

Retransmitting Messages on Social Media in Disasters: Effects of Communication Tool Capabilities

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ABSTRACT

Retransmitted messages online can have profound effects on disaster response; however, existing literature provides an incomplete account of why messages are retransmitted on social media in disasters. In particular, there is a need to theorize the capabilities of the communication tools used for sending messages, because nowadays people can send messages online via different tools. This paper aims to theorize and explain how the capabilities of communication tools affect message retransmission by affecting the generation of message characteristics. To test our account, we collected and coded Twitter data from three disasters, and employed five logistic regressions to test our hypotheses. Our results confirm our expectations that compared to messages sent from desktops, messages sent from mobile devices are less likely to be helpful and verifiable, but are more likely to have visual attachments and expressions of anxiety.

KEYWORDS

Misinformation, Disaster Management, Message Retransmission, Rumor Theory, Social Media

INTRODUCTION

Information dissemination plays a pivotal role in information management, as it dictates the extent and influence of the audience. With the rapid evolution of social media, there has been a fundamental transformation in the dissemination of information. The waning impact of traditional channels such as television and newspapers on information dissemination is being eclipsed by the rising importance of decentralized channels, for example, social media (Wamba et al., 2023; Wan et al., 2023).

In recent years, we have witnessed many significant disasters, such as floods, terrorism, and earthquakes (Kong et al., 2023; Kusumasari & Prabowo, 2020; Wamba et al., 2023). Such disasters can cause widespread human, material, economic, and/or environmental loss (Krichen et al., 2024). Our ways of coping with such events have dramatically changed following the wide use of social media, such as X (formerly Twitter), Weibo, and Facebook (Muniz-Rodriguez et al., 2020). Specifically,

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both the public and disaster management officials now rely heavily on such tools to disseminate information during disasters (Kusumasari & Prabowo, 2020).

The mechanisms of information dissemination in social media diverge significantly from traditional paradigms (Berger, 2011). Conventional information dissemination, exemplified by official news channels on television and print media, operates in a centralized and direct manner, with information flowing directly from the source to the recipient (Berger, 2011). In the realm of social media, information dissemination hinges on the intermediary nodes in the social network who have the autonomy to decide whether or not to retransmit (i.e., pass on) a message (Renshaw et al., 2021). Whether the message is retransmitted to more people is of great importance, because those messages that are retransmitted are seen more frequently and by more people (Liang, 2021; Zhu et al., 2020b). Such messages are therefore more likely to affect disaster recovery efforts (Sutton et al., 2014). Therefore, studying why these nodes are willing to retransmit information becomes crucial. By explaining factors associated with message retransmission in disasters (Chang et al., 2023; Fuhrer, 2023; Kong et al., 2023), researchers can provide helpful insights for disaster management.

To date, the nascent literature on message retransmission on social media in disasters has been dominated by two approaches: descriptive studies that identify factors associated with retransmission but that do not propose or test theoretical mechanisms (Chua & Chen, 2020; Li et al., 2014; Renshaw et al., 2021; Starbird & Palen, 2010, 2012; Zhu et al., 2020b) and theory-driven studies that focus on the effects of message characteristics on retransmission (e.g., message themes, account characteristics, or message tone) (Chua & Chen, 2020; Kim, 2014; Sutton et al., 2014). A plethora of tools are employed for the production, dissemination, and reception of information on social media, including mobile phones, desktop computers, laptops, tablets, smartwatches, and other devices. The distinct functionalities and usage patterns of these diverse devices undeniably exert an influence on the retransmission of information. However, the differences in the abilities of these tools in message retransmission has barely been investigated. This paper is motivated by the opportunity to bridge both streams of work and provide a more complete theoretical account. For descriptive studies that have suggested that tools matter, we provide and test an accompanying theoretical rationale; for studies that focus on message characteristics, we explain why researchers need to look further up the causal chain to understand how message characteristics can be driven by tool capabilities. Finally, for both sets of researchers, we provide a cohesive theoretical account (from tool capabilities and message characteristics to retransmission) that can provide a foundation for future research.

Our focus on tool capabilities is essential because, in recent years, social media has become ubiquitous, but users can use it across tools with distinctly different capabilities. To develop a context-specific account, we note that different devices have critical variations in their capabilities that could matter in disasters (Shih et al., 2013). Information systems researchers in other topic areas have also shown the need to distinguish between them (Ghose et al., 2013; Venkatesh et al., 2003). For instance, compared to desktops, mobile devices allow people to send timely messages from an affected area more easily, but they are also more difficult to type on (British Broadcasting Company, 2019; Carroll, 2005; Kumar & Zahn, 2003; Perreault & Ruths, 2011). Due to their different capabilities, their messages could show very different characteristics (Huang et al., 2020; Perreault & Ruths, 2011). By theorizing the capabilities of communication tools, we can provide a more complete understanding of the underlying reasons why messages sent from different tools have different characteristics and have different likelihoods of being retransmitted.

Accordingly, our research question is: what are the capabilities of communication tools used for sending messages on social media that can affect message retransmission, and how do they affect retransmission by affecting the generation of message characteristics? To answer this question, we use rumor theory as our theoretical foundation. Rumor theory has long been used to study communication in disaster contexts (e.g., Allport & Postman, 1946; Chua & Chen, 2020; Larsen, 1954; Ma, 2008; Oh et al., 2013). In this paper, we apply rumor theory to explain message retransmission in disasters,

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