Factors Influencing the Level of Community Participation: A Case Study of Community Action Planning (CAP) in Yogyakarta City, Indonesia

DESTAMAL[1] · Tetsunobu YOSHITAKE[2] · Chikashi DEGUCHI[2]

[Abstract]

The purpose of this paper is to identify the factors that affected the level of community participation, within a case of Community Action Planning (CAP) in Yogyakarta City, Indonesia. CAP was introduced as a public participation reconstruction and rehabilitation process after the 2006 earthquake. Community perceptions for CAP implementation were collected by questionnaires. The questionnaires were distributed in the CAP locations of Karang Anyar, Purbayan, and Pandeyan. The survey was conducted from July 21 to August 24, 2008 and consisted of 55, 59, and 58 respondents of Karang Anyar, Purbayan, and Pandeyan, respectively.

This paper performed a Two-step Cluster Analysis and Ordinal Regression. Two-step Cluster Analysis is used to obtain the categorical variables of the community participation level, while the Ordinal Regression is used to obtain the factors that influence the level of community participation. The study reveals that there are five factors contributing to the level of community participation associated with personal attributes, community attitudes, and circumstances of CAP. The five factors are the 1) age of participants, 2) occurrence of transferring knowledge from NGOs to the community, 3) community response to rising ideas, 4) gap among the community in interactions and communication in the initial phase of CAP, and 5) occurrence of better social cohesion, interaction, and communication of community during CAP.

Key Words: *Community Action Planning, Indonesia, participation, Arnstein's participation ladder, Ordinal Regression*

1. Introduction

On May 27, 2006, an earthquake hit central Java Island, including Yogyakarta city, in Indonesia. It destroyed many residential properties. GTZ, an international NGO, introduced Community Action Planning (CAP) for the reconstruction and rehabilitation to promote public participation. The authors' previous paper[1)] on CAP in Yogyakarta City revealed the level of community participation for the case study in Karang Anyar, Purbayan, and Pandeyan, referring to Arnstein's theory[2)]. CAP is a relatively new participation method in Indonesia.

It is commonly known that the government of the Republic of Indonesia has been trying to utilize public participation as much as possible, with the goal of development. Unfortunately, this effort has not been achieved. Soekamto et al.[3)] stated that in P2KP (Program Penanggulangan Kemiskinan Perkotaan / Urban Poverty Alleviation Program), the level of public participation was only good enough in the implementation phase. It was not good enough in the rest of the phases, such as the planning processes and maintenance. Additionally, Bahri[4)] revealed that the Project Rural Areas Infrastructure Development (RAID) program lacked community participation, because the project activities were designed and decided upon by elites or local authorities. Therefore, the projects seem quite inclusive.

Wahyuni[5)] , based on the study of PRA (Participatory Rural Appraisal), stated that poor public participation was more likely caused by a lack of social cohesion/trust, not only among the community, but also between the community and the persons in the government or NGO. Moreover,

1) Masters Student, Dept. of Civil and Environmental
2) Associate Professor, Dept. of Civil and Environmental

she appointed that most of the unsuccessful participation programs were caused by a lack of community knowledge about the programs. The research of Hadi[6] on Environmental Impact Assessment (EIA) also revealed the same situation for the participation process.

Based on the above review, it can be said that the poor result of the government's participative program was based on the ignorance of public involvement in decision-making process. In addition, community circumstances, such as social cohesion and insufficient knowledge of the community about the program, also become the issue. Besides, public participation programs involve many people with various personal attributes and attitudes, which affect the success of the programs. Therefore, community personal attributes and attitudes should be firstly identified in examining public participation level.

As a result, the purpose of this paper is to examine the factors of the level of community participation. Consequently, the following hypothesis can be set: "The level of community participation depends on personal attributes, community attitudes, and the circumstances established in CAP".

To identify the factors of the participation level, this paper comprehensively considers all probable aspects at once, using an ordinal regression analysis. The level of participation data is the dependent variable *(y)*, *whereas* the personal attributes, community attitudes, and circumstances established in CAP are the explanatory variables *(x)*. In addition, as far as authors know, there have not been any studies on this topic in Indonesia.

