what people in Group 1 have been shown, but others will be misleading. If participants in Group 1 choose to retransmit a correct message, their behaviors will be viewed as information retransmission. If they retransmit an incorrect message, their behaviors will be regarded as misinformation retransmission. If participants in Group 2 retransmit a message, their behaviors will be considered as rumor retransmission.

We will use ordinary least squares (OLS) estimation to test whether these different characteristics can affect message retransmission, and dominance analysis (Tonidandel and LeBreton 2011) will be used to test whether the strength of each association is different in terms of three types of message retransmission using the experiment data.

PRELIMINARY FINDINGS

To give a sense for the importance and salience of the phenomenon we are studying and to illustrate the kind of data we wish to obtain, we present some illustrative Twitter data in this section from the Boston Marathon bombing on April 15, 2013. During the Boston marathon, two bombs exploded at 2:49 p.m. EDT. Three spectators were killed. We collected data from Twitter shortly after the bombings occurred.

At 6:45 pm on 15 Apr 2013, a tweet came out indicating an 8 year-old boy passed away in the Boston bombing (as shown below). In our framework, such a tweet would be considered rumor retransmission because at that time no verified information had been published. Furthermore, the source credibility and message richness of this tweet was low, since the user name, *Sorry Not Sorry,* does not have clear meaning and this tweet lacks of picture, video or external URL. Thus, this tweet had only about five thousands retweets.

> *Sorry Not Sorry @SorryNotSoorry (*6:45 pm 15 Apr 2013): *RIP to the 8 year old boy who passed away in the Boston bombing today. Heaven has gained another little angel.*

However, at 7:41 pm and 8:18 pm, 15 Apr 2013, two fake tweets came from a twitter named *Hope for Boston*. The first tweet (shown below) said a girl was killed while running, and this tweet was accompanied by a photo of a girl running. The second tweet was similar to the first one, but it said a boy was killed and had a picture of a running boy. In fact, there was a boy killed in the bombing, but he was killed while waiting for his father instead of running, and the boy in the picture of the second fake tweet was not the boy killed in Boston.

> *HOPE FOR BOSTON @HopeForBoston (*7:41 pm 15 Apr 2013): *R.I.P. to the 8 year-old girl who died in Boston's explosions, while running for the Sandy Hook kids. #prayforboston pic.twitter.com/WhaaTG3nSP*

The fake tweet regarding the girl came out one hour earlier than the second fake tweet, and it was retweeted about 80,000 times. The later fake tweet concerning the boy was retweeted about 30,000 times. The main reasons for the high retransmission of these two rumors appear to be consistent with the predictions of our research model. First, the account name is “Hope for Boston”. Although this twitter user had only just started up, the account name would appear to have high credibility because it appears to have been opened to pray for victims in

the explosion. Second, the tweets are rich, since they contain pictures that enhance the emotional nature of the message and could make recipients think that the twitterer has access to "the facts."

At 11:47 pm, another tweet was sent in which more accurate details about the young boy was provided:

> *Michael Skolnik @MichaelSkolnik (*11:47 pm 15 Apr 2013): *8 yr old boy who was killed was waiting for his father to finish the boston marathon. His mother and sister were also injured. May he RIP.*

This tweet lacked relevant pictures, and the name of the twitter account was personal rather than authoritative; thus, it had only a thousand retweets, much lower than the two fake tweets. At this stage, people do not have enough evidence to substantiate the accuracy of the tweet, so they simply retransmit tweets that look more credible and attractive.

On 16 Apr 2013, the mass media disclosed the deceased boy's real name and photos. At that time, members of the public could substantiate the truth of the tweets they received on this topic. Therefore, content effects became more important than source effects. For example, a tweet sent at 10:59am 16th Apr 2013 (shown below) with the accurate name of the boy had about five thousands retweets, although this tweet had only several words, no picture, and a personal (rather than authoritative) source.

