Co-evolution of Social Media Crises: Investigation of Information Cascades in Institutional Fields

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ABSTRACT

The emergence and rapid development of social media platforms such as Facebook and Twitter has significantly changed the ways people and organizations interact during crisis and how such crises occur. Viral spread of information through social networks generates large datasets that may provide unique opportunities for exploration of the crisis' nature and development within institutional fields. While various computational methods have been developed to gather and study these datasets, social science has not yet deployed these opportunities. Linking together methods from computational science with social research this study suggests a new approach and intends to investigate how social media crises shape, cascade and diffuse, affecting other actors in the field, reshaping relations between stakeholders, and how it can potentially reconfigure the organizational field and lead to institutional changes.

Keywords: *social media crisis, legitimacy, crisis dynamics, information cascades*

INTRODUCTION

Today, due to fast information diffusion through social networking services (also known as social media or SNS), a single post (e.g. tweet, Facebook video, etc.) may cause a "butterfly effect" as it can be shared and rapidly go viral, enough to impact a company's legitimacy, often resulting in social media crisis (SMC). While the immediate direct effect of the crisis may be obvious, expressed in financial loss and threats to the organization's reputation, little is known about how this SMC evolves over time affecting other players in the field and the organizational field itself. Meanwhile the effect can be significant (both positive and negative) and have an important social, cultural, political impact leading to changes in institutional fields.

One recent example is the United Airlines (UA) Flight 3411 incident in April 2017[1], when a video showing a passenger being violently removed from an overbooked flight went viral on social media, resulting in huge outrage and causing serious reputational, legal and other damages to UA. At the beginning of the crisis rivals and other airlines engaged in opportunistic behavior benefiting from increased ticket sales and enjoying social media attention with viral puns of "anti-dragging" campaigns[2] and ads[3]. However, as the crisis progressed and more stakeholders became involved, including the US Congress and state bodies, focus switched to the issue of overbooking, questioning existing standards and challenging companies to change their policies and regulations on overbooking[4] and displaced passengers' compensation[5]. The virality of social media brought attention to this problem across the globe: inspired by the UA incident Canada adopted a new passenger bill of rights prohibiting removal due to overbooking[6].

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[1] https://www.nytimes.com/2017/04/10/business/united-flight-passenger-dragged.html?mtrref=en.wikipedia.org&gwh=F51D21592CC0C935D3B3F2E12E02542C&gwt=pay

[2] https://www.businessinsider.com.au/emirates-united-airlines-ceo-feud-2017-4?r=US&IR=T

[3] http://www.ibtimes.com/united-airlines-controversy-emirates-royal-jordanian-troll-company-after-passenger-2524512

[4] http://money.cnn.com/2017/04/27/news/companies/southwest-airlines-overbooking/

[5] http://money.cnn.com/2017/04/14/news/companies/delta-10000-overbooked-flight/

[6] http://time.com/4781156/canada-airlines-passenger-bill-of-rights/

This research aims to understand co-evolution of SMC: what impact it will have on other players in the field (e.g. third-party stakeholders, competitors and allies) and fields (e.g. society, state, NGOs). Therefore, the proposed research will aim to answer the following research questions (RQ):

➢ *RQ1: How does SMC shape, cascade and diffuse over time?*

➢ *RQ2: How does SMC affect the relationship between actors in the field?*

➢ *RQ3: How does SMC affect practices in the organizational fields?*

THEORETICAL BACKGROUND

Social Media

In this paper we use words such as "social media", "social network services" and "social networking sites" interchangeably. In general, by social media we understand computer-mediated technologies that enable creation and sharing of user generated content and allow online interaction between users. While there are many different definitions for social media (see for example Boyd and Ellison 2007; Fuchs 2017; Kaplan and Haenlein 2010) as well as many different types (i.e. (micro)blogs, content communities, social networking sites, virtual game-worlds, etc.), scholars agree that social media facilitate social interactions, transform communications between individuals and organizations and the ways how information is spread and shared online.

Crisis

A crisis is an unexpected or unusual event that creates high levels of uncertainty and "carries a high level of risk, harm, and opportunity for future loss" (Seeger, Sellnow, and Ulmer 2003). It negatively affects organization's performance, undermines stakeholders' expectations and leads to threats associated with financial loss, reputation damage, legitimacy risks, legal issues, etc. (Coombs 2007, 2014)

Social Media Crisis

By SMC we understand any crisis that was initiated through social media or was significantly intensified by the means of social media platforms. In many ways SMC is similar to a transboundary crisis, identified by Boin (2009). Transboundary crises often go beyond traditional time boundaries (i.e. they may not have a distinct clear start and/or end point), escalate suddenly, and may spread in different directions across geographical borders and functional boundaries (i.e. from one industry to another, from private to public, etc.)