2. Features of Villages and CAP

The CAP area includes Karang Anyar, Purbayan, and Pandeyan. **Fig.1** illustrates the study areas in Yogyakarta City, Indonesia. Karang Anyar is located in the Brontokusuman sub-district of Mergangsan, Purbayan is in the Purbayan sub-district of Kotagede, and Pandeyan is in the

Fig. 1 Map of study areas

Table 1 Features of the villages

Villlage	Kr. Anyar	Purbayan	Pandeyan
Subdistrict (SD)	Brontokusuman	Purbayan	Pandeyan
District	Mergangsan	Kotagede	Umbulharjo
SD's-Population	12.916	9.670	13.741
SD's-Household	2.392	2.077	3.858
SD's- width	0.93 (ha)	0.83 (ha)	1.38 (ha)
CAP coverage:			
area	RW 18 & RW 19	RW 05 & RW 06	RW 03
household	224	2.077	225
Kampong (sub-village) name	Karang Anyar Lor	Bumen-Paseko	Pandeyan

Source: Pemerintah Kota Yogyakarta and GTZ, 2007

Pandeyan sub-district of Umbulharjo. These villages are the so-called "kampung" in the traditional administrative zone system in Yogyakarta. The term *kampung* historically refers to the Mataram Empire's system.

In the present system, *"kampung"* can cover one, two, or more RWs (sub-villages), or even one entire sub-district. This was also one of prerequisites of selecting a CAP location, because factually, in daily life, the *kampung* residents have much in common socially and culturally. As shown in **Table 1**, CAP covers two RWs with 224 households in Karang Anyar, two RWs with 2,077 households in Purbayan, and one RW with 225 households in Pandeyan. **Table 2** illustrates the features of CAP, which was conducted during

Table 2 Locations, major events, and the time of CAP

Location	Year	Month	Events	Actor	Participants
Karang Anyar Lor, a Kampung of Brontokusuman	2006	November (14-17)	Making village miniature (mock-up)	Community	12-17 persons
		November (15)	Drawing the dream village	Community (children)	35 persons
		November (18-20)	Workshop	Community & NGOs	87-85-80 persons
	2006 2007	January to July	Community Action for Reconstruction	Community & NGOs	Not recorded
Bumen-Paseko, a Kampung of Purbayan	2007	February	Making village miniature (mock-up)	Community	7-11 persons
		February	Drawing the dream village	Community (children)	28 persons
		February (25-26)	Workshop	Community & NGOs	85-100 persons
		May (start) to September	Community Action for Reconstruction	Community & NGOs	Not recorded
Pandeyan, a Kampung of Pandeyan	2007	end of February	Making village miniature (mock-up)	Community	7-10 persons
		end of February	Drawing the dream village	Community (children)	43 persons
		March (3-4)	Workshop	Community & NGOs	95-84 persons
		July (start) to December	Community Action for Reconstruction	Community & NGOs	Not recorded

Source: GTZ-GLG and Yayasan Pondok Rakyat (YPR), 2007

different dates and durations over the two year period. The main events of CAP in all villages were similar, e.g., making village miniatures, drawing their dream for their village, workshops, and infrastructure construction. The community was the main actor in these events. In the workshop and action for reconstruction, the community together with the NGOs (GTZ and YPR) carried out the activities. Numbers of participants differed from location to location, but the Purbayan had the largest number of attendants.

3. Methodology

Community members' evaluation about the CAP was surveyed to identify factors for the level of community participation. The evaluations were collected by questionnaire, which consisted of four main items: community members' evaluation of participation level (A), personal attributes (B), community attitudes (C), and the circumstances of CAP implementation (D). **Table 3** illustrates the items and their contents.

