Chapter XIV
Information Sharing: A Study of Information Attributes and their Relative Significance During Catastrophic Events

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ABSTRACT

We live in a digital era where the global community relies on Information Systems to conduct all kinds of operations, including averting or responding to unanticipated risks and disasters. This can only happen when there is a robust information exchange facilitation mechanism in place, which can help in taking quick and legitimate steps in dealing with any kind of emergent situation. Prior literature in the field of information assurance has focused on building defense mechanisms to protect assets and reduce vulnerability to foreign attacks. Nevertheless, information assurance does not simply mean building an impermeable membrane and safeguarding information, but also implies letting information be securely shared, if required, among a set of related groups or organizations that serve a common purpose. This
chapter will revolve around the central pivot of Information Sharing. Further, to study the relative significance of various information dimensions in different disaster situations, content analyses are conducted. The results hence obtained can be used to develop a prioritization framework for different disaster response activities, thus to increase the mitigation efficiency. We will also explore roles played by few existing organizations and technologies across the globe that are actively involved in Information Sharing to mitigate the impact of disasters and extreme events.

**INTRODUCTION**

Information assurance is the process of ensuring that the right people get the right information at the right time. This term is sometimes used interchangeably with information security but in a broader connotation, it is a superset of information security and also comprise of managing relevance, integrity, accuracy, authentication, confidentiality and other similar attributes of information (Thomas, Ang, Parbati Ray, & Nof, 2001). The main thrust of this chapter is on Information Sharing, which plays a crucial role in mitigating dire consequences of any disaster or threat to our social/business infrastructure. Here we will be analyzing different attributes of information which will also be referred to as information quality dimensions in the sections ahead and will draw some inference on deciding about their priorities during different kinds of disaster. So we will be studying information assurance through the spectrum of Information Sharing during disasters. It is important to note here that the terms disasters, emergency, crisis, calamity and catastrophe, all may have different meanings in their respective fields. However, as a part of this chapter, all these terms refer to the same context and may appear interchangeably. Similarly, information attributes and information quality dimension are both assumed to mean the same.

Information Sharing is a fundamental component of a successful security program. With the high-level of inter-dependent business operations among business partners and automated control systems, organizations can derive value from accessing and sharing appropriate information. Nevertheless, doing the same in a secure fashion is indeed a daunting challenge, since we have to deal with information content that ranges from the simple to the complex (e.g., travel records, weather information, citizenship records, financial information, intelligence reports, military positions and logistical data, map data, etc.) in an interoperable environment that is constantly changing (Phillips, Ting, & Demurjian, 2002). Therefore, it becomes very important to understand the significance of various information attributes during any disaster management operation, because handling information in a way that can facilitate the special information needs of the particular disaster will expedite the relief operations. Our interest is to help disaster management organizations (DMO) prepare a framework for quick and secure Information Sharing that is required in response to a crisis, e.g., natural disaster (earthquake, hurricane), terrorist attacks (biological warfare or explosions), etc.

**Background**

In the United States, there are approximately 30,000 local governments, 30,000 local fire departments, 18,000 local police departments, 15,000 school districts, and 3,400 county governments (Pelfrey, 2005). Many organizations collaborate together for responding to a major disaster; for example, during the disaster response of 9/11 terrorist attacks in New York City, there were 1,607 governmental and non-governmental organizations involved (Kapucu, 2004). Major international volunteer organizations such as the
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