To understand why and how companies experience SMC the notions of legitimacy, field theory and crisis management should be reviewed. In addition, in order to understand how information spreads in social networks it is necessary to analyse previous work related to information diffusion, cascades and virality. The research intends to link them together developing a framework for analysis of SMC.

Legitimacy, Field Theory and Crisis Management

Concepts of organizational legitimacy, reputation, and impression management are broadly explored in institutional theory (Dimaggio and Powell 1983; Elsbach and Sutton 1992; Meyer and Rowan 1977; Oliver 1991; Suchman 1995). The definition of legitimacy is usually seen in the scope of perception and judgement and represents "the degree to which broader publics view a company's activities as socially acceptable and desirable because its practices comply with industry norms and broader societal expectations" (Rindova, Pollock, and Hayward 2006). Many scholars have tried to open the "black-box" of legitimacy exploring its types and measurements (Bitektine 2011; Deephouse and Suchman 2008; Suchman 1995) and to explain why an organization might adopt a particular strategy for handling competing logics and how organizations respond to reputation crises and legitimacy threats. (Benoit 1997; Elsbach 2003; Yue, Rao, and Ingram 2013).

With the development and fast spread of social networks new theories have emerged about SMC. A brief description of selected models and theories is presented in Table1. In general, most existing works aim to answer how a company should behave and what strategies to use in order to overcome crisis successfully.

Theories and Models	Brief description	References
Situational crisis communication theory (SCCT)	Framework for understanding how to maximize the reputational protection by crisis communication.	Coombs (2007, n.d.)
Blog-mediated crisis communication model (BCCM)	Conceptual model to help public relations professionals to monitor and respond to blog-mediated crisis.	Jin and Liu (2010)
Social-mediated crisis communication model (SMCC)	Model examining how audiences seek information from social and traditional media, and what factors affect media use during crises.	Austin et al. (2012)

Table 1 - Crisis communication models and theories

Most studies related to legitimacy and crisis management investigate crisis within the boundaries of a single organization without recognizing multiple levels of complexity or accounting for the impact of the crisis on other players in the field and the implications it may have.

Field theory in the social sciences tries to explain such complexity of interactions among actors and fields and describes interdependent actions that transcend organizations or groups (Martin 2003) resulting in changes or/and stability in the fields (Fligstein 2013). Recently there is a growing interest in exploring cross-field contestation as well as endogenous dynamics of institutional change driven by societal action (DellaPosta et al. 2017). In the context of the UA incident overbooking, while not unusual, was not an emerging issue until the outbreak of the crisis. The crisis raised public concern over overbooking as a legitimate practice and eventually led to changes in industry legislation and policies.

Information diffusion in social media

Rapid development of SNS has inspired web scientists to look at questions of information diffusion, virality and cascades in social media. The potential of SNS may be used to explain political mobilization, trends in disease spread and disaster management among others. Researchers try to predict what kind of, how and why information goes viral (Berger and Milkman 2012; Cheng et al. 2014; Goel et al. 2015). While some researchers examine how external events can lead to new outbreaks and spikes in information cascades (Gruhl et al. 2004) others try to reveal the role of social networks (Bakshy et al. 2012), public opinion and influentials (Watts and Dodds 2007) in information diffusion.

Existing gaps and theoretical contribution of this research

The review of existing literature reveals three gaps in previous research:

First, most existing studies both in social and computational science investigate a single case and do not focus on the actual complexity of organisational fields. In addition, previous studies have not shown how crisis for one player can lead to co-evolution and changes in the field, both in terms of reshaping relationships between stakeholders and creating new meanings, social norms and regulations. This study intends to "zoom-out" from a micro level perspective (crisis of a particular organization) and explore SCM phenomenon on a macro level using large datasets from SNS.

