
Emerging Media Crisis Value Model: A Comparison of Relevant, Timely Message Strategies for Emergency Events

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pp. 20-31

Recommended Citation

Page, Sabrina; Freberg, Karen; and Saling, Kristin. "Emerging Media Crisis Value Model: A Comparison of Relevant, Timely Message Strategies for Emergency Events." *Journal of Strategic Security* 6, no. 2 (2013) : 20-31. DOI: <http://dx.doi.org/10.5038/1944-0472.6.2.2>
Available at: <https://scholarcommons.usf.edu/jss/vol6/iss2/2>

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Introduction

Disaster or crisis situations are “non-routine events that result in a host of non-routine behaviors and new social arrangements. Modern disaster and crisis situations reveal such innovative behavior extending to online settings.”¹ Government agencies (agency) must participate in effective crisis communications to: 1) protect and sustain the value of reputation, 2) increase audience activism through communication technologies, 3) broaden the views of crises, and 4) negate failure to plan.² To provide the community with the opportunity to voice its concerns, appreciation, etc., a two-way communication system must be instituted and utilized. This allows an agency the opportunity to address community concerns and questions in a timely and effective manner.

In all crises, communication, particularly mass communication, is used to reach relatively large audiences, is transmitted publicly, and can be timed to reach most audience members simultaneously.³ When a crisis is widely publicized it can evoke incomprehension, indignation or fear. Furthermore, the very occurrence can cast doubt on the ability of the government and its responders to protect the public. Communities assume that the government, non-governmental organizations (NGOs) or aid agencies are supposed to either prevent or mitigate the impact of a crisis.

The public’s perception regarding the handling of a crisis is developed through communication (or lack thereof) by an agency and the media. Government agencies and emergency responders can assist in the development of public perception by providing simple, direct, and timely information addressing what has occurred and what is currently being done to handle the situation. Not doing so can lead to public perception that the agency does not care, or is not concerned with the needs of the public. Due to these external influencers, government agencies and emergency responders must take care to have a plan in place which will address public concerns and needs.

Training provided by the National Incident Management System (NIMS) focuses on communication among first responders and those individuals speaking on behalf of the government agency in charge.⁴ In conjunction with training for responders, individual response plans are developed by local and state agencies as well as non-governmental.

The procedures and protocols for the release of warnings, incident notifications, public communications, and other critical information must be disseminated through a defined combination of networks used by the Emergency Operations Center. As demonstrated by the response to 9/11 and to Hurricane Katrina, communication between and among responders,

¹ Leysia Palen and Sarah Vieweg, "The Emergence of Online Widescale Interaction in Unexpected Events: Assistance, Alliance and Retreat" *Proceedings of the ACM conference on Computer Supported Cooperative Work (CSCW)* (2008): 117-126.

² Coombs, W. Timmothy, *Ongoing Crisis Communication: Planning, Managing, and Responding* (Thousand Oaks: Sage Publications, Inc., 2007).

³ Severin, Werner J. and James W. Tankard, *Communication Theories: Origins, Methods, and Uses in the Mass Media*, 5th ed. (New York: Allyn & Bacon, 2001).

⁴ “National Incident Management System,” *Federal Emergency Management Agency*, May 6, 2013, available at: <http://www.fema.gov/national-incident-management-system>.

government agencies, and the public can be non-existent, miscommunicated, or limited at best. Poor communication leaves victims feeling helpless, confused, and unsure of what is happening, whom to contact for assistance, and most importantly – where to go from here.

One option identified in the “First Responder Communities of Practice Virtual Social Media Working Group Community Engagement Guidance and Best Practices”, is that emergency responders recognize that use of social media allows for a type of interaction between emergency responders and the public they serve.⁵ Specifically, the guidelines indicate “that social media should be used in conjunction with traditional media . . .”⁶ These current standards limit discussion to online media, but should be expanded to include the mobile media environment made possible by tablets and smartphones.

