

Applying Social Media in Crisis Communication: A Quantitative Review of Social Media-Related Crisis Communication Research from 2009 to 2017

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Abstract: Social media has drawn growing attention from crisis communication researchers. The purpose of this study was to provide an overview of the current paradigm of research on social media and crisis communication, to identify the research gaps, and to help scholars understand future research directions in this area. The current study examined the trends and patterns of social media-related crisis communication research published in 11 communication and public relations journals from 2009 to 2017. More specifically, it focused on the trends and characteristics of research topics, theories and theoretical models, crisis types, social media platforms, sample types, and research methods. This study found that public relations-focused journals published most of the social media-related crisis communication articles. Most studies adopted theories or theoretical models and examined the role of social media in crisis communication, which focused on product tampering and general crisis. Additionally, a considerable number of studies employed content analysis techniques that used social media content as the sample. This study discussed the trends of social media-related crisis communication research and the directions for future research.

Keywords: Crisis communication, social media, research trend, public relations, communication.

INTRODUCTION

Over the past decade, social media adoption and engagement have become part of our daily lives. Social media serves as critical information sources for most American people [1]. By 2016, about 69% of the American adults used at least one social media platform, such as Facebook, Twitter, LinkedIn, and Instagram [2].

The rapid development of social media offers opportunities as well as challenges for organizations in crisis. On one hand, social media is a major crisis communication platform between modern organizations and stakeholders [3-5]. Social media has become important information sources during organizational crises [6]. On the other hand, social media can promptly spread negative information and comments about a crisis. Thus, organizations need to effectively use social media to handle crises and communicate with their publics during and after the crises.

Crisis communication is one of the areas strongly influenced by the development of social media. An organization's crisis is traditionally conceptualized as "the perception of an unpredictable event that threatens important expectancies of stakeholders related to health, safety, environmental, and economic issues,

and can seriously impact an organization's performance and generate negative outcomes" [7]. In the specific context of social media, crises are events that arise or are amplified by social media, which mostly harm the organization's reputation [7, 8]. Crisis management on social media is particularly challenging because crises emerging online are rather unpredictable and can upgrade quickly [7]. Given the various communication characteristics of social media, the public, not organizations or the news media, are at the center of producing and distributing information [7]. As publics are progressively engaging with social media during crises [9], they also hold a high level of expectation on organizations' communicative behaviors on social media before, during, and after crises [5]. Thus, how to effectively optimize crisis communication social media has become a question for both public relations practitioners and scholars.

Scholars have increasingly incorporated social media with crisis communication research. They have examined the effects of social media usage on crisis communication outcomes, organizations' social media use for crisis communication, and various crises occurring on social media. However, the number of studies in this research area is relatively small. It seems that academia lags behind industry in exploring the potentials of social media to crisis communication [10]. Although the merits of social media are recognized in public relations research, theory-driven research is still needed to guide the strategic integration of social media into crisis communication

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practices. Viewed as an evolutionary stimulus to crisis communication [7], social media may bring new scholarly inquiry of the existing theories and methodologies. Thus, the mechanisms and impacts of social media on crisis communication need to be examined with more theory-grounded and evidence-based research [11].

In this sense, the purpose of this study was to provide an overview of the current paradigm of research on social media and crisis communication, to identify the research gaps, and to help scholars understand future research directions in this area. The current study examined the trends and patterns of social media-related crisis communication research published in 11 communication and public relations journals from 2009 to 2017. More specifically, it focused on the trends and characteristics of research topics, theories and theoretical models, crisis types, social media platforms, sample types, and research methods. This study could advance the growing literature on crisis communication and social media by synthesizing research and summarizing the research trends in this area.

LITERATURE REVIEW

Crisis Communication

Recent years have seen a growing scholarly inquiry to crisis communication as a public relations paradigm. Crisis communication is defined as “the collection, processing, and dissemination of information required to address a crisis situation” [12]. Crisis communication focuses on the interrelationships between crisis situation, response strategies, and public perceptions [13].

