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## **Efficacy of International Standards on Logistics in Disaster Management**

### **Case Study: National Crisis Management Center, Thailand**

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#### **Abstract**

As one of the tsunami affected countries in December 2004, Thailand realized a need for and subsequently established a national crisis management center (NCCMC). The key purpose of establishing the NCCMC was to streamline logistical issues in disaster management. These logistical issues mainly related to ways in which to bring in and deploy proper resources legally to the affected area and people in a timely manner. Challenges exist due to the fact that more than twenty government and non-government unit functions are involved in disaster management. Each government unit function has different rules and regulations to follow. It is currently even more challenging to bring in the various international standards (ITU, ISO, etc.) to use in disaster management. This research addresses the key findings of the potential effects in adopting international standards in disaster management, especially in the area of command control coordination and communication.

## **1. Introduction**

Despite efforts in forecasting and preventing disaster disruption, it is still unavoidable. Even if disasters occur infrequently and last for only a few moments, the catastrophic toll on property and life are devastating. The disaster or emergency disruption in this paper refers only to the kind of aforementioned disastrous events. A systematic approach in finding and preparing mitigation measures in protecting all resources and lives should be undertaken well in advance. A default executive decision maker in charge of the situation might indeed have no experience in dealing with this kind of disaster. This is in part due to the fact that the top executive position is based on political appointment. The challenges in managing emergency responses are to be able to locate, identify, move and deliver the proper resources (staff, victims, commodities, life saving equipment, etc.) in the right places in a timely manner. Since various resources belong to various organizations, the logistics in delivering the right resources require an efficient flow of the right information within a short notice period. Disaster operations management research is widely cross functional as suggested by Atlay and Green (2006). They review and classify 109 disaster related academic journals based on the authors, methodology, operational stages, and disaster types. Green and Kolesar (2004) point out the role and the issues in applying Management Science in real-life emergency situations. Yi and Ozdamar (2006) is an example of a paper which uses OR techniques of mixed integer multi-commodity network flows in modeling the disaster response activities. Despite the potential contributions of OR/MS research in the disaster management operations field, the related OR/MS papers in Thailand cannot be located. Since the relevant decisions in managing the disaster activities belong to the authorized government agencies, exposure to this kind of information for Thai scholars is limited. Given the chance to

participate in the technical committee in developing international standards in societal securities, studying and interviewing various Thai government organizations which are involved in emergency response, this paper addresses key findings which relevant to the OR/MS researchers. Through further study, the tools that aid in disaster/emergency decision making should be further developed. After doing SWOT analysis of disaster management activities for Thai officials, we found a need to establish a national crisis management center (NCCMC) to streamline the logistics activities. Section 2 points of the key concepts of establishing the centralized disaster coordinator and command post. Section 3 and 4 address the standardization issues and potential effects on the various emergency responder groups. Section 5 concludes the paper.

## **2. National Crisis Management Center (NCCMC)**

In the Tsunami disruption in December 2004, the scope of involvement included more than 5 ministries, over 20 large NGOs and government unit functions, thousands of local and international staff, volunteers, victims and their families. With the communication disruption, unknown authorized commander in chief, unplanned and weakly coordinated works among the staff and volunteer, emergency logistics were the key challenges. Stephenson (1993) pointed out that emergency logistics is a systems exercise involving integrated and coordinated performance from widely scattered groups of skilled specialists. Since it is difficult for the single organization unit to have enough staff and resources in order to perform the emergency works. The ability to identify, locate, reallocate, move and deliver the appropriate resources (supplies) to the right and needed places (demand) with short notice are key success factors in managing the emergency response. In addition, it is often the case that

relief logistics need military assistance. Unlike in the military operations in which command and control are precise, government agencies often receive assistance from cooperation and coordination with other government agencies across the ministries. Since each ministry has certain rules and regulations to follow, difficulties can arise in deploying resources in emergencies.

Understanding of the challenges in emergency logistics, the national crisis management center is now established. The center is aimed at serving as a central coordinating unit in a preparedness stage and to serve as a central command post in the emergency disruption stage. The center will focus on facilitating good information flows among the related key players and actively monitoring and gauging the risk, impact and the readiness of the key players. The guidelines in triggering the command post and declaring a state of emergency have been identified. In the case of the emergency, the center will strategically decide remotely from the command post on the relief operations and logistical issues. The center is designed to be compact with no field operational staffs except for the emergency response team, which is involved only in emergency assessment. To promote cooperation, the center is administered by committees with executive decision makers from key organizations. The tabletop exercise is to be used in coaching the executive committee members.