Items in A consist of three variables/ statements and were arranged with four alternative answers: strongly disagree, disagree, agree, and strongly agree. This was to determine power redistribution among stakeholders in CAP and indicate community participation levels based on

Table 3 Structure of questionnaire

No.	Items and sub items being evaluated by respondents	*Classification*
A	***Public participation level***	
A6	Every activity in the project was the results of discussion among community and local government or NGOs.	***Partnership***
A7	There is negotiation among community and NGOs or local government in determining activity in the project but community has dominant decision-making authority.	***Delegated power***
A8	The activity in the project was determined by community themselves without any intervention from local government or NGOs.	***Citizen control***
B	***Personal attributes***	
B1	Age	
B2	Income	
B3	Education	
C	***Community attitudes during CAP***	
C.1a	Pay attention	***Enthusiasm***
C.2a	Willingness to attend	
C.3b	Recognition about the issue of the program	***Motivation***
C.4b	Awareness to attend	
C.5b	Spirit to contribute something	
C.6c	Willingness to share idea	***openness***
C.7c	Response to rising ideas	
C.8d	Appreciate other participants' ideas	***fairness***
C.9d	Patient to hear other participants sharing their ideas	
C.10d	Willingness to avoid conflict	
C.11d	Listen to disagreement of other participants on your idea and effort to clear	
C.12d	Effort to find solution if there is conflict or deadlock	
C.13e	Acceptance of the given task/duty	***Activeness***
C.14e	Effort to do something useful if you don't get any task/duty	
C.15e	Effort to do something for the success of the program	
D	***Circumstances of the implementation of CAP***	
D.1a	In initial stage of CAP, I felt my capability for involving in the program is inadequate	***Knowledge & capacity***
D.2a	During the process of CAP, I felt my knowledge increased as well as my capability	
D.3a	Transfer of knowledge from NGO (facilitator or advocate) to community occurred during the process	
D.4a	I feel that knowledge which I got during the process of CAP is very useful for the success of the program	
D.5b	In initial stage of CAP, there is gap among community in interaction and communication	***Social cohesion***
D.6b	During the process of CAP, I felt communication and interaction among community was going better	
D.7b	Social cohesion of community has been increasing because of the activities in CAP	
D .8b	The activity of focus group discussion (FGD), drawing the dream village by children, making village miniature and workshop is helpful in achieving better social cohesion, interaction, and communication	
D.9b	Better social cohesion, interaction, and communication of community achieved during CAP are very contributive to infrastructure reconstruction process	
D.10c	There was no conflict in the whole process of CAP	***conflict***
D.11c	There is some conflict in the process of CAP, but community can resolve by themselves	
D.12c	I was very pleasure and did enjoy involving in the process of CAP	
D.13d	The results of meeting represent voices of community	***Awareness & feeling being represented***
D.14d	CAP encourages community awareness of participation in participatory development program	

Arnstein's theory. Codes (A6, A7, A8) indicate the top rungs of Arnstein's participation ladder. In ascending order, the top rungs are: *partnership, delegated power, and citizen control*. This data was necessary to obtain the ordered categorical data of community partcipation levels in CAP.

Items in B consist of three questions about personal attributes: age, income, and education level. These variables are important bacause they affect their involvement in the programs[7].

Items in C contain fifteen variables/ statements with five alternative answers: very poor, poor, fair, good, and very good. These questions asked respondends to evaluate *a) enthusiasm, b) motivation, c) openness, d) fairness, and e) activeness of community*. These attitudes were divided into sub-items to make evaluations easier for respondents. They are necessary to understand whether community members have good attitudes towards the entire processes of CAP.

In the meanwhile, Item D consisted of fourteen variables/statements providing four alternative answers: strongly disagree, disagree, agree, and strongly agree. It focused on four matters: *1) knowledge and capability of community* (4 sub items) , *2) social cohesion* (5 sub items) , *3) conflict* (3 sub items) , and *4) awareness and feeling of being represented* (2 sub items) . Each matter was for any probable circumstance in the CAP process. They were likely to be the factors contributing to better community participation level.

