

KNOWLEDGE MANAGEMENT IN SUPPORT OF CRISIS RESPONSE

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ABSTRACT

Most organizations face difficult challenges in managing knowledge for crisis response, but it is crucial for response effectiveness that such challenges be overcome. Organizational members must share the knowledge needed to plan for emergencies. They also must be able during an emergency to access relevant plans and communicate about their responses to it. This paper examines the role and relevance of knowledge management (and knowledge management systems therein) in support of crisis response. We begin by discussing what knowledge management and crisis response mean. We move on to suggest why crisis response efforts within an organizational context, might benefit from knowledge management initiatives. Specific examples of how knowledge management efforts have supported crisis response in the past are then presented. We end by offering researchers with some suggestions for future research work in light of this subject domain.

INTRODUCTION

Knowledge management (KM) is about capturing knowledge created in an organization and making it available to those who need it to make decisions [7]. Crisis response is about making decisions under stress and time pressure [9]. While it would seem natural to use KM to support crisis response decision making; a review of the literature pertaining to implementation of KM and KM systems (KMS) finds little published research. However, events such as the 9/11 terrorist attacks, the London subway bombings, the 2004 tsunami, and Hurricane Katrina have spurred interest in research in crisis/disaster/emergency preparation/response (henceforth referred to as crisis response). This has led to a small but growing body of research focused on examining KM and KMS support for crisis response. Accordingly, the purpose of this paper is to help researchers and managers to better appreciate and understand the relationship between KM, KMS, and crisis response.

WHY CRISIS RESPONSE NEEDS KM?

Crises can happen at any time making it difficult for organizations to have the right resources where and when they are needed. Most organizations don't have experience with real emergencies so they need to take advantage of all available experience as decisions need to be made fast and under stress and high tension circumstances. The complexity of communicating, collaborating, and decision making processes in the context of crisis response efforts cannot be undermined.

The above paragraph implies that an organization's ability to survive given dynamic changes within its environment is contingent upon its ability to quickly respond to change, in a crisis mode. This includes the ability to effectively manage its knowledge resources. Burnell et al. [1] assert that "an effective knowledge-based organization is one that correctly captures, shares, applies and maintains its knowledge resources to achieve its goals" (p.203). This echoes the view of March and Simon [8] who state that successful organizations are able to adapt to any dynamic environment. The information processing

theory states that the role of having accurate and up to date information is vital particularly when organizations deal with a turbulent environment [8]. Integrating KM processes can support managers to proactively respond to a highly turbulent environment and will benefit an organization. This would include organizations that plan and prepare for emergencies and crisis response situations [5].

A crisis response center deals with various stakeholders during a crisis situation. Different stakeholder groups often have different skills, resources, technical expertise, and more importantly experience in responding to a particular crisis. For any crisis response center, issues such as managing different stakeholder expectations, priorities, and the various resource and skill sets they bring into an actual crisis response mode, is complex and dynamic. This could lead to difficulties in making accurate decisions, under time-pressured and intense situations, while responding to a particular crisis. In this context, we suggest that a KMS can be used to capture and then re-use specific crisis response knowledge which can be used to support decision making when a crisis actually occurs. The Practice of selectively applying knowledge from previous experiences during turbulent moments of decision making, to current and future decision making activities with the express purpose of improving the organization's effectiveness, would be possible via a KMS. In addition, we further add that given the dynamic and complex nature of crisis situations, coupled with different inputs and requirements from various stakeholder groups, a crisis response manager and centre are subject to information overload, which can prevent timely and accurate decision making. A well tested and implemented KMS can apply knowledge from previous disasters to guide decision makers to what to look at, how this information should be visualized, what decisions to focus on, and what decisions can be made automatically and/or in advance.

EXAMPLES OF KM IN CRISIS RESPONSE

KM in crisis response is used to help organizations plan, respond, and review crises. KM helps by capturing crisis response knowledge, connecting crisis response experts and enabling knowledge flow, and capturing and implementing rules, lessons learned, and experience in crisis response procedures, work processes, and organizational structure. The large number of groups that may respond to an emergency all need access to a wide range of real-time information and knowledge that requires coordination. Groups have proposed and created KM enhanced Emergency Response systems that allow for more efficient use of data and faster response. One example is the Information Management System for Hurricane disasters (IMASH) [2]. IMASH is an information management system based on an object-oriented database design, able to provide data for response to hurricanes. IMASH was designed with the premise that the World Wide Web is the medium of choice for presenting textual and graphical information to a distributed community of users. This design is much more effective in the fast-changing environment of a natural disaster than the historical use of static tools which, out of necessity, have been the tools used in disaster response. KM is used in this example to connect experts and facilitate knowledge flow as well as to capture and implement experience in what information is needed for responders. Another similar example is from Kitamoto [4] who describes the design of an information management system, Digital Typhoon, designed to provide a hub of information on the Internet during a typhoon disaster.

Murphy and Jennex [9] added knowledge management, KM, to the expanded Crisis Response System model proposed by Jennex [6] and showed how it was used in open source developed systems used to aid in the response to Katrina through the implementation of the Peoplefinder and Shelterfinder systems. Another application of KM to emergency response is in identification of the decision/hand off points. KM is applied through the generation of guidelines, rules, and procedures that govern these points. As experience is gained and lessons learned, the criteria guiding the declaration of these points is modified

to incorporate this experience. The benefit to emergency responders is that decision making with respect to these points is simplified and guided, reducing the stress on the decision maker.

Raman, et al. (2006) discusses the use of wiki technology to facilitate KM for emergency response systems. It is expected that open source technologies such as wiki technology will be used to improve connectivity and communications between diverse groups needing to communicate during an emergency. It is expected that increased use of knowledge based systems and KM will continue for emergency response. Improved KM technologies for storing, searching, and retrieving knowledge will be used to integrate KM into emergency decision making [9].

CONCLUSION

KM is a relatively young field. The fusion of crisis response with KM is even younger. Many questions are yet to be answered in this research domain. Cases on crisis management and how KM efforts were used or are applicable to them are needed as is quantitative studies. This would be of value to the KM and crisis management practitioner community. Issues inherent in the context of transferring knowledge between crisis responders in all three phases of pre, during, and post crisis periods would be of interest, particularly issues involved with codification and transfer of tacit knowledge embedded within experienced crisis responders. Other areas from a more technical perspective warranting research is in examining the role and relevance of semantic websites, use of ontologies, data fusion and visualization technologies, collaborative technologies and sense making technologies in light of crisis response.

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