> *Blake Shelton @blakeshelton (*10:59 am 16 Apr 2013): *Thoughts and prayers to the family of 8 year old Martin Richard. Rest in peace young man...*

Potential Implications and Conclusions

We believe that this study will contribute theoretically to research on social media use in three ways. First, this research is the first to differentiate three types of message retransmission, and discuss them together from a comparative perspective. Second, our research extends previous work on ELM by explaining how source and content effects may be different when individuals process information, rumor and misinformation. Third, we extend the concept of source effects by operationalizing three dimensions of source effects according to the features of social media. Overall, our work will provide a foundation for understanding differences between information, rumor and misinformation retransmission online.

Since rumor and misinformation on social media can bring negative impacts on society, practically studying the links between their presentation and retransmission can help us find ways to control rumor and stop misinformation and therefore minimize their potential damage on society, and at the same time encourage more information sharing.

REFERENCES

Adams, B. N., and Bristow, M. 1979. "Ugandan Asian expulsion: Rumour and reality," Journal of Asian and African Studies (14:3-4), June, pp. 191-203.

Allen, D. G., Van Scotter, J. R. and Otondo, R. F. 2004. "Recruitment communication media: Impact on prehire outcomes," Personnel Psychology (57:1), March, pp. 143-171.

Allport, G. W., and Postman, L. 1947. *The psychology of rumor*, New York: Holt, Rinehart and Winston.

Ballou, D. P. and Pazer, H. L. 1985. "Modeling data and process quality in multi- input, multi-output information systems," Management Science (31:2), June, pp. 150-162.

Bembeck, W. L., and Howell, W. S. 1952. *Persuasion*. Englewood Cliffs, N. J.: Prentice-Hall.

Bhattacherjee, A., and Sanford, C. 2006. "Influence Processes for Information Technology Acceptance: An Elaboration Likelihood Model," MIS Quarterly (30:4), December, pp. 805-825.

Blackshaw, P., and Nazzaro, M. 2006. Consumer-generated media (CGM) 101: *Word-of-mouth in the age of the web-fortified consumer*. New York: Nielsen BuzzMetrics.

Butler, J. K. 1999. "Trust expectations, information sharing, climate of trust and negotiation effectiveness and efficiency," Group and Organization Management, (24:2), June, pp. 217-238.

Chaiken, S. 1987. *The Heuristic Model of Persuasion,* In M. P. Zanna, J. M. Olson and C. P. Herman (Eds.). Social influence: The Ontario Symposium (5) Hillsdale, NJ: Erlbaum. pp. 3-39.

Chaiken, S., and Maheswaran, D. 1994. "Heuristic Processing Can Bias Systematic Processing: Effects of Source Credibility, Argument Ambiguity, and Task Importance on Attitude Judgment," Journal of Personality and Social Psychology (66:3), September, pp. 460-473.

Chiu, C., Hsu, M., and Wang, E. 2006. "Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories," Decision Support Systems (42:3), September, pp. 1872-1888.

Cho, C. H., Phillips, J. R. and Hageman, A. M. 2009. "Media richness, user trust, and perceptions of corporate social responsibility: An experimental investigation of visual web site disclosures," Accounting, Auditing and Accountability Journal (22:6), June, pp. 933-952.

Covacio, S. 2003. "Misinformation: Understanding the Evolution of Deception," Informing Science: InSITE – "Where Parallels Intersect" (June), pp. 668-669.

Davis, F. D. 1989. "Perceived usefulness, perceived ease of use, and user acceptance of information technology," MIS Quarterly (13:3), September, pp 319-340.

DePaulo, B. M., Kashy, D., Kirkendol, S. E., Wyer, M. M., and Epstein, J. A. 1996. "Lying in Everyday Life," Journal of Personality and Social Psychology (70:5), May, pp 979-995.

Deutsch, M., and Gerrard, H. B. 1955. "A Study of Normative and Informational Social Influence upon Individual Judgment," Journal of Abnormal and Social Psychology (53:3), September, pp 629-636.