Fig.2 illustrates the structure of overall analysis. Since this study attempts to prove the hypothesis that "the level of community participation depends on personal attributes, community attitudes, and the circumstances established in CAP", the level of community participation should be firstly identified. Therefore, *Item A* is used and analyzed by use of TwoStep Cluster Analysis (TCA) to obtain the level of community participation in the form of ordered categorical data (low, medium, and high) as one new variable. The results of TCA together with Items B, C, and D, then were used for the next analysis by *Ordinal Regression* to obtain the significant factors that influence community participation level.

4. Analysis and Results

The questionnaire survey was conducted from 21 July to 24 August 2008. The number of respondents was 55, 59, and 58 in Karang Anyar,

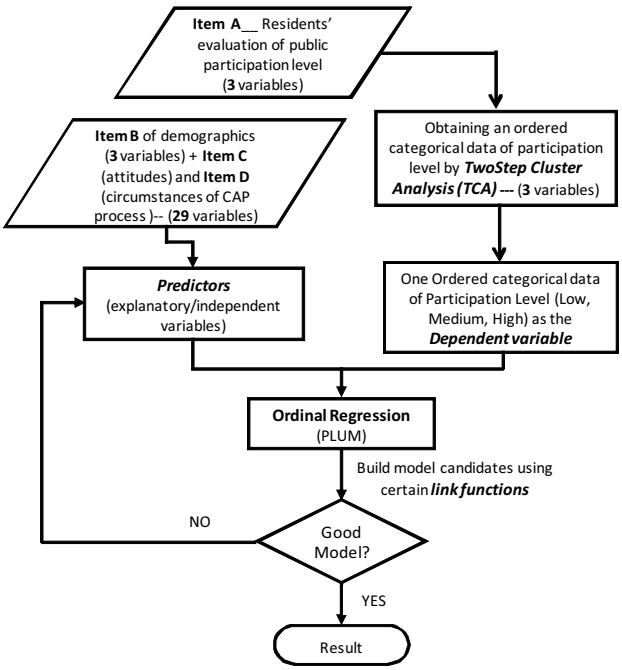

Fig. 2 Steps of analysis to obtain influential factors of community participation level

Purbayan, and Pandeyan, respectively. The respondents were chosen from the households, using a simple random sampling technique.

Prior to the analyses, all data were regrouped and recoded to avoid many cells with zero frequencies. All variables with four categorical answers (strongly disagree, disagree, agree, and strongly agree), were regrouped into two categorical answers, disagree and agree. In the meanwhile, other data or variables with five categorical answers (very poor, poor, fair, good, and very good), were also regrouped into two categorical answers (poor and good).

TCA was performed to obtain the community participation level. Items in A with A6, A7, A8 were employed as the candidates of the dependent variable for the ordinal regression. These variables are important because they describe the position of the community participation level. By TCA, the respondents were grouped into three clusters based on their evaluation upon the statements described within the three variables. The "by variable" importance charts were produced with Chi-square values for each cluster.

Looking at the respondents answers to the statements (see **Table 4**) , the members of Cluster

Table 4 Characteristic of members of each cluster based on their answer to the statements

Cluster Number	A6_Every proj. activities were resulted from discussion		A7_There is negotiation, community is dominant		A8_Proj. activities decided by community, no intervention	
	disagree	***agree***	disagree	***agree***	disagree	***agree***
1	0	60	0	60	0	60
2	0	51	0	51	51	0
3	39	22	41	20	42	19

Number 1 were found to be people who totally chose “agree” for all variables. The members of Cluster Number 2, mostly chose “agree” for variable A6 and A7, but “disagree” for variable A8. In the meanwhile, the members of Cluster Number 3 were those who mostly chose “diagree” for all variables.