Currently, NIMS does not train its public information officers in the use of social media, but rather restricts training to the use of traditional media systems. However, steps are being taken to remedy this by the Department of Homeland Security’s Science and Technology Directorate through the development of a virtual social media working group (VSMWG). This working group, comprised of subject matter experts, was gathered to provide “examples and best practices from agencies already using social media . . .” to assist first responders in communicating in a more timely and accurate fashion.⁷

Utilizing social media when responding to an emergency/crisis can help to ward off or reduce the threats by providing recommendations for properly handling crises. Crisis management seeks to prevent or lessen the negative outcomes of a crisis and thereby protect the agency, responders, and the public. Therefore, the use of social media during an emergency/crisis event can aid in:

- **Preparation** which involves the diagnoses of vulnerabilities, selecting and training a crisis management team, to include a spokesperson, creating a crisis plan, and refining a communication system that utilizes all forms of media available;
- **Response** through the use of mass media, Internet, and social media during the preparation as well as the response and recovery phases;
- **Recovery** in an attempt to return to normal operations as soon as possible following a crisis/disaster event – also known as business continuity or continuity of operations;
- **Revision** that involves an evaluation of the response in simulated and real crises, determining what was done right and what wrong to better the performance in the possibility of its next disaster/crisis event.

Background

The classic emergency management model revolves around the activities, challenges, and responsibilities of emergency responders during an emergency/crisis event. Research on the

⁵“First Responder Communities of Practice Virtual Social Media Working Group Social Media Strategy,” Department of Homeland Security, Science and Technology Directorate, Washington, D.C., January 18, 2012.

⁶ Ibid, 2.

⁷ Ibid.

challenges faced by local government officials in preparing for a disaster event such as terrorist attacks has focused primarily on the preparation of local governments.

When communication is examined as part of an emergency/crisis event, it is done through that of leadership and the importance of that leader's ability to coordinate and communicate to various agencies.⁸ How emergency responders and community officials provide timely, accurate, and essential information to all involved is a neglected area of research. Literature addressing emergency preparedness provides little or no consideration for the communication process with the public in general.

Digital communication platforms are used to connect groups of people using mobile Internet capabilities and social networking sites like Facebook and Google+, microblogs like Twitter, photosharing sites like Instagram and Pinterest, and video sharing sites like YouTube and Vimeo. These platforms provide means for interactions and conversations that are enhanced by multimedia, and for connecting individuals with real-time information directly through their computer, tablet, or smartphone. Emergency and crisis communication professionals need to be prepared to engage in dialogue on these various platforms.⁹

A 2010 American Red Cross online survey of the U. S. population over age eighteen showed that about half of the respondents would sign up for emails, text alerts, or applications to receive emergency communication, including location of food and water (53 percent), evacuation routes (52 percent), shelter locations (50 percent), road closures (50 percent), location of medical services (50 percent), and information about how to keep safe during an emergency (48 percent). About half of those who use social media also said they would post emergency information on their sites. More than half would send a text message to a responsible agency if someone they knew needed help. Also, during an emergency nearly half of those searching for information would use social media to let them know family members are safe.

Perception of Crises or Emergencies

A crisis event is an "episodic breakdown of familiar frameworks that legitimate the pre-existing sociopolitical order."¹⁰ A crisis event can escalate in intensity and severity and may increase (in the case of an organization or public figure) governmental and/or media scrutiny; a crisis can jeopardize the current "positive" image and interfere with normal operations.¹¹ A crisis often occurs due to the failure to communicate the unforeseen and/or overwhelming situation.

The perception of a crisis as an "unpredictable" event can threaten important expectancies, which can seriously impact an agency's performance and generate negative outcomes. Perception is a

⁸ Brian J. Gerber, David B. Cohen, Brian Cannon, Dennis Patterson and Kendra Steward, "On the front line: American cities and the challenge of Homeland Security preparedness," *Urban Affairs Review*, 41:2 (November 2005): 182-210.

⁹ Christopher G. Reddick, "Collaboration and Homeland Security preparedness: A survey of U.S. city managers," *Journal of Homeland Security and Emergency Management*, 5:1 (2008): 1-18.

¹⁰ Leonard J. Marcus, Barry C. Dorn and Joseph M. Henderson, "Meta-leadership and national emergency preparedness: A model to build government connectivity," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, 4:2 (2006): 128.134.

¹¹ Arien Boin, Paul 't Hart, Eric Stern and Bengt Sundelius, "The politics of crisis management: Public leadership under pressure," *International Public Management Journal* 10:1 (2007); 111-117.