The patterns of crisis communication research have been examined by a couple of scholars [14, 15]. Two theories dominated crisis communication research published from 1991 to 2009, the image restoration theory [16, 17] and the situational crisis communication theory (SCCT) [14, 15, 18, 19]. The image restoration theory was mostly studied through rhetorical analyses and case studies, whereas the SCCT was often applied to experimental research [14]. According to a trend study on crisis communication [14], both quantitative and qualitative methods were applied to test those theories, and student samples were frequently employed. Considerable research was organization-centered, aiming to restore corporate image and reputation [13, 14]. In addition, most articles focused on

the communication efforts during or after the crises, but the preventive crisis communication strategies were not sufficiently investigated [14]. Crisis communication scholars could benefit from more extensive research in diverse contexts [14].

Social Media

Social media is defined as “a group of internet-based applications that build on the ideological and technical foundations of Web 2.0, and that allow the creation and exchange of user generated content” [20]. There are many social media platforms being used by publics and organizations, such as Facebook, Twitter, YouTube, LinkedIn, etc. Social media has some unique characteristics – participation, openness, conversation, communities, and connectedness [7]. Building upon social networks, social media is inherently participatory and interactive. Individual users are connected to their existing networks to form online communities beyond geographical boundaries. Its user-generated content allows users to receive information and create content simultaneously. The real-time environment also enhances the speed and the scope of information dissemination. With these features, social media has great potential to facilitate crisis communication between organizations and publics.

Crisis Communication and Social Media

A research gap can be identified regarding the popular use of social media in crisis communication. As shown in a recent industrial report, about 88% of the organizations are engaging with publics on social media like Facebook, Twitter, Instagram, or LinkedIn [21] (Bennett, 2014). The various public-oriented features of social media offer a more complex perspective on crisis communication, which emphasizes the interactive communication of crisis issues between affected organizations and stakeholders [13]. During crises, publics are more often seeking for credible coverage of crises via social media [5, 9], bringing new challenges for crisis managers to deal with issues emerging online [10].

Despite the general interest of social media in public relations research, questions about the impact of social media on crisis communication [22], as well as how it differs from other types of media, have not yet been adequately answered with empirical evidence [23]. Furthermore, it is important to notice the disparity between the “best practice” in research and practice [15], particularly in the context of social media. As

suggested by Coombs (2008) [10], “the practice of crisis communication is ahead of research in terms of social media” (p.1). As social media becomes an increasingly prominent means of communication in the social construction and deconstruction of crises [13], research in this area has evolved during the past decade. Yet, there is no comprehensive analysis to date of the emerging body of research highlighting theoretical and methodological explorations in crisis communication and social media. Particular attention is needed regarding how social media is incorporated into crisis communication research, particularly focusing on the role of social media plays in crisis management, the opportunities and challenges along with it, and its impacts on the effectiveness of crisis communication.

Communication Trend Research

Scholars have examined the trends of several research areas, such as Internet communication research [24], advertising research [25, 26], health communication research [27], and social media research [28, 29]. In particular, Avery *et al.* (2010) examined the trend of crisis communication research using SCCT and image restoration theory from 1991 to 2009, and they found that crisis communication studies could be enriched theoretically and empirically through more diverse contexts and methodological applications. Kim *et al.* (2009) conducted a content analysis study to examine crisis response strategies that were analyzed in crisis communication literature [15]. By reviewing articles published in 11 journals from 1991 to 2009, they found a lack of diversity in case selection as well as gaps between theory and practice [15].

Although scholars have extensively incorporated social media into crisis communication research, few focused on the trend of social media-related crisis communication research. More specifically, none of the prior studies have reviewed published research articles on social media-related crisis communication focusing on incidence patterns of previous studies, research topics, theories or theoretical models, crisis types, social media platforms, types of sample, and research methods. Thus, the following six research questions were proposed:

RQ1: What are the primary topics of social media-related crisis communication research?

RQ2: What theories or theoretical models are used in social media-related crisis communication research?