DiFonzo, N., and Bordia, P. 2007. "Rumors influence: Toward a dynamic social impact theory of rumor," In A. R. Pratkanis (Ed.), *The science of social influence: Advances and future progress*. Philadelphia, PA: Psychology Press. pp 271-296

Festinger, L. 1957. *A theory of cognitive dissonance,* Evanston, IL: Row, Peterson.

Fisher, C.W., and Kingma, B.R. 2001. "Criticality of data quality as exemplified in two disasters," Information and Management (39:2), June, pp 109-116.

Flanagin, A. J., and Metzger, M. J. 2000. "Perceptions of Internet information credibility," Journalism and Mass Communication Quarterly (77:3), June, pp 515-540.

Kaplan, A. M., Haenlein, M. 2010. "Users of the world, unite! The challenges and opportunities of social media," Bus Horiz (53:1), March, pp 59-68.

Keenan, A. and Shiri, A. 2009. "Sociability and social interaction on social networking websites," Library Review, (58:6), June, pp 438-450.

Kim, D., and Benbasat, I. 2006. "The effects of trust-assuring arguments on consumer trust in Internet stores: application of toulmin's model of argumentation," Information Systems Research (17:3), September, pp 286-300.

Kim, J. and Bock, J. 2011. "A Study on the Factors Affecting the Behavior of Spreading Online Rumors: Focusing on the Rumor Recipient's Emotions," in *Proceedings of 15th Pacific Asia Conference on Information Systems (PACIS),* Brisbane, Australia.

Liao, C., Chen, J. L. and Yen, D. C. 2007. "Theory of Planning Behavior (TPB) and customer satisfaction in the continued use of e-service: an integrated model," Computers in Human Behavior (23:6), June, pp.2804-2822.

Marett, K., Joshi, K. D. 2009. "The decision to share information and rumors: examining the role of motivation in an online discussion forum," Communication of the Association for Information Systems (24:1), March, pp.47-68.

Metzger, M. J., Flanagin, A. J., and Medders, R. 2010. "Social and heuristic approaches to credibility evaluation online," Journal of Communication, (60:3), September, pp 413 - 439.

Mintz, A. P. 2002. *Web of Deception: Misinformation on the Internet.* Medford, NJ: Thomas H. Hogan.

Morris, M. R., Counts, S., Roseway, A., Hoff, A., and Schwarz, J. 2012. "Tweeting is believing?: understanding microblog credibility perceptions," In *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work*, Seattle, Washington

Nöteberg, A.; Christiaanse, E.; and Wallage, P. 2003. "Consumer trust in electronic channels," e-Service Journal (2:2), pp 46-67.

Nelson, R. R, Todd, P. A and Wixom, B. H 2005. "Antecedents of information and system quality: An empirical examination within the context of data warehousing," Journal of Management Information Systems (21:4), pp 199-235.

Oh, O. Agrawal, M. and Rao, H. R. Forthcoming. "Community Intelligence and Social Media Services: A Rumor Theoretic Analysis of Tweets during Social Crises," MIS Quarterly

Perloff, R. M. 1993. *The dynamics of persuasion,* Hillside, NJ: Erlbaum.

Petty, R. E., and Cacioppo, J. T. 1986. "Communication and Persuasion: Central and Peripheral Routes to Attitude Change," New York, U.S.: Springer-Verlag.

Petty, R. E., Cacioppo, J. T., and Schumann, D. 1983. "Central and peripheral routes to advertising effectiveness: The moderating role of involvement, " Journal of Consumer Research (10:2), June, pp 135-146.

Pornpitakpan, C. 2004. "The Persuasiveness of Source Credibility: A Critical Review of Five Decades' Evidence," Journal of Applied Social Psychology (34:2), June, pp 243-281.

Rosnow, R. L. 1991. "Inside rumor: A personal journey," American Psychologist (46:5), May, pp 484-496.

Shirky, C. 2011.'The Political Power of Social Media: Technology, the Public Sphere and Political Change," Foreign Affairs (90:1), March, pp 28 - 41.