“complex process by which people select, organize, and interpret sensory stimulation into a meaningful and coherent picture of the world.”¹² It is developed through actual experiences and psychological factors that influence perception. Perception provides the public with information acquired through past experiences, and allows them to adapt their behavior and response to the event, issue, or objects. This type of information gathering is known as perceptual learning.¹³ Individuals selectively focus their attention on information they perceive to be important when processing information.¹⁴ During this process, individuals imprint specific aspects of the stimulus into their memory. These aspects are extracted and tailored to new situations. Therefore, individuals use past experiences as well as information from newspapers, news broadcasts, magazines, and the Internet to process crises.

Different crises create different perceptions among audiences. People perceive organizations or agencies differently if they could have prevented a crisis compared to situations where they were not responsible. Two types of crisis situations that are opposite ends of the continuum of attribution of responsibility include man-made and natural disasters. While a majority of the crisis and emergency literature focuses on natural disasters and emergency situations such as hurricanes (ex. Hurricane Katrina in 2005), tsunamis (Japanese Tsumani in 2011) or earthquakes (Haiti in 2010), there are other crisis situations that are man-made. Natural disasters have low levels of responsibility due to the fact they are not predictable or the attribution of responsibility is low towards the parties involved. However, man-made crisis situations have high levels of attribution of responsibility due to the preventable nature and perception people have for these situations. The difference in responsibility attribution is one of the primary causes of variations in perception among key audiences.

Social Media and Mobile Technology

Social media and mobile technology can benefit individual stakeholders during a highly tense situation. These emerging technologies have allowed people to feel they have more control over the crisis as well as more connection to the community.¹⁵ Increased empowerment of the individual stakeholder leads to greater feelings of control over the situation and a willingness to help others in the community, which could potentially mobilize crisis responders.

Further, technology can be an essential element in the dissemination of information during a crisis. Preparing a crisis communication plan can help to lessen the publics' fear, decrease the publics' uncertainty, and help to enhance credibility of responders. Social media provide the ultimately networked communication hub of dialogue, relationship management, and information creation and dissemination in digital and mobile environments. Social media combine the use of innovative strategies with digital communication technology platforms, enabling the user to share knowledge, engage in digital storytelling through conversations and visual components, and collaborate with others. It allows people to engage in crowdsourcing tasks and to contribute ideas to solve problems, conduct strategic monitoring and analytic

¹² Severin and Tankard, *Communication theories: origins, methods, and uses in the mass media*, 73.

¹³ Carlson, Neil R., *Physiology of Behavior*, 8th ed. (Boston: Allyn & Bacon, 2004).

¹⁴ Robert L. Goldstone and Lawrence W Barsaloub, “Reuniting perception and conception,” *Cognition* 65 (1998): 231-262.

¹⁵ Ilrina Shklovski, Moira Burke, Sara Kieslerb, and Robert Kraut, “Technology adoption and use in the aftermath of Hurricane Katrina in New Orleans,” *American Behavioral Scientist* 53 (2010): 1228-1246.

analysis online, and build relationships within a community sharing common interests, investments, and needs.

Social media share some features with traditional communication platforms, but has unique aspects as well. Social media not only provides a means for establishing and maintaining relationships but it also allows users to create their own content to share with others in the online community (user-generated content).¹⁶ Current advances in new media, such as social networking sites, microblog sites, and the increased use of geo-location based applications on smartphones and tablets have opened a world of opportunities for crisis communication professionals to share information, converse with others remotely, and discuss necessary information about a crisis with various stakeholder groups. In crisis communication, “if communities depend on information for their survival in times of crisis, then communication technologies are their lifelines.”¹⁷

With social media, stakeholders and risk bearers are expecting tailored and personalized messages rather than prepared statements and messages from organizations. Recognizing the influence of social media allows crisis communicators the opportunity to use social media strategically to look for potential issues relevant to their stakeholders, to prepare for crises, and to implement online communication.¹⁸

*Emerging Media Crisis Value Model (EMCV)*¹⁹

The Emerging Media Crisis Value Model (EMCV) is a value model that merged two models:

1. Systems engineering process: a derivation of value focused thinking, these functions were used to develop a qualitative value model, that breaks a system into functions and sub-functions based on actions that system performs that have value to stakeholders. It is then necessary to “score” a system, or a number of candidate systems on their ability to perform these functions. Measurement scales must be developed to categorize the performance of the system(s) based on the stakeholders’ values. Using this methodology, researchers determined how different strategies of crisis messaging achieved success in the performance of these listed sub-functions. This qualitative value model of the crisis messaging system shows the general functions and sub-functions of a crisis message, and the objectives those sub-functions needed to meet to be successful (Figure 1):

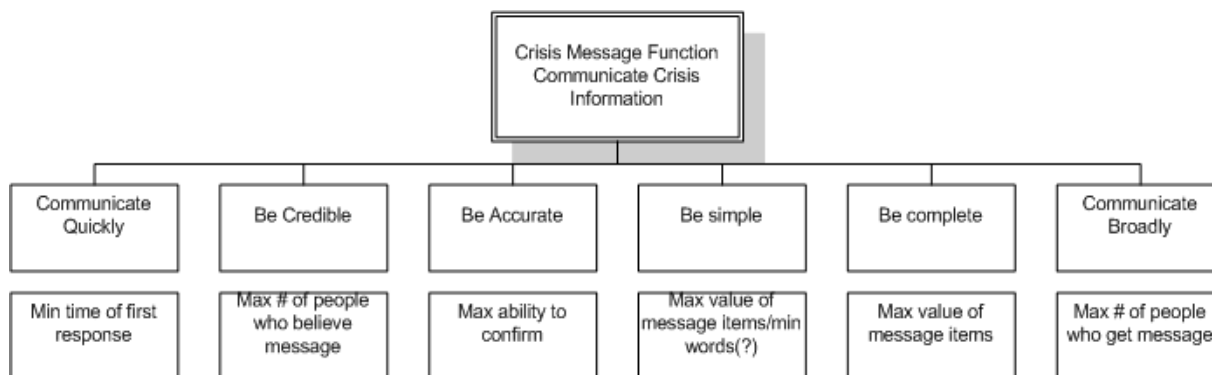
¹⁶ Richard D. Waters, Emily Burnett, Anna Lamm and Jessica Lucas, “Engaging stakeholders through social networking: How nonprofit organizations are using Facebook,” *Public Relations Review* 35:2 (2009); 102-106.

¹⁷ United Nations Foundation. *New technologies in emergencies and conflicts report: The role of information and social networks* (New York: United Nations Foundation, 2010).

¹⁸ Alfonso González-Herrero, and Suzanne Smith, “Crisis communications management on the web: How internet-based technologies are changing the way public relations professionals handle business crises,” *Journal of Contingencies & Crisis Management* 16 (2008): 143-153.

¹⁹ Freberg, Karen, Saling, Kristen, Vidoloff, Kathleen, and Gina Eosco, “What makes a good social media crisis message?: Challenging traditional methodology through qualitative and quantitative value modeling.” Paper presented at the 16th International Conference on Corporate Reputation, Brand, Identity and Competitiveness, Milan, Italy, May 30-June 1, 2012.

Figure 1. Crisis Message Function Qualitative Value Model



2. Proof-of-concept model that presented various characteristics and attributes for crisis communicators to take into consideration when communicating over social media. They found that while traditional hashtags (i.e., keywords used in social media applications denoted with a “#” symbol) were being used consistently, there was a variation based on location. In addition, hashtags were found to be useful in the monitoring of the information being provided but allowed those impacted to more easily follow what others were reporting. The improper use or dissemination of hashtags may have impacted the wider dissemination of what could have been a very high scoring message. For instance, function:

“F.02. Be Credible” relies almost entirely on attribution and accepting of responsibility for the crisis. In an act of nature such as Hurricane Irene, this value measure does not apply, so it was not used. The model was filtered for only those crisis messaging functions and value measures that would apply to a natural disaster:

- VM_02_5 Traditional media outlet
- VM_03_1 Presence of topical key words
- VM_03_2 Real time monitoring links, graphics, etc.
- VM_04_1 Conversational or real voice,
- VM_05_1 Info about safety given
- VM_05_2 Info about sources of relief
- VM_05_3 Secondary messages in a different medium
- VM_06_1 Presence of a hashtag
- VM_06_2 Presence of a URL

This model identified three best practices for the use of social media in a crisis:

1. Integration of multimedia and links into updates:
2. Proper use of hashtags and tagged keyword:
3. Balance between official and conversational updates were needed.