RQ3: What are the crisis types examined in social media-related crisis communication research?

RQ4: What are the social media platforms examined in social media-related crisis communication research?

RQ5: What are the types of sample used in social media-related crisis communication research?

RQ6: What are the research methods used in social media-related crisis communication research?

METHOD

Sample

The sample of this study included research articles on crisis communication and social media published in 11 journals. Based on previous research that reviewed communication research articles [25, 28-30], we selected five general communication journals considered leading journals in the communication field and six journals focusing on public relations (shown in Table 1). *Journal of Communication*, *Journalism & Mass Communication Quarterly*, *Communication Research*, *Human Communication Research*, and *Journal of Broadcasting & Electronic Media* are considered leading journals in the communication field [28]. According to Duhé (2015), the following journals primarily dedicated to public relations: *Journal of Public Relations Research*, *Public Relations Review*, *Public Relations Journal*, and *Journal of Communication Management* [30]. Additionally, *International Journal of Strategic Communication* and *Corporate Communication: An International Journal* are another two journals that publish many research articles on crisis communication. These 11 journals were selected because of their primary focus on communication and public relations and their ability to represent scholarly perspectives from both within and beyond the United States [30].

This study set the starting point of sampling as 2009, the year articles on crisis communication and social media [31] appeared for the first time in the journals we searched. We extended the search through May 2017. We searched original research articles on the official websites of the 11 journals listed above using the key words “crisis communication and social media,” “crisis and social media,” “social media crisis,” “crisis communication and blog,” “crisis communication and Facebook,” and “crisis communication and Twitter.” A total of 45 articles were selected for this study.

Table 1: The Number of Articles on Social Media-Related Crisis Communication Published in Each Journal

Area	Journal Name	Number of Articles	Percentage (%)
Communication	<i>Journal of Communication</i>	0	0
	<i>Journalism and Mass Communication Quarterly</i>	2	4.4
	<i>Communication Research</i>	3	6.7
	<i>Human Communication Research</i>	0	0
	<i>Journal of Broadcasting & Electronic Media</i>	0	0
Public Relations	<i>Journal of Public Relations Research</i>	6	13.3
	<i>Public Relations Review</i>	19	42.2
	<i>International Journal of Strategic Communication</i>	2	4.4
	<i>Public Relations Journal</i>	3	6.7
	<i>Journal of Communication Management</i>	2	4.4
	<i>Corporate Communication: An International Journal</i>	8	17.8

Measure

Each research article in the sample was coded based on the following variables: 1) general information (i.e., title, publication outlet, and publication year), 2) research topic, 3) theories or theoretical models, 4) types of crisis, 5) social media platforms, 6) types of sample, and 7) research methods.

General Information

In order to assess the frequency of research articles, the publication outlet, year of publication, and article's title were recorded.

Research Topic

Research topics is the themes or subjects studied in each article [28]. According to previous measures of social media research [28] and the stream of crisis communication research, we developed nine

categories to measure research topics, which were shown in Table 2. Each article was assigned a single code from these categories according to its primary topic.

Theories or Theoretical Models

The researchers first coded whether a research article used a theory and/or theoretical model. If a theory/model was used in the article, the specific theory or model was coded. If multiple theories or models were used, each was coded separately. We used open coding for this variable and identified a total of 19 theories and theoretical models.

Types of Crisis

Coombs (1998) identified four types of crisis: accident, transgression, natural disaster, and product tampering [32]. Accident refers to an industrial problem caused by technological failures or human errors [33].