Second, existing literature consider SMC as a single event or shock without investigating past events or predicting possible future evolvement. This research surmises that due to the nature of online informational diffusion, many social media crises are actually continuous, having waves and cycles and that the time dimension is more complicated and important. While some scholars have tried to study cascade waves (Cheng et al. 2016) they neither qualify them nor explain what is happening inside the waves and why it is important. The Internet never forgets, making it easier to track and investigate related past events, resulting in multiple outbreaks. For instance, when the UA Flight 3411 incident happened the internet community quickly recalled the "United Breaks Guitars" song from 2009[789] trending #*unitedbreaksguitar* on Twitter, thus escalating and intensifying the current UA crisis. Social

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[7] Protest songs by Canadian musician Dave Carroll about his real-life experience of how his guitar was broken during a trip on United Airlines in 2008. The song went viral, becoming a hit on social media and also resulted in a 10% drop of UA stock price and public-relations embarrassment for the airline.

[8] https://www.theguardian.com/news/blog/2009/jul/23/youtube-united-breaks-guitars-video

[9] https://goo.gl/2qoobu

network analysis (SNA) techniques will help identify past crises and reconfirm previous research arguing that an organization's past crises history affects the perception of the current crisis and increases the reputational threat (Coombs 2004).

Lastly, most of the literature related to issues of legitimacy and field theory is purely qualitative and interpretive in nature. Though many scholars realize the potential of big data for social research (Tinati et al. 2014) and even call for "the marriage of cultural sociology and big data" (Bail 2014), social scientists still haven't fully utilized the possibilities brought by the emergence and accessibility of large datasets available through SNS, and haven't really moved beyond a static approach in looking at crises.

Therefore, the contribution of this research is going to be two-fold:

This research will first review and adopt modelling techniques used in SNA and computational science, and will apply them to the social context of SMC. This will allow to conceptualize Information Technology (IT) by a "computational view" along with a "tool view" (Orlikowski and Iacono 2006) exploring how SNS alter social relations and communication behaviour. Data crawled from SNS will facilitate collection of detailed information about relationships between social actors and probably reveal previously unexamined patterns and new knowledge. By doing so this research will also try to meet several Davis' (1971) criteria of an "interesting" theoretical contribution summarized in Table 2. A case study will serve as empirical evidence and justification for the proposed methods.

The findings of the study are expected to allow better understanding of the complexity of interrelations between actors during SMC, thus contributing to and extending the knowledge about organizational and field theories related to questions of legitimacy and crisis management.

Criteria	Explanation	Application for this research
Co-relation	What seem to be unrelated phenomena are in reality correlated phenomena.	This research will study a "butterfly effect" and a "ripple effect" (adapted from complexity science) that a trigger event in SNS might have due to information diffusion.
Co-variation	What seems to be a negative co-variation between phenomena is in reality a positive co-variation between phenomena.	This research will differentiate between short- and long-term effects of SMC. While SMC is considered as a negative event for a particular organization, it may also have positive effects and benefit other players and the field.
Causation	What seems to be the independent phenomenon in a causal relation is in reality the dependent phenomenon.	This research plans to investigate polarity and directions of information flow spread from original outbreak, waves' categorization, causes and drivers for virality.

Table 2. Criteria of the relations among multiple phenomena (adapted from Davis 1971)

RESEARCH APPROACH

This research will include a combination of quantitative and qualitative analysis.

In order to answer RQ1 various quantitative modelling techniques will be used to examine social media data related to SMC (RQ1). The resulted "Toolkit" will be based on existing computational methods for exploration of complex networks' metrics, content and dynamics as well as models of analysis for cascades, multiple bursts and prediction of cascades recurrence.

Since SMC is a relatively new concept and the phenomenon of its effects on organizational fields is a contemporary, yet not well-researched topic, a case study approach will be used to further address RQ2 and RQ3. Case studies are suitable to answer "why" and "how" research questions (Yin 2014), appropriate for new areas and problems in which research and theory are at their early stages (Benbasat, Goldstein, and Mead 1987; Eisenhardt 1989).

To minimize bias and enhance generalizability four cases of crises will be selected. The unit of analysis will be the crisis, initially identified for a particular organization (e.g. UA crisis, Uber crisis, etc.) but investigated from a macro perspective, stressing its co-evolution and effects in the field. The data analysis will include both within-case analysis and cross-case examination in order to identify patterns and get evidence viewed through multiple lenses. The focus will be on SMC dynamics, reactions from

