Chapter 3.13

Achieving Electric Restoration Logistical Efficiencies During Critical Infrastructure Crisis Response:
A Knowledge Management Analysis

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ABSTRACT

After the 2007 Southern California wildfire events, event-assessment of the efficacy of spreadsheets and paper forms raised the question of whether alternative tools could have achieved greater efficiencies in the logistical support of command centers, the sites from which the local utility's electric restoration personnel were deployed. In this paper, the authors examine what approach would have enabled personnel working on the logistics of the command center effort to have easier-to-use, faster-to-access, command center data stored in, and provided via, a catastrophe resilient platform other than the traditional company computer network. Additionally, the capability to store basic command center requirements from previous emergency responses, thereby saving time during the next emergency, was examined.

INTRODUCTION

Gas and electric services in the County of San Diego are provided by San Diego Gas & Electric Company (SDG&E), an investor-owned public utility. Many useful issues can be analyzed from the wildfires that damaged SDG&E's electric system in 2003 and 2007 and certain activities that supported efficient service restoration can be examined and used for comparative analysis for a terrorist attack scenario, earthquakes, wildfires, or any other event that might impact service delivery.

This paper analyzes the logistics support provided during the wild fires to determine what could be improved. This is an important topic as there is little research literature addressing crisis response logistics. Whybark et al. (2010) discuss disaster relief supply chains but only propose a research agenda. We agree there needs to be research in this area and start with this case study. Logistics/supply chains ensure that responders are able to sustain disaster relief. Their importance is illustrated by the response to the 2009 Haiti earthquake where ships and supplies stood empty or unused off the coast because of an inability to deliver supplies and evacuate injured. Keeping responders in the field is critical for long term disaster relief. Providing relief is critical for affected persons and societies to recover. This paper hopes to start this important research area by exploring alternatives to the spreadsheet approach used in the 2007 wild fires.

Finally, the research question for this paper was what alternatives could be used in lieu of paper forms and spreadsheets to achieve more accurate, timely logistics data and solutions?

METHODOLOGY

This paper is a case study using action research to assess whether future activities by the command center support teams can be influenced to convert from paper forms and spreadsheets to something more real-time, as a new solution for crisis response.

The working definition of action research (Zuber-Skerrit & Fletcher, 2007, p. 413) incorporated situations where people reflect and improve (or develop) their own work and their own situations by tightly interlinking their reflection and action; and also making their experience public not only to other participants but also to other persons interested in and concerned about the work and the situation, i.e. their public theories and practices of the work and the situation, and in which the situation is increasingly: data-gathering by participants themselves (or with the help of others) in relation to their own questions; participation (in problem-posing and in answering questions) in decision-making, self-reflection, self-evaluation and self-management by autonomous and responsible persons and groups. This study is action research as the lead author is a team lead of the SDG&E supply chain systems team tasked with assessing logistics performance.

Reflection for this study was done using knowledge management, KM as the reflective lens. Jennex (2005) summarized KM definitions to conclude that KM is about capturing knowledge created in an organization and making it available to those who need it to make decisions and improve organizational performance. Jennex (2007) discussed the role of KM in crisis response and included the role of post event evaluation of lessons learned as a way of capturing knowledge generated during an event and ensuring that knowledge is shared and incorporated into crisis response activities. This implies that KM is a good reflective lens for crisis response research.

The ability to apply KM to the 2007 command center logistical effort and how it can benefit future emergency responders corresponds to KM in support of crisis response as expanded upon by Jennex and Raman (2009). The underlying KM principle upon which this study is constructed are that experience gained from one emergency can be

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