Table 2: Research Topics of the Articles on Social Media-Related Crisis Communication

Research Topic	Number of Articles	Percentage (%)
The effects of social media use on crisis communication / management outcomes	15	33.3
Organizations' social media use for crisis communication	14	31.1
A crisis occurring on social media	6	13.3
Crisis communication theory development	2	4.4
Social media usage, motivation, and attitude towards social media	2	4.4
Social issues and political issues	1	2.2
Health issues	1	2.2
Cultural issues	1	2.2
Advertising and public relations issues	3	6.7

Transgression is defined as a crisis that takes place when stakeholders recognize an intentional violation of expectations or when an organization commits an injustice [34]. Natural disaster is conceptualized as acts of nature damaging an organization in different ways (i.e., flood or earthquake) [35]. Product tampering refers to the damage to an organization that “alters the product to make it dangerous” [35]. If some articles did not specify the type of crisis or examined other types of crisis, we coded their types of crisis as “general crisis” or “other crises.” Thus, this study categorized the types of crisis into “accident,” “transgression,” “natural disaster,” “product tampering,” “general crisis,” and “other crises.”

Social Media Platforms

According to the definition of social media, we selected 12 popular social media platforms, which included Facebook, Twitter, LinkedIn, Pinterest, Tumblr, Instagram, Flickr, Vine, Yik Yak, YouTube, Blog, and Weibo. If multiple social media platforms were examined in a single study, each of them was coded separately.

Types of Sample

Given the topics examined in this area, we identified six types of sample including students, social media users, professionals, general public, adolescents, and social media content.

Research Methods

We coded the research method of each article. Twelve methods were identified including experiment, survey, content analysis, interview, secondary data analysis, ethnography, participation observation, focus group, theory/scale development, and rhetorical analysis. If an article used multiple research methods, it was coded as “mixed methods.”

Coding Procedure and Intercoder Reliability

One coder created the coding protocol and code sheet and explained them to the other coder. Then, they discussed some issues regarding the variables and coding protocol before starting to code the articles in the sample. The code book was revised until the two coders reached 100% agreement.

A subsample of the data set including 20% of the sampled articles was randomly selected and coded by each coder, which is acceptable for intercoder reliability test [36]. The Cohen’s kappa score for each variable

ranged from .82 to 1.00, which showed highly acceptable intercoder reliability [37].

RESULTS

Frequency of Research Articles

Forty-five articles on social media-related crisis communication in our sample were published in eight journals during the research period (see Table 1). Among these journals, *Public Relations Review* ($n = 19$, 42.2%) published the most social media-related crisis communication articles, followed by *Corporate Communication: An International Journal* ($n = 8$, 17.8%) and *Journal of Public Relations Research* ($n = 6$, 13.3%). In terms of the journal area, public relations-specific journals published the majority of the social media-related crisis communication articles ($n = 40$, 88.9%), which were much more than those published in communication journals ($n = 5$, 11.1%).

As displayed in Figure 1, social media-related crisis communication studies have increased during the two time periods, 2009–2011 and 2013–2015. Those articles were mainly published in public relations journals. The largest portion of articles was published in 2015 ($n = 10$, 22.2%), and the least portion of articles was published in 2009 ($n = 1$, 2.2%).

Research Topic

As shown in Table 2, a majority of social media-related crisis communication studies examined “the effects of social media use on crisis communication / management outcomes” ($n = 15$, 33.3%) and “organizations’ social media use for crisis communication” ($n = 14$, 31.1%). Another popular topic was “a crisis occurring on social media” ($n = 6$, 13.3%). Interestingly, all articles published in communication journals studied “the effects of social media use on crisis communication / management outcomes” ($n = 5$, 100%). Comparably, articles published in public relations journals examined “organizations’ social media use for crisis communication” ($n = 14$, 35%) most frequently. We further conducted a t-test and found that there was no significant difference in research topics between communication journals and public relations journals, $t(43) = -1.865$, $p = .069$.

