

## Chapter 3

# An Overview of Disaster and Emergency Management Systems Models

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### **ABSTRACT**

*Emergencies and disasters can cause immense physical, emotional and financial losses to individuals, organisations, and larger scale countries. These emergencies and disasters can fundamentally cause casualties, and in many cases, loss of life. Psychological and financially the impacts on individuals, organisations and countries can be irretrievable due to the impact of the disaster or emergency. Emergency management systems provide a multi-level overview of emergency environments. Bearing the current emergency management models in mind, this article looks at reviewing the existing six models in order to provide a solution for a more comprehensive emergency management system for implementation. If emergencies are managed effectively, these negative impacts can be removed or at least minimised. The article evaluates with an extensive literature review, how to develop a holistic framework to address the shortfalls of existing models.*

### **INTRODUCTION**

Systems which are used within emergency management are significantly responsible for enabling decisions to be made effectively and thus enabling key resources to be implemented within areas where natural emergencies are prevalent (McCarthy et al., 2016). The emergency management systems which are used significantly and applied to natural emergencies in undesirable events are required to follow a criterion based approach which have an impact on the critical infrastructure within the environment. When a natural emergency occurs, the method used to inform authoritative bodies of the emergency requires a formal alert. This alert system should underpin the key areas where an abnormal situation arises, and which is having a direct impact on normal conditions within the environment. The key objective here is to reduce, remove and prevent economical and physical losses through the implementation of an emergency

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management alert system (Kapucu & Hu, 2016). Where there is a case of natural emergency occurring, the main concern remains to reduce damages and in particular the costs associated with the emergency and implement a defense mechanism was required in all cases where there is an emergency an immediate intelligent, informative reaction is necessary (Blaikie, Cannon, Davis, & Wisner, 1994). This paper highlights key thematic areas; crisis management, emergency management and emergency management. It is necessary here to highlight the constructs which can be applied to natural emergencies which are similar in their destructive nature, but which fundamentally have individual characteristics that highlight a variance. Risk management when applied to a natural emergency setting enables the identification, prioritising and the fundamental assessment of natural emergencies. This cycle is therefore followed by focusing particularly on the synchronised and economical use of key resources in order to reduce, monitor and control the likelihood and the effect of natural emergencies, moreover this approach enables the fundamental understanding of the opportunities that are available when a natural emergency occurs.

Where risks are applicable within risks that occur; areas such as failures, natural causes, accidents and natural emergencies in accordance with deliberate attacks; for example, terrorist attacks need to be eliminated or minimised (Li, Li, Liu, Khan, & Ghani, 2014). Within this natural emergency evaluation crisis management is essentially required in order to comprehend what key threats may impair organisations (Karavas, Kyriakarakos, Arvanitis, & Papadakis, 2015). There are a number of essentials which are key to crisis management, these range from the notion of immediate or direct threats to an organisation, the impact of a natural emergency which causes incredulity and finally a focus on the limited period of making and formulating a decision in the event of a natural emergency. In divergence to the previous focus on risk management which clearly establishes an understanding of risk management and finding alternatives to avoid risks, which in essence focus on ensuring and measuring potential threats and focusing on how to reduce those threats the elements of crisis management endeavour to apportion threats after they have befallen.

It is an area where the control within the greater focus of management aimed at the techniques and skills associated to identifying, understanding, assessing and coping with critical situation, essentially from the time the event initially occurs to the event of actually addressing the impact of the emergency in order to formulate a recovery (Blaikie, Cannon, Davis, & Wisner, 1994). There are key elements which are outlined within a crisis management model, in essence the diagnosis, and the signals which outline the dangers associated with the emergency. In essence the necessity to change and suggest alternatives are key in developing a turnaround strategy. Further to this the move towards the monitoring and its change process which then necessitates an outcome. Emergency management itself is defined as an area of addressing and avoiding any risks that occur. This requires understanding the fundamental of mitigation, preparedness, response and recovery of the emergency which has occurred (Hughes & Palen, 2012). It is important to appreciate here that there are very limited essential differences in relation to crisis management and emergency management as a whole (Karavas, Kyriakarakos, Arvanitis, & Papadakis, 2015).

Emergency management is an area which will be discussed in terms of emergency management models. Emergency management deals directly with the notion of assessing and dealing with a long-term focus of organisational management processes which are essentially applied to ensure critical assets of an organisation from risks associated with hazards, whereby it is inevitable that catastrophes and emergencies occur. In essence, it is important to ensure the continuation within the lifetime of the emergency management system in order to address this problem.

Hazards are categorised as being caused by natural impacts or from human-made impacts (Asghar, Alahakoon, & Churilov, A Comprehensive Conceptual Model for Disaster Management., 2006). The

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