Two limitations EMCV, were: 1) it was not apparent whether the variations of the hashtags that were used were effectively communicated across media platforms or agencies, and 2) that only utilized the social media search and analysis platform of Social Mention. This platform only

collected from certain platforms and not all of the social media platforms are available for monitoring.

Justification of Research

Information systems evolve at a rapid pace and as a result, ongoing evaluation of tools and systems is needed. Understanding the uses of emerging technologies – including social media – in an emergency allows first responders to disseminate messages effectively. Not only is it important to determine the most efficient way to communicate crisis messages via social media, but it is also important to determine the reputational risks that can be detected within the messages before they spread virally across multiple platforms. Several methods used in previous social media and crisis and emergency management investigations include interviews, experiments with a specific population such as undergraduate students or consumer panels, and social media monitoring and crisis informatics.²⁰

Approaching social media and crisis communication from a joint public relations and systems engineering approach will add additional methods for observing and determining the most effective online crisis messages.

RQ1: Are the main attributes of a “good” crisis message communicated via social media the same in a natural disaster as in a man-made crisis situation?

RQ2: Are the best practices the same in both situations?

Methodology

An examination of two disasters and the communication strategies employed was conducted utilizing the (EMCV). The first disaster examined was the Federal Emergency Management Administration’s (FEMA) response to Hurricane Irene, and the second was the Aurora, Colorado theatre shooting event.

Overview of Hurricane Irene

Hurricane Irene hit the East Coast of the United States during the hurricane season of 2011, and was one of the most destructive hurricanes in the last three decades, killing at least twenty-seven people.²¹ Even before Hurricane Irene hit the East Coast, fear and levels of uncertainty escalated across the states from Vermont to Florida. The significance of this natural disaster prompted

²⁰ Lucinda Austin, Brooke Fisher Liu and Yan Jin, “How audiences seek out crisis information: Exploring the social-mediated crisis communication model,” *Journal of Applied Communication Research* 40:2 (2012); Karen Freberg, “Intention to comply with crisis messages communicated via social media,” *Public Relations Review* 38 (2012): 416-421; Leysia Palen, Leysia, Kenneth M. Anderson, Gloria Mark, James Martin, Douglas Sicker, Martha Palmer and Dirk Grunwald, “A vision for technology-mediated support for public participation and assistance in mass emergencies and disasters,” *ACM-BCS Visions of Computer Science* (2010): 1-12; Jeannette N. Sutton, “Twittering Tennessee: Distributed networks and collaboration following a technological disaster,” Paper presented at the 7th International ISCRAM Conference, Seattle, Washington, 2010.

²¹ Various Photographic Images, “Hurricane Irene,” *boston.com*, August 29, 2011, available at: http://www.boston.com/bigpicture/2011/08/hurricane_irene.html.

President Obama to announce a formalized statement to residents in the potentially impacted locations:

"I cannot stress this highly enough: If you are in the projected path of this hurricane, take precautions now. The federal government has spent the better part of last week working ... to see to it that we're prepared. All indications point to this being a historic hurricane."²²

The initial research on the value model presented insights into which social media messages were deemed the most effective, being shared among agencies and individuals. Social media updates utilizing hashtags (#), links, and attached other credible usernames to the update were the most effective in reaching multiple audiences.

Overview of Aurora, Colorado Theatre Shooting Case Study

The emergency management or “man-made” crisis situation that is the focus of this study and proof-of-concept model is the Century 16 movie theatre mass shooting in Aurora, Colorado. On July 20, 2012, a lone gunman named James Eagan Holmes entered the Century 16, through the back door of theatre 9. Holmes entered after midnight armed and was dressed as “The Joker.” Once inside Holmes opened fire in the full movie theatre. The result was the death of twelve people and the wounding of fifty-eight.²³

Documents presented in the courtroom discussed previous statements Holmes made to others at the University of Colorado, Denver campus and in a notebook mailed to his psychiatrist, Dr. Lynne Fenton, before the theatre shooting tragedy.²⁴

References were made by Holmes to the Columbine Shooting of April 20, 1999, which was the worst previous mass shooting in history.²⁵ This was also a case where social media played an active role in providing real-time updates related to the theatre shooting.