Simons, Herbert W., Nancy N. Berkowitz, and R. John Moyer. 1970. "Similarity, Credibility, and Attitude Change: A Review and A Theory," Psychological Bulletin (73:1) January, pp 1-16.

Steffes, E. M., and Burgee. L. E. 2009. "Social ties and online word of mouth," Internet Research (19:1), March, pp 42-59.

Stiff, J. B., and Boster, F. J. 1987. "Cognitive processing: Additional thoughts and a reply to Petty, Kasmer, Haugtvedt, and Cacioppo," Communication Monographs (54:3), September, pp 250-256.

Sundar, S. S. 1999. "Exploring receivers' criteria for perception of print and online news," Journalism and Mass Communication Quarterly, (76:2) June, pp 373-387.

Sussman, S. W. and Siegal, W. S. 2003. "Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption," Information Systems Research (14:1), March, pp 47-65.

Taraborelli, D. 2008. “How the Web is changing the way we trust,” In K. Waelbers, A. Briggle and P. Brey (Eds.), *Current issues in computing and philosophy.* Amsterdam: IOS Press.

Tonidandel, S., and LeBreton, J. M. 2011. “Relative importance analysis: A useful supplement to regression analyses,” Journal of Business and Psychology, (26:1), March, pp 1-9.

Toft, B. and Reynolds, S. 1994. *Learning from disasters,* Butterworth-Heinemann, Oxford.

Wang, R. and Strong, D. 1996. "Beyond Accuracy: What Data Quality Means to Data Consumers," Journal of Management Information Systems" (12:4), December, pp 5-34.

Warshaw, P. R. 1980. "A new model for predicting behavioral intentions: an alternative to Fishbein," Journal of Marketing Research (17:2), May, pp 153-172.

Wilson, E. J. and Sherrell, D. L. 1993. "Source Effects in Communication and Persuasion Research: A Meta‐analysis of Effect Size," Journal of the Academy of Marketing Science (21:2), July, pp 101-112.

Xiang, Z. and Gretzel, U. 2009. Role of social media in online travel information search. Tourism Management (31:2), June, pp 179-188.

Zhang, W. and Watts, S. 2008. "Capitalizing on content: Information adoption in two online communities," Journal of Association of Information Systems (9:2), June, pp 73-94.

Zhao, D., and Rosson, M. B. 2009. "How and Why People Twitter: The Role That Micro-Blogging Plays in Informal Communication at Work," in *Proceedings of the ACM 2009 International Conference on Supporting Group Work*, Florida, U.S.

Zhou, L., and Zhang, D. 2007. "An Ontology-Supported Misinformation Model: Toward a Digital Misinformation Library," IEEE Transactions on Systems, Man, and Cybernetics-Part A (37:5), May, pp 804-813.

Zimbardo, P. G., and Leippe, M. R. 1991. *The psychology of attitude change and social influence.* Philadelphia: Temple University Press.

Ayyagari, R., Grover, V., and Purvis, R. 2011. “Technostress: Technological Antecedents and Implications,” MIS Quarterly (35:4), December, pp 831–858.

Turel, O., and Serenko, A. 2012. “The benefits and dangers of enjoyment with social networking websites,” European Journal of Information Systems (21:5), May, pp 512–528.

Maier, C., Laumer, S., Eckhardt, A., and Weitzel, T. 2012. "Online Social Networks as a Source and Symbol of Stress: An Empirical Analysis," Proceedings of the 33rd International Conference on Information Systems (ICIS), Orlando (FL).

Maier, C., Laumer, S., Eckhardt, A., and Weitzel, T. 2012. "When social networking turns to social overload: Explaining the stress, emotional exhaustion, and quitting behavior from social network sites' users," ECIS 2012 Proceedings. Paper 71.

Jones, Q., Ravid, G., and Rafaeli, S. 2004. "Information Overload and the Message Dynamics of Online Interaction Spaces: A theoretical model and empirical exploration," Information Systems Research (15:2), June, pp 194–210.

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