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Social Media Knowledge Influence on a Loosely Coupled System: A Case Study of an Informal Humanitarian Initiative

Abstract: Notwithstanding that in Slovenia there is no conceptual solution that would integrate social media within formal emergency operating procedures, social media has become a tool for supporting official responses during emergencies. In this chapter, we introduce a conceptual optimization of natural disaster standard operating procedures, which reveals points at which it is possible to integrate social media with the formal response process. We take as a case study the ice storm that affected Slovenia in the beginning of 2014, which, because of the downfall of communication lines and the electrical power grid, caused the isolation of the whole region. Running in parallel with the official response, social media enabled emerging of informal loosely coupled initiatives that reacted to the humanitarian aid and the call for power generators. The efficiency of the social media-based response was high, and successfully complemented official activities. This is the first optimization approach of this kind in Slovenia, and we expect it to serve as a base ground for further research on the connection between social media and emergency management.

Keywords: Social media, knowledge influence, loosely coupled systems, natural disasters

1 Introduction

The prevalence and global reach of social media enables a viral spread of published information in audio visual, graphic or textual form. Woerndl et al. (2008, p. 34) argues that social media constitutes a core infrastructure for viral spread, supported by peer to peer interaction that selector-specifies message targets and avoids transmission dead-ends. It provides online users with tools that make information sharing virtually effortless, contributing to viral share by “encouraging the user to share feedback, provide comments, rate products, provide reviews and download item[s] for sharing with friends” (Gilfoil 2012, p. 70). Viral information spread allows decision-makers who work in a specific field to obtain important information

about that field almost immediately after the information has been published. Similar to the phenomena of social influence, whereby “individuals’ behaviors or opinions are affected by their social environment” (Xia & Liu 2013, p. 1), important information will affect the decision taken, just as it would in the case of a specific decision-maker intentionally using social media as an information source. When decisions are urgent, with high and diverse stakes, with considerable uncertainty and ignorance involved, and when trust is fragile, “decision-making needs to be understood as a process with multiple sources of information and research evidence” (Grossberndt 2012, p. 2), and social media nowadays represents an important information and knowledge source. While the worldwide reach of social media on the one hand increases the information pool for an individual decision-maker, on the other hand, it involves a crowd becoming a constantly present, yet loosely organized, decision support mechanism. “To make crowdsourcing work, there is a basic requirement to make external parties aware of the challenges or problems that need to be solved. Various digital marketing tools, especially social media platforms, provide new ways to foster the interaction between the parties” (Simula, Töllinen & Karjaluoto 2013, p. 122).

Not only has that involvement of the crowd through social media become unavoidable, but the crowd gets channeled onto the specifically designed crowdsourcing platforms that provide it with the ability to create its own contribution. “The concept of organizations as loosely coupled systems is widely used and diversely understood” (Orton & Weick 1990, p. 203). Glassman (1973, p. 83) set the definition of loose coupling as interaction among activities shared between two systems with the condition that there are only few such activities, or that they are weak when compared to the others within the system. Further, Weick (1976, p. 2) describes a loosely coupled system as an organization in which entities connect with weak links which allow them to retain their own identity and separateness. Principles of loosely coupled systems can be identified in a wide range of organizational practices. Frandsen, Morsing and Vallentin (2013, p. 238) presented a loosely coupled approach for sustainability adoption; Moilanen (2011, p. 138) found that loose coupling as a managerial tool may stimulate generative organizational learning. The question arises of how such systems perform when triggered by emergency events relating to public safety or

homeland security issues. Koven (2010, p. 353) criticized official public and private response during hurricane Katrina, even though Busch and Givens (2012, p. 16) found public–private cooperation an important factor that strengthens national resilience. Holguín-Veras et al. (2012, p. 15) identified similar deficiencies in response during catastrophic events such as hurricane Katrina, the earthquake in Haiti and the tsunami that affected Fukushima, arguing that the most difficult part of the necessary solution was to integrate all segments of affected society into the response. A similar discovery was made by O'Brien et al. (2010, p. 504), but emphasizing community and social learning to support resilience building. Even though many authors have researched loosely coupled systems, the problem of how knowledge interaction within such system influences process patterns has not been studied to its full extent.