Emerging Media Crisis Value Model (EMCVM)

Both cases were analyzed using the EMCVM, This analysis was conducted to define what constitutes a “good” crisis message. The overall purpose, or the primary function, of crisis communication is to communicate crisis information (accurate, timely, credible, and relevant information regarding what is happening and what should be done about it). This function created the first level in the functional hierarchy of the model. The next step was gathering information regarding what information and communication content is most relevant to

²² “Obama says Hurricane Irene "extremely dangerous," *Reuters*, August 26, 2011, available at: <http://www.reuters.com/article/2011/08/26/us-storm-irene-obama-idUSTRE77P4IM20110826>.

²³ Rong-Gong Lin II, “Gunman kills 12 at 'Dark Knight Rises' screening in Colorado.” *Los Angeles Times*, July 20, 2012, available at: <http://articles.latimes.com/2012/jul/20/nation/la-na-nn-dark-knight-shooting-20120720>.

²⁴ Ashley Frantz, “New Colorado shooting documents: threat made at university,” *CNN.com*, September 28, 2012, available at: <http://www.cnn.com/2012/09/28/justice/colorado-shooting-new-documents/index.html>.

²⁵ Thomas Peipert and P. Solomon Banda, “James Holmes identified as the alleged Aurora, Colorado theatre shooter.” *Huffington Post – Denver*, July 20, 2012, available at: http://www.huffingtonpost.com/2012/07/20/james-holmes-identified-a_n_1688776.html.

stakeholders in the message. A stakeholder is defined as anyone with an interest in the effects or outcomes of a system.²⁶

Subfunctions for this model were distributed utilizing the following variables (Table 1):

1. F.01. Communicate Quickly
2. F.02. Be Credible
3. F.03. Be Accurate
4. F.04. Be Simple
5. F.05. Be Complete
6. F.06. Communicate Broadly

Adding the two additional value measures to the EMCVM extended the original model for social media crisis messages strategies emerging from natural disasters. The two value measures added to EMCVM include level of attribution assigned to crisis and response, and the value measure of validity of photos and other multimedia.

The researchers used these value measures to rank and score the 2134 Hurricane Irene crisis messages to determine whether the messages deemed “messages that matter” by Social Mention (www.socialmention.com) fit the model of a “good” crisis message. Obviously, not every crisis encountered is a natural disaster. 2177 Colorado Shooting crisis messages were also collected through Social Mention to fit the model to determine what constitutes as a “good” crisis message in a man-made crisis situation.

In a man-made crisis, such as the Colorado shooting, “F.02. Be Credible” and all of the attribution and acceptance of responsibility value measures are very much in play. This research examines the findings from the Hurricane Irene study and data gathered during the Colorado shootings in an effort to determine best practices for crisis communication in a variety of situations, natural or man-made, attributional or not. What follows is a focus on using other “value” measures and the difference in value models between man-made and natural disasters.

In comparing the Value Measures utilized to assess natural disaster crisis communication, those to describe communication during a man-made crisis, almost all of the value measures remain the same except for the previously mentioned reintroduction of attribution of responsibility. In exploring this aspect of communication, this research identified two forms of attribution that need to be addressed:

- 1) In a man-made crisis, responsibility for initiating the crisis must be determined in order to satisfy public demands for information, and
- 2) in both instances, responsibility for responding to the crisis must be addressed. The initial value measure (VM 02_2) was reintroduced, and a new value measure (VM 02_3) was added to cover the attribution of responsibility for responding to the crisis.

²⁶ Parnell, Gregory S., Patrick J. Driscoll, and Dale L. Henderson, *Decision Making in Systems Engineering and Management*, 2nd ed. (Hoboken: Wiley and Sons, 2011).

Additionally, discussions involving the real and “shopped” photos being transmitted across social media platforms during the recent Hurricane Sandy crisis led to the establishment of a new value measure under the credibility function: Validity of photos presented.

Discussion and Findings

Research Question 1 asked if the main attributes of a “good” crisis message communicated via social media are the same in a natural disaster versus a man-made crisis situation. Results showed that the use of the EMCVM provides emergency responders with an additional tool for crafting more timely and accurate communications.

