

Chapter 9

Communication Process of Disaster Management: Shift From Web 2.0 to Web 3.0

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ABSTRACT

The importance of effective and timely communication is critical in disaster management life cycle. With the proliferation of communication and web technologies, the challenge has now shifted from the availability of information to the efficient handling of the sheer amount of information available online. This has attracted researchers and practitioners to find ways which can facilitate individuals and organizations in their decision making while dealing with large amounts of online data. This chapter presents (1) the evolution of web technologies from Web 1.0 to Web 3.0, (2) the overview of communications tasks involved in disaster management, and (3) the literature survey on the pros and cons of Web 2.0 and Web 3.0 in disaster management. By comparing the role of Web 2.0 with Web 3.0, the chapter also attempts to explore how the communication tasks of disaster management could be improved using Web 3.0. It is anticipated that the findings of this chapter will assist the decision makers to use Web 3.0 as a strategic tool for effective communication in disaster management.

INTRODUCTION

Web technologies especially the Web 2.0 (the terms generally used interchangeably with social media) became an integral part of billions of peoples' lives around the world. Web 2.0, as a mode of a communication, has become the preferred communication channel when it comes to communicating with ease, effectiveness and with low cost. Web 2.0 enable the end users to set up their own websites and blogs, post videos, and fill the web with user-generated content. People with little Hyper Text Mark-up Language (HTML) experience could set up a decent website through third-party software. Like the individuals' use, the organizations have also realized the value of Web 2.0 for activities like marketing, promotion, and outreach. There is a growing number of organizations using these technologies for connecting with their customers and building online communities. Over the last few years, it has been witnessed that not

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only commercial organizations are considering Web 2.0 as an important communication channel to reach out to their existing and potential customers, the organizations working in disaster management have also opted for Web 2.0 applications to reach the masses before, during and after the crisis. The review of recent literature on disasters such as Haiti (Gao, Barbier, Goolsby, & Zeng, 2011), Chile earthquake (Ahmed & Sargent, 2014; Alexander, 2014) proved the critical role that Web 2.0 played during these crises. There are several examples when large volumes of data (in the form of blogs, posts, and messages) were created by the individuals and organizations within few moments of disaster strikes.

Study of recent events suggests that though the large volumes of data created on Web 2.0 are valuable, the excess of the data could easily turn into data overloading where potential recipients struggle to extract meaningful information from available sources of incoming data. According to Schwarz (2012), it is highly likely that the massive stream of user generated content contains pieces of highly relevant information that is not known to its potential recipients. To deal with the massive influx of data on Web 2.0, the agent-based mechanism (referred as Web 3.0) was introduced a few years ago. The aim of Web 3.0 is to replace humans with software agents for better collecting, harvesting, distributing and analyzing the data available online (Workman, 2016). There are several articles that describe the architecture, use and the value of Web 3.0 and its importance in effective decision making (Gretzel, 2015; Nayar, 2015; Rudman & Bruwer, 2016). However, to the extent of our knowledge, there is not much literature available that compares Web 3.0 with Web 2.0, particularly for disaster management. This chapter offers a conceptual, non-empirical review of the work done by Ahmed & Sargent (2014) and employs it as a theoretical underpinning to evaluate the significance of Web 3.0 for various communication tasks of disaster management. A systematic review of literature is also conducted to support the findings of this study. It is anticipated that the findings presented in this chapter would extend the existing understanding on the use of Web 3.0 in disaster management.

The chapter is structured into four sections. Section one highlights the key characteristics and the overview of various web technologies such as the Web 1.0, Web 2.0 and Web 3.0. Based on the recent work by Ahmed & Sargent (2014), section 2 presents the overview of communication process involved in disaster management. Section three summarizes the process and key findings of the literature review related the limitations of Web 2.0 in disaster management. Finally, the chapter is concluded with the summary of the role of Web 2.0 and Web 3.0 and the recommendations to consider Web 3.0 as a strategic communication channel in disaster management along with the future research directions.

EVOLUTION OF WEB TECHNOLOGIES

The first web page <http://info.cern.ch/hypertext/WWW/TheProject.html> was developed by Tim Berners-Lee and launched on August 6, 1991. It was dedicated to information on the World Wide Web (WWW) project and ran on a NeXT computer at the European organization for Nuclear Research, CERN. The value of a web page was soon realized as a tool by which businesses can send their information to their existing and potential customers via the internet. Soon after its inception, web pages become a popular avenue to host organizational information online. Initially, an expert (referred as '*Webmaster*') was responsible for creating static websites and uploading information that can be viewed by the end users (Lafuente, 2016). It was only the *Webmaster* who could edit the contents of the web page to reflect any update. The end users were only able to visit and access the existing information on the web pages but were not able to edit them. Primarily, these static web pages offered one-way communication (from

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