

A MENTAL MODEL APPROACH TO MEASURE THE EFFECTIVENESS AND RELEVANCY OF COMMUNITY BASED DISASTER MANAGEMENT ACTIONS IN NAGOYA, JAPAN*

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1. Introduction

Every time when we think about any risk management plans and activities we have in mind some actions that were designed and implemented for the achievement of better safety, risk preparedness etc. no matter what kind of risk we have in mind. There has been done many research on community participatory management and many approaches has been developed and designed for the purpose of evaluation of the management activities. Some of them are process oriented¹ and some of them are outcome oriented². Every evaluation is different and depends on the specific context and its needs. The community disaster management context needs to achieve better safety through better preparedness. Preparedness can be defined as an increase or correction of knowledge and as learning or correction of “safe” behavior. In order to assess whether present approaches and community management plans and activities are effective in terms of increasing safe knowledge and safe behavior, their effectiveness has to be evaluated. As an effective tool for such evaluation the Mental Model Approach³, the behavioral aspect and the relationship between the knowledge and behavior is not taken into account in this work, yet, and will be the topic for future studies.

2. The Mental Model Approach for risk communication-based procedure for the evaluation of community-based disaster management in Nagoya.

Currently in Japan the community-based participatory disaster risk management based on the NPO organizations is very important issue. It is so, because during Kobe 1995 earthquake local governments realized that they are not able to provide enough help to citizens who additionally were not enough prepared⁴. The purpose of the NPO activities is to raise awareness and change behaviors of the citizens in order to increase their coping capacity by involve them in certain activities as workshops etc. The only unanswered questions are, to what extent the workshops, or other activities provided by NPOs are effective, whether or not the content of the workshops is relevant to recipients needs.

To answer these questions we propose Mental Model Approach for Risk Communication – based procedure. As the name of approach indicates, the Mental Model Approach has originally been design for risk communication purposes. Most of the studies were related to analysis of the expert’s views and laymen views related to particular risk and designing relevant risk communicate using particular media as for example: brochures. There are many ways of

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measurement mental models. One of them is to code and measure the content of provided communications and compare them with the mental models of risk communication's recipients. The example of the measurement of the contents of the brochures related to Radon is in the table no. 1. below.

Table 6.1 The contents of the two Carnegie Mellon brochures and the 1986 EPA *A Citizen's Guide to Radon*.

	<i>CMU Directed Network</i>	<i>CMU Decision Tree</i>	<i>1986 EPA Citizen's Guide</i>
Basic concepts			
Exposure	9	8	7
Effects	4	4	4
Identification	4	4	4
Specific concepts			
Exposure	23	14	15
Effects	1	1	3
Identification	2	2	2
Number of words	~2350	~2750	~3170

Source: Atman et al. (1994) (abridged).

Table no. 1 After Morgan G, Fischhoff B., Bostrom A., Atman J.C.(2002), Risk Communication: A Mental Model Approach. Cambridge University Press p. 107

The other ways to measure mental models are based on the system science and work of Peter Senge⁵ who measured the change in mental models using criteria of complexity: *detail complexity* (number of nodes and connections between them) *dynamic complexity* (number of feedback loops).

What we would like to do is to evaluate the effectiveness and relevancy of provided by NPO in Nagoya, where effectiveness is defined as the extent to which mental models of participants are changing towards the content of the workshops. And the relevancy, as the extent to which the content of the workshops is related to the needs or gaps in mental models of workshops participants.

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