Research Question 2 asked if the best practices are the same in both situations. First, by understanding the level of attribution assigned to specific factors (internal, external, and situational), the more effective crisis and emergency responders will be able to communicate across social media platforms.²⁷ Once these attributional states are identified, the crisis or emergency manager is in a position to select the best crisis communication message strategy to disseminate to the appropriate social media platform.

Second, the rise of visual social media platforms such as Instagram, Pinterest, and Tumblr is one of the reasons to add the new additional visual value measure in the EMCVM. Secondary messages showcase the growing trends of videos and photos as necessary components of communication during a crisis. According to Pew Research Center, photos and videos are the new “social currency” users are attaching to their social media updates.²⁸

Individuals create various multimedia components (creators) or share visuals that their own social communities and ecosystems may want to see (curators).

Best practices suggested by these results are:

1. **Seamlessly integrate multimedia and messages across social media channels.** Individuals may want to have multiple formats of information based on the type of crisis involved (ex. Man-made versus natural disaster). Photos, videos, and other visual content shown as evidence are necessary to include for audiences to be informed and understand the story.
2. **Timeliness of addressing fake rumors, photos, and misinformation.** Having an official voice and verification of information through an official spokesperson representing the organization or agency involved that has been deemed confirmed and transmitted across multiple social media channels has to be enforced more.

²⁷ Heider, Fritz, *The Psychology of Interpersonal Relations* (New York: Wiley, 1958).

²⁸ Lee Rainie, Joanna Brenner and Kristen Purcell, “Photos and videos as social currency online,” *Pew Research Center*, September 10, 2012, available at: <http://pewinternet.org/Reports/2012/Online-Pictures.aspx>.

- 3. Determining the value of level of attribution based on source, crisis context, and situation.** Understanding the characteristics being assigned to the user on social media (government agency, emergency responder, etc.) in the particular situation will be important to note in this emerging media environment.

Conclusion

Emerging media will continue to evolve and transform traditional crisis communication and emergency management practices. Strategic application and theoretical foundation should become a focal point for discussion and research among crisis and emergency management professionals and scholars. Understanding the core value measures associated with proactive crisis messages should be incorporated into traditional practices, and also in training and education simulation exercises. Crisis and emergency managers have to note the range of perception and accessibility to these tools across their audiences. More integrated research is needed to better understand the theoretical and applied perspectives of emerging media across associated disciplines.

Table 1: Objectives and Value Questions for Crisis Message Model – Man-made Crisis

FCN	Function and Objective	Value Measure	Value question	Source
F01	Communicate Quickly			
OBJ1_1	Max communication speed	VM01_1	Quick and honest response?	Gonzalez-Herrero & Smith, 2008
OBJ1_2	Max value of communication	VM01_2	Proximity of reporter to crisis?	Starbird & Palen, 2010
F02	Be Credible			
OBJ_2	Max credibility scale	VM02_1	Internal or external crisis origin?	Jin, Liu, & Austin, 2011
		VM02_2	Attribution of crisis responsibility?	Coombs, 2007
		VM02_3	Attribution of responsibility for crisis	New value measure
		VM02_4	History of similar crises?	
		VM02_5	Level of consistency?	Coombs, 2007
		VM02_6	Traditional media outlet?	Yang & Lim, 2009
		VM02_7	Validity of photos presented	New value measure
F03	Be Accurate			
OBJ_3	Max Accuracy Scale	VM03_1	Presence of topical keywords?	Starbird & Palen, 2010
		VM03_2	Real time monitoring links, graphics,	Taylor & Perry, 2005
F04	Be Simple			
OBJ4	Max value of communication	VM04_1	Conversational/"real" voice?	Kelleher, 2008
F05	Be Complete			
OBJ5	Max # of resources	VM05_1	Info about safety given?	Hughes et al., 2008
		VM05_2	Info about sources of relief?	Hughes et al., 2008
		VM05_3	Secondary messages in different medium?	Schultz, Utz, & Goritz, 2011
F06	Communicate Broadly	VM05_4	Relevant response and rescue user	Palen & Liu, 2007
OBJ6	Max follow/RT/forward	VM06_1	Presence of hashtag?	Suh et al., 2010
		VM06_2	Presence of URL?	Suh et al., 2010
		VM06_3	Ability to forward message during crisis (share buttons?)	Shultz et al, 2011