Theories or Theoretical Models

Theories or theoretical models were used in 75.4% ($n = 34$) of social media-related crisis communication articles. Among them, the SCCT ($n = 16$, 35.6%) was

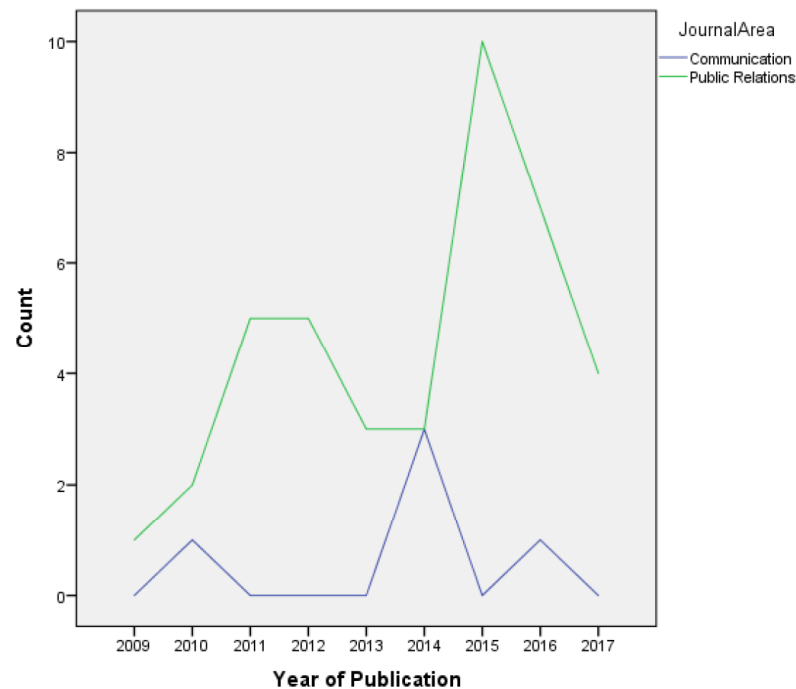


Figure 1: Trend of Social Media-Related Crisis Communication Articles by Journal Area.

most frequently used, followed by the image restoration theory ($n = 8$, 17.8%) and the social mediated crisis communication model ($n = 5$, 11.1%). In particular, articles published in communication journals used social mediated crisis communication model most frequently (40%), whereas those published in public relations journals dominantly employed SCCT (40%).

Types of Crisis

As shown in Table 3, the most frequently studied types of crisis were “product tampering” ($n = 11$, 24.4%) and “general crisis” ($n = 11$, 24.4%), followed by “transgression” ($n = 9$, 20%). The product tampering cases often involved food safety issues. For example, McDonald’s 2012 crisis about selling expired food and KFC’s 2012 crisis about using mutated chicken as food materials [38]. Malfunctions of product [39] and altered product information [40] were also considered as product tampering, because consumers may encounter health or safety risks due to the problematic products. The general crisis type included studies that did not specify a crisis type. Articles discussing multiple case studies [41] or focusing on general social media usage in crisis [42] were coded in this category. The transgression cases comprised crises that were an intentional violation of stakeholders’ expectations or an organizational act of injustice. Typical examples included Planned Parenthood’s funding crisis and conflict with Live Action [43] and BP’s Deepwater Horizon oil spill [44].

Table 3: Types of Crisis Examined in Social Media-Related Crisis Communication Research

Type of Crisis	Number of Articles	Percentage (%)
Accident	6	13.3
Transgression	9	20
Natural disaster	3	6.7
Product tampering	11	24.4
General crisis	11	24.4
Other crisis types	5	11.1

Social Media Platforms

Facebook ($n = 24$, 53.3%) and Twitter ($n = 22$, 48.9%) were the dominant social media platforms examined in previous social media-related crisis communication studies. Other popular social media platforms studied included blog ($n = 11$, 24.4%) and YouTube ($n = 8$, 17.8%). In the communication field, Facebook (60%) and blog (60%) were most frequently studied, whereas public relations scholars examined Facebook (52.5%) most frequently.

Types of Sample

The most frequently used type of sample was “social media content” ($n = 18$, 40%), followed by students ($n = 9$, 20%). In particular, communication scholars employed student sample (80%) dominantly,

while public relations researchers examined “social media content” (45%) most frequently.

Research Methods

More than half of the articles in our sample used content analysis ($n = 14$, 31.1%) and experiment method ($n = 12$, 26.7%). All the articles published in communication journals used the experiment method (100%), whereas those published in public relations journals employed content analysis method most frequently (35%).

