External Validity of the Causal Factors on Effective Personnel Support by Local Governments during Emergency Response and Relief after the Great East Japan Earthquake

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Abstract

The Great East Japan Earthquake formed a hypothesis to improve the effectiveness of personnel support by local governments. The purpose of this study is to examine the validity of the model based on this hypothesis, with the following procedures; 1. Conduct a survey through questionnaires on cities and towns in Iwate and Miyagi Prefectures which have received personnel support and 2. Examine a model that looks at the degree of effectiveness of personnel support by local governments which is mainly determined by the following two capacities by multiple regression analysis;

i Capacity to receive outside support
ii Capacity to provide support.

Background & Objectives

1. Study background

(1) At the time of the Great East Japan Earthquake, contrary to the expanding disaster response activities following catastrophic damage, the administrative function dropped dramatically, resulting in an unprecedented shortage of manpower. External support was therefore vital to an extent greater than at the time of the Great Hanshin-Awaji Earthquake.

(2) Personnel support activities were implemented by way of the dispatching program of various government personnel between affected and non-affected municipalities from the initial stage. For instance, in fiscal year 2014, the City of Kobe dispatched a Public Health Nurse to the life recovery support department of the City of Natori, Miyagi Prefecture. The nurse who usually takes on the responsibility of conducting case management was sent as a resource to expand relevant services for the city. This, on the other hand was considered as an emergent assignment from the point of view of the City of Natori.

(3) In previous studies of quantitative investigation concerning personnel support from the initial stage to the emergency response stage following the Great East Japan Earthquake, no questionnaire surveys appear to have been conducted for the purpose of grasping the actual situation regarding personnel support, which covered all municipal governments which received such support.

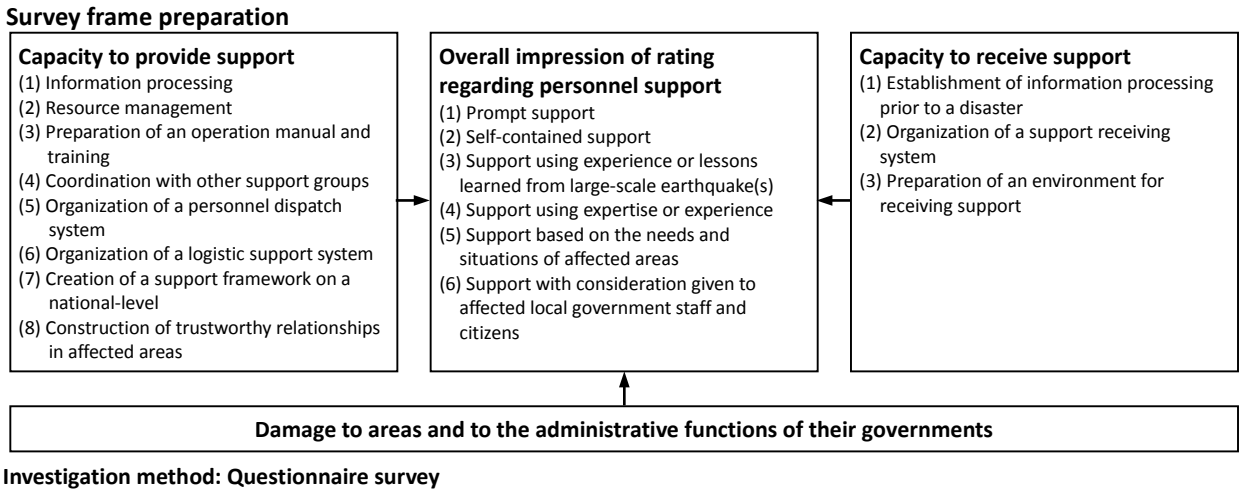
2. Study objectives

(1) To carry out cause analysis of factors concerning effective personnel support from the supported municipal governments' perspective.

(2) To verify, in particular, the validity of the models in which the capacity to provide and receive support is supposed to influence the overall impression of rating, based on the questionnaire data conducted for the supported municipalities.

Materials & Methods

1. Survey frame preparation



2. Investigation method: Questionnaire survey

(1) 27 disaster-stricken municipalities designated by the dispatching personnel program of the Ministry of Internal Affairs and Communications, were selected for the survey.

(2) The survey was carried out by distributing and collecting questionnaires by mail.

(3) The survey period began on January 21, 2013 when the questionnaires began to be distributed and closed on May 15, 2013 when collection was completed.

(4) The collection rate was 70.4% (19 municipalities).

3. Procedures

(1) Create 5 point Likert scales for the overall impression of personnel support and the capacity to provide and receive support respectively using factor analysis.

(2) Using multi-regression analysis, verify the relationship between the overall impression of rating as the dependent variable, the capacity to provide and receive support, and all damage to areas and to the administrative functions of their governments as the independent variable.

Results

1.Scaling of factors to measure each item by factor analysis

(1) Dependent Variable: Overall impression of rating regarding personnel support

Factors	1st principal component
(1) Prompt support	0.801
(2) Self-contained support	0.242
(3) Support using experience or lessons learned from large-scale earthquake(s)	0.781
(4) Support using expertise or experience	0.803
(5) Support based on the needs and situations of affected areas	0.765
(6) Support with consideration given to affected government staff and citizens	0.731
Eigenvalue	3.076
Contribution ratio (%)	51.262

(2) Independent Variable1: Capacity of providing support

Factors	1st principal component
(1) Information processing	0.832
(2) Resource management	0.855
(3) Preparation of an operation manual and training	0.719
(4) Coordination with other support groups	0.493
(5) Organization of a personnel dispatch system	0.798
(6) Organization of a logistic support system	0.828
(7) Creation of a support framework on a national-level	0.793
(8) Construction of trustworthy relationships in affected areas	0.765
Eigenvalue	4.721
Contribution ratio (%)	59.007

(3) Independent Variable2: Capacity of receiving support

Factors	1st principal component
(1) Establishment of information processing prior to a disaster	0.801
(2) Organization of a support receiving system	0.810
(3) Preparation of an environment for receiving support	0.773
Eigenvalue	8.305
Contribution ratio (%)	63.888

2.Factors impacting on the overall impression of rating regarding personnel support by regression analysis

	Non-standardized coefficient		Standardized coefficient	t-value	Significance probability	Collinearity statistic	
	B	Standard error	Beta			Tolerance	VIF
(Constant)	-.240	.131		-	-		
Capacity to provide support	.674	.144	.674	4.671	.000	.691	1.446
Capacity to receive support	.342	.148	.342	2.310	.036	.655	1.526
Ratio of dead and missing persons to the total no. of personnel	.069	.017	.519	4.034	.001	.871	1.148

Adjusted R^2=0.741

Conclusions

1. In this study, verification was carried out using the data obtained from the questionnaire survey conducted for disaster-stricken municipalities which received support. As a result, it revealed that the capacity to provide and receive support, and the ratio of dead and missing personnel to the total number of personnel had a significant impact on the personnel support overall impression of rating.

2. The study showed that this model had an explanatory power of 74.1% for the personnel support overall impression of rating.

3. As the validity of this model has been verified, the statistical regularity that it is necessary to improve both the capacity to provide and to receive support, in order to realize effective personnel support, has further increased.