### **3. Perspective on International Standard**

For the benefits of sharing the technical know-how, ensuring the technical compatibility, facilitating the technology transfer, and promoting the coordination and cooperation amongst country members, the International Standard for the societal security (ISO/TC223) establishment is on-going. It is acceptable in the general scope of the standard which aims in strengthening the capabilities to respond in emergency

by resolving the inter-organizational barriers that limits the exchange of information, resources and knowledge. Nevertheless, the detailed topics, especially part of the third working group (ISO/TC223/WG3) “command control coordination and cooperation”, needs to be justified. The term “command and control” which reflects the authorization issues especially common in the military is somewhat ambiguous in the context of international standards. It is the authors view that, the standard areas should be focusing in facilitating the information interoperability and information exchange such as developing common terminologies and data exchange protocols, utilizing common record keeping, establishing emergency warnings, managing procedures, etc. In order to share or bring in the right resources at the right place at the right time from various organizations, the standardization should promote only the “coordination and cooperation” activities (not the “command and control” activities) amongst the members. The international standard should be implemented mainly as a guideline to get the international cooperation - not as regulations to follow.

#### **4. Possible effects of International Standard**

In this section, potential affects of utilizing the standards for various key players in emergency response in Thailand have been identified. Besides the need of maintaining up-to-date, reliable and well-organized information; interoperability and exchanged protocols are key issues in utilizing the standards to quickly exchange necessary information among the key organizations.

For groups which are related to emergency response in the area of risk assessment, capacity assessment, and impact analysis in case of the disruption, the standards should help in establishing more systematic thinking in situation assessment, relief logistics, restorative measures and records keeping. For the mass impact organization

such as life line utilities, the critical operations and setting up recovery time objectives should be identified so that no time is lost during the emergency. Since this group applies to the authorized first response teams which report the key findings directly to the central command post. This should aid in better decision making for the responsible authorities in allocating the right resources in case of unforeseen emergency circumstances.

For groups which are related to emergency response in the area of disaster warning, rescue and saving life, or providing life support (food, supply, shelter, health and medical) the international standard terminologies, sign, and symbols should be aligned for better communication and better understanding for the emergency victims. This is important since the potential victims can be from various regions and speak different languages. In some circumstances it is necessary to bring in experts and aid staff from different countries and various NGOs, so the standardization should help to reduce the language barrier, and align understanding of the right emergency situation under time pressure. Standardized procedures for first aid emergency, medical services, and records keeping should ease in transferring the victims to getting the proper medical treatment later on. Some standard operations in this field already exist.

For groups related to forensics and law enforcement, the standard procedures in investigation, keeping the evidence and record keeping should ease in transferring the case to various authorized (government) agencies and transferring the case aboard. Due to the nature of the law enforcement process, sometimes it takes a long time to close the case.

For groups involved in hazardous material and biological agents, standard handling and record keeping plays vital roles. It is due to the fact that mismanagement has the

potential negative impact on the large communities that bringing in the experts from outside might be necessary in emergency situation.

For groups related to logistics support, standards in maintaining up-to-date emergency situation, operational constraints, and resource information such as contact lists of the staffs, multimodal transportation routes, map, and resource inventories from the various organizations are important. In the emergency situation, it is often the case that the planned assets, resources, and staff might not be enough. There will be unforeseen or unplanned circumstances that require additional support from different organizations. By having accurate and up-to-date information of the various resources (supplies), disruption areas (demand) and the available delivery options, the appropriate supplies from various sources can be arranged and delivered at the quantities, places and time they are needed. This operations unit group applies to the authorized official disaster coordinators who oversee all key activities in emergency response operations.

## **5. Conclusion**

Besides effective training and exercises in mock situations, the standards in various aspects of disaster activities and exchanging information need to be used to promote coordination between various key emergency response agents. At international cooperation levels, the establishment of international standards should be flexible enough for the various organizations to adopt. Awareness of the impact of disaster catastrophe and the complications of disaster management activities, Thailand decided to establish the central disaster coordination and command post.

By strategically deciding on the ways to handle the emergency situation from a holistic approach involving experts from various fields, this should produce an effective result. However, coordination in supplying vital information in the

preparedness stage can often be difficult especially when dealing with most government agencies. The data gathering process has proven to be the most difficult task. In aligning the interest of sharing the right information to the central coordinator in the preparedness stage, the cooperative indicator level should be one of the key performance assessments for each organization. In addition, the proper incentive (annual budgeting) might need to be justified. However, sharing the right information from the various agents tends to have fewer difficulties for the command post. By allowing the study of and interviewing of various key agents in emergency response in Thailand, the author believes that there exist lots of opportunities in applying various OR/MS techniques in aiding more efficacious disaster management activities.

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