the company and other players in the field, patterns for information diffusion, changes in the relationship between actors and eventually changes within the industry. A preliminary research design framework is shown in Figure 1.
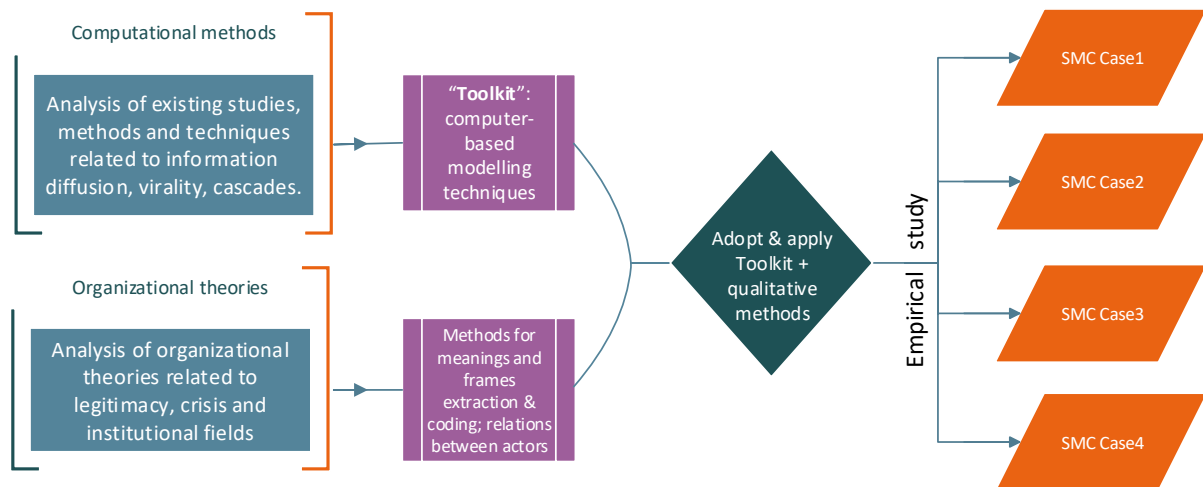

Figure 1: Research design framework

CONCLUSION

This research will provide a unique perspective on SMC, aiming to go beyond the boundaries of one organization dealing with crisis and instead look at the broader picture. It will investigate how SMC affects third parties and co-evolves with industry norms.

Linking computational algorithms developed by web scientists and social studies in the field of organizational theory will open the "black box" of SMC and the underlying reasons and mechanisms behind it. The research has the potential to facilitate further interdisciplinary studies on these concepts.

The outcome of this research will be useful for public relations professionals, crisis managers and policy makers. It will help to predict crisis diffusion, extend existing knowledge about crisis management and provide some clues on how and when companies can actually benefit from crisis.

REFERENCES

Austin, Lucinda, Brooke Fisher Liu, and Yan Jin. 2012. "How Audiences Seek Out Crisis Information: Exploring the Social-Mediated Crisis Communication Model." *Journal of Applied Communication Research* 40(2): 188–207.

Bail, Christopher A. 2014. "The Cultural Environment: Measuring Culture with Big Data." *Theory and Society* 43(3): 465–524.

Bakshy, Eytan, Itamar Rosenn, Cameron Marlow, and Lada Adamic. 2012. "The Role of Social Networks in Information Diffusion." *WWW 2012 - Session: Information Diffusion in Social Networks April 16-20, 2012, Lyon, France*: 519–528.

Benbasat, Izak, David K Goldstein, and Melissa Mead. 1987. "The Case Research Strategy in Studies of Information Systems Case Research." *MIS Quarterly* 11(3): 369–86.

Benoit, W.L. 1997. "Image Repair Discourse and Crisis Communication." *Public Relations Review* 23(2): 177–186.

Berger, Jonah, and Katherine L Milkman. 2012. "What Makes Online Content Viral?" *Journal of Marketing Research* 49(2): 192–205.

Bitektine, Alex. 2011. "Toward a Theroy of Social Judgements of Organizations: The Case of Legitimacy, Reputation, and Status." *Academy of Management Review* 36(1): 151–79.

Boin, Arjen. 2009. "The New World of Crisis and Crisis Management: Implications for Policymaking and Research." *Review of Policy Research* 26(4).

Boyd, Danah M., and Nicole B. Ellison. 2007. "Social Network Sites: Definition, History, and Scholarship." *Journal of Computer-Mediated Communication* 13(1): 210–30.

Cheng, Justin et al. 2014. "Can Cascades Be Predicted?"

Cheng, Justin, Lada A. Adamic, Jon Kleinberg, and Jure Leskovec. 2016. "Do Cascades Recur ?" *Www*: 671–81.