DISCUSSION

The current study examined the trends of social media-related crisis communication research published in 11 journals from 2009 to 2017. The results indicated an increasing trend of social media-related crisis communication studies. This study could contribute to the literature on crisis communication and social media by identifying the research trends and providing directions for future research.

One important finding of this study was that public relations-focused journals published most social media-related crisis communication articles, which suggested that articles on this topic gained greater attention in public relations journals. In particular, *Public Relations Review* published the most studies on crisis communication and social media. One possible reason was that this journal published the largest number of articles in the field of public relations, which might cover the most public relations topics including social media-related crisis communication. Thus, we suggested scholars consider public relations-specific journals, especially *Public Relations Review*, as the primary outlets when submitting papers and searching literature on social media-related crisis communication.

This study also found that researchers in this area mainly examined the effects of social media use on crisis communication outcomes (i.e., stakeholders' supportive behavioral intentions) and organizations' social media use for crisis communication. They tended to focus on the role of social media in crisis communication. Previous researchers have only focused on a limited number of research topics. Thus, we suggested that future social media-related crisis communication research could be expanded to examine more diverse topics, such as crises occurring on social media and the effects of an organization's crisis communication behaviors on stakeholders' social media usage.

An encouraging finding was that 75.4% of social media-related crisis communication articles used theories or theoretical models. By comparison, Khang *et al.* (2012) documented that approximately 40% of social media research published between 1997 and 2010 used theoretical frameworks [28]. Thus, we found that more attention was paid to theoretical frameworks in social media-related crisis communication articles than those in other fields. Crisis communication scholars not only extensively employed existing theoretical frameworks (i.e., SCCT and image restoration theory), but also developed and applied some new theoretical models (i.e., social mediated crisis communication model) to explain and predict social media-related crisis communication phenomena. According to Kuhn (1962) [45], one phase in the process of scientific revolution is that anomalies (e.g., social media) are incorporated into the old paradigm (e.g., crisis communication). Social media-related crisis communication research is currently in this phase. Thus, we suggested that future researchers continue to develop and apply new theories and/or theoretical models to understand the mechanism of social media and crisis communication.

Another important finding was that the most frequently studied types of crisis were “product tampering” and “general crisis.” This trend was different from previous trends in crisis communication research [15]. For instance, Kim *et al.* (2009) found that preventable crisis was the most frequently examined type of crisis in crisis research, followed by the accident and victim crisis [15]. One possible explanation was that product tampering might receive more attention on social media. Some social media-related crisis communication studies focused on developing and testing crisis communication theories and, therefore, did not specify the types of crisis.

In terms of the samples used in social media-related crisis communication research, social media content was the most frequently used sample, followed by student sample. This finding was consistent with previous findings that also documented student sample as the most frequently employed in crisis communication research from 1991 to 2009 [14]. Consistent with the sample selection, content analysis was the most popular research method used in social media-related crisis communication research, followed by experiment. This finding was also consistent with previous findings suggesting that rhetorical analysis and experiment were adopted most frequently in crisis communication research [14]. On the whole,

quantitative research methods were more prevalent than qualitative methods in this area. Future studies could employ more types of samples (i.e., public relations practitioners) and research methods (i.e., interview).

This study could contribute to existing literature on social media and crisis communication by exploring the trends of social media-related crisis communication research published in 11 journals from 2009 and 2017. It provided insights into the stream of social media-related crisis communication research. It also provided some suggestions about the directions for future research.

LIMITATIONS AND FUTURE RESEARCH

Although this study examined social media-related crisis communication research published in 11 communication and public relations journals, it may not be entirely inclusive. Future trend research could include some journals in the field of emerging media that published some social media-related crisis communication studies, such as *Journal of Computer-Mediated Communication, New Media & Society, Cyberpsychology, Behavior, and Social Networking, and Social Media + Society*.

Some coding categories were not strictly mutually exclusive, including “research topic” and “types of crisis.” Future scholars could create mutually exclusive coding categories. They could also categorize the types of crisis more specifically.

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