In this chapter, we present the influences and contributions of social media and the following consequential phenomena: information spread, communication, fieldwork coordination and crowdsourcing in the context of disaster management and standard operating procedures, using workflow diagrams. The case that we analyzed dates from the beginning of 2014, when the ice storm hit most of Slovenia and heavily affected the Notranjska region. We determined the importance of social media within the response process of the loosely coupled response initiatives that took place 150 km away in the Posavje region, which felt minimal consequences from the storm. We used the method of observation in order to follow the response process from the widest possible perspective. Further on, we conducted semi-structured interviews with key entities that were active within the initiatives and also gathered information about the temporal dynamic of the social media activities that are available online on the social networks that were used during the response. We used a process modelling method to construct a workflow diagram of response initiatives and additionally developed a knowledge map that reveals the influences of social media in the response process. For modelling we used the additional knowledge module, developed for process-knowledge interaction indication on the basis of “TAD methodology” (Damij 2000, p. 23).

The contribution of this research is presented within the graphic optimization model that provides us with insight as to what potential there is to include social media, and the crowd that is using its services daily, in the

standard operating procedures of the national disaster protection system and how such inclusion could increase the efficiency of the formal response process.

2 Method

For the purpose of this paper, we conducted a literature review to be able to determine the state of existing knowledge. We collected data, used in the research through the observation method, where we recorded all necessary aspects of the research object. We also gathered information from the online media portals and social networks. Further, we used a business process management simulation environment to create a response process model, which served as a base structure for building a knowledge map. Using the same concept, we developed a process optimization of a national standard operating procedure.

3 Influential Incident Information

Depending on the source and magnitude of the incident, local emergency informing and alert mechanisms together with local media will be the earliest sources to provide gathered and processed information to the public. Nevertheless, these sources will not be the only or the very first, neither will they affect the wider community as significantly as the content spread through social media. A report by the Slovenian Environment Agency about the ice storm between January 30 and February 3, 2014, reveals that an early warning was issued on January 30 at 9am and an additional warning that forecasted heavy snow storms was issued at 6:30pm. On January 31 the media began covering the sensational weather phenomenon and its consequences, with titles such as: “Snow Causes Truck Accidents and Chaos on the Roads”; “After the Snow, Rain and Slipperiness”; “Trees on Railways Cause Delays”; “Weather Will Hinder Any Movement”; “I Wanted to Cry”; “Emergency in Pivka: Children in Schools without Electricity and Heating”; “Helpless: You Cannot Enter the car, Nor Control It”; and “Meteorologists: This Is Not the Usual Weather”. Even though meteorological alerts were issued and the media covered the news promptly, the daily emergency response reports of the Administration for Civil Protection and Disaster Relief for January 30 to January 31 reveal that people

in the affected regions were not fully aware or prepared for the oncoming disaster. Reports (URSZR SPIN, 2014) reveal that 27 car accidents occurred in 24 hours due to adverse weather conditions and that there were more than 40 technical interventions caused by an underestimation of the weather conditions.

Higher awareness of the seriousness of the situation came with the spread of the graphic and audiovisual content published online by individual social network users. Citizens of the most affected region began taking and publishing visuals of the landscape captured in ice. Local media which usually focused its reach on a regional level had first-hand information on the ice severity and began publishing the information through social media, causing its spread nationwide. It was not until February 2 that, through their web portals, larger media companies first brought attention to the situation. Topics like “Red Alert for Slovenia, No Classes for 75 % of Schools, 80.000 Households without Electricity” were highlighted on the morning news, and less affected Slovenian regions slowly got a realistic impression what was happening in the Notranjska region.

February 2 is also the date on which the Administration for Civil Protection and Disaster Relief published its first briefing on the situation in Notranjska region and issued instructions on how to react during the emergency. From January 31 until February 2, social media allowed the viral spread of influential information that consequently triggered an unofficial response of the crowd. In the crucial moments when other means of communications (including the national emergency system of radio communications) failed due to the breakdown of the electricity network, social media became the only communication channel that allowed communication among individuals and organizations.

4 The Emergence of Loosely Coupled Initiatives due to Social Media Intervention

In the case of the ice storm and the consequences that followed we easily distinguish between formal and informal responses; formal separates local action conducted by local government from regional action that is organized and implemented by the national government's Administration for Civil Protection and Disaster Relief. At the time of ice storm neither at local