Coombs, W. Timothy. 2014. *Ongoing Crisis Communication: Planning, Managing, and Responding*. Sage Publications.

Coombs, W Timothy. 2004. "Impact of Past Crises on Current Crisis Communication: Insights From Situational Crisis Communication Theory." *Journal of Business Communication* 41(3): 265–89.

Coombs, W. Timothy. 2007. "Protecting Organization Reputations during a Crisis: The Development and Application of Situational Crisis Communication Theory." *Corporate Reputation Review* 10(3): 163–76.

Davis, Murray S. 1971. "That's Interesting: Towards a Phenomenology of Sociology and a Sociology of Phenomenology." *Philosophy of the Social Sciences* 4: 309–44.

Deephouse, David, and Mark Suchman. 2008. Management *Foundational Themes*.

DellaPosta, Daniel, Victor Nee, and Sonja Opper. 2017. "Endogenous Dynamics of Institutional Change." *Rationality and Society* 29(1): 5–48.

Dimaggio, Paul J, and Walter W Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational." *American Sociological Review* 48(2): 147–60.

Eisenhardt, K. M. 1989. "Building Theories from Case Study Research." *Academy of Management Review* 14(4): 532–50.

Elsbach, K. D. 2003. "Organizational Perception Management." *Research in Organizational Behavior* 25(3): 297–332.

Elsbach, K. D., and R. I. Sutton. 1992. "Acquiring Organizational Legitimacy Through Illegitimate Actions: A Marriage of Institutional and Impression Management Theories." *Academy of Management Journal* 35(4): 699–738.

Fligstein, Neil. 2013. "Understanding Stability and Change in Fields." *Research in Organizational Behavior* 33: 39–51.

Fuchs, Christian. 2017. *Social Media: A Critical Introduction*. Sage.

Goel, Sharad, Ashton Anderson, Jake Hofman, and Duncan J. Watts. 2015. "The Structural Virality of Online Diffusion." *Management Science* (May 2017): 150722112809007.

Gruhl, Daniel, R. Guha, David Liben-Nowell, and Andrew Tomkins. 2004. "Information Diffusion through Blogspace." *Proceedings of the 13th conference on World Wide Web - WWW '04*: 491.

Jin, Yan, and Brooke Fisher Liu. 2010. "The Blog-Mediated Crisis Communication Model: Recommendations for Responding to Influential External Blogs." *Journal of Public Relations Research* 22(4): 429–55.

Kaplan, Andreas M, and Michael Haenlein. 2010. "Users of the World, Unite! The Challenges and Opportunities of Social Media." *Business Horizons* 53(1): 59–68.

Martin, John Levi. 2003. "What Is Field Theory?" *American Journal of Sociology* 109(1): 1–49.

Meyer, John W., and Brian Rowan. 1977. "Institutionalized Organizations: Formal Structure as Myth and Ceremony." *American Journal of Sociology* 83(2): 340–63.

Oliver, C. 1991. "Strategic Responses To Institutional Processes." *Academy of Management Review* 16(1): 145–79.

Orlikowski, W J, and C S Iacono. 2006. "Desperately Seeking the 'IT' in IT Research: A Call to Theorizing the IT Artifact." *Information systems: the state of the field* 34(2): 19.

Rindova, Violina P., Timothy G. Pollock, and Mathew L. A. Hayward. 2006. "Celebrity Firms: The Social Construction of Market Popularity." *Academy of Management Review* 31(1): 50–71.

Seeger, Matthew Wayne, Timothy Lester Sellnow, and Robert R Ulmer. 2003. *Communication and Organizational Crisis*. Greenwood Publishing Group.

Suchman, M. C. 1995. "Managing Legitimacy: Strategic and Institutional Approaches." *Academy of Management Review* 20(3): 571–610.

Tinati, Ramine, Susan Halford, Leslie Carr, and Catherine Pope. 2014. "Big Data: Methodological Challenges and Approaches for Sociological Analysis." *Sociology* 48(4): 663–81.

Watts, Duncan J., and Peter Sheridan Dodds. 2007. "Influentials, Networks, and Public Opinion Formation." *Journal of Consumer Research* 34(4): 441–58.

Yin, Robert K. 2014. 26 Sage Publications *Case Study Research: Design and Methods*.

Yue, Lori Qingyuan, Hayagreeva Rao, and Paul Ingram. 2013. "Information Spillovers from Protests against Corporations: A Tale of Walmart and Target." *Administrative Science Quarterly* 58(4): 669–701.