Fig. 3 describes that all charts of the clusters show the importance of the variables that exceeded the critical value. It can be said that all of the variables contributed to the formation of the clusters. Looking at the descending importance order of the variables, Cluster Number 1 revealed that the most important variable as A8, followed by A7 and A6. In Cluster Number 1, respondents evaluated variable A8 as most important, then A7 and A6. Cluster Number 2 illustrates the same importance order, but had a less significant Chi-square value than A8, A7, and A6 in Cluster Number 1. In the meanwhile, Cluster Number 3 illustrates the most significant variable is A7, followed by A6 and A8, which were just barely significant. The respondents in Cluster Number 3 evaluated variable A7 as most important, followed by A6 and A8. Hence, this order of importance and Chi-Square values were considered new categorical variables.

Based on those charts, the table, and the Arnstein’s theory, for the purpose of ordinal regression analysis, a new variable, the level of participation, was created where category HIGH for the respondents in Cluster Number 1, MEDIUM for Cluster Number 2, and LOW for Cluster Number 3.

Next, an ordinal regression analysis was employed. This analysis included at least 29

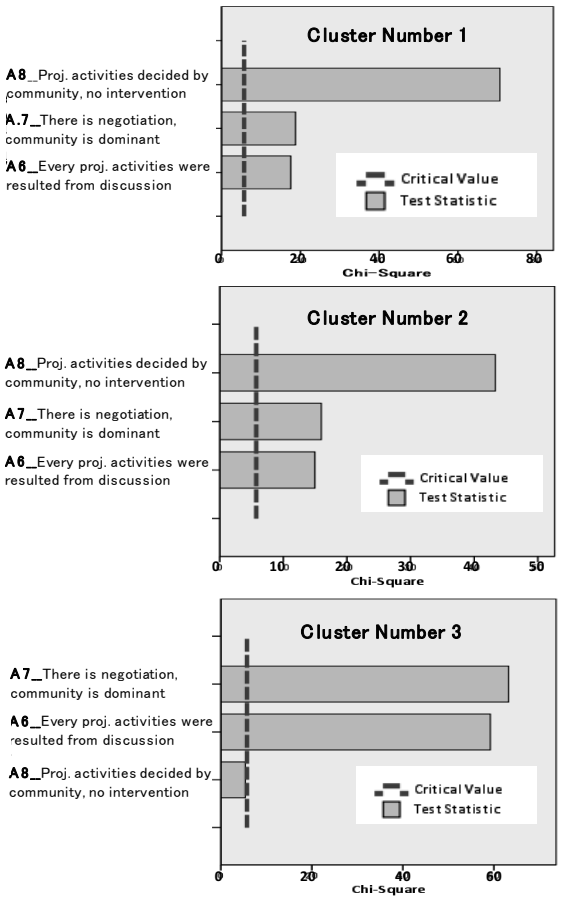

Fig. 3 Attribute importance of each cluster by Two-Step Cluster Analysis

variables for community attitudes, circumstances of the implementation of CAP (community capability and social condition) , and 3 variables of personal attributes, i.e., age, monthly income, and education level. To generate model candidates, the complete and the reduced models along with the various link functions were used.

In examining significant explanatory variables for the reduced model of ordinal regression, the data reduction process with the method of Principal Component Analysis was used. As a result, eight components with an Eigen value above 1.0 were obtained (see **Table 5**). The cumulative contribution ratio was 68.38%. Component I means knowledge and social cohesion of community and its most highly correlated variables were D.2a, D.3a, D.7b, D.8b, D.9b, D.12c, D.13d, and D.14d. Component II is fairness of community, which is most highly correlated with variables C.8d, C.9d, C.10d, C.11d,

Table 5 Rotated Component Matrixes [(a)] of Principal Component Analysis

		Component							
		1	2	3	4	5	6	7	8
C.1a	Pay attention.	-.039	.173	.733*	.090	.052	-.234	-.231	.079
C.2a	Willingness to attend.	.125	.037	.831*	.067	-.149	-.059	.036	-.240
C.3b	Recognition about the issue of the program	.036	.314	.485	.044	.247	.390	.211	.199
C.4b	Awareness to attend.	.007	-.077	.769*	.242	.002	.223	.021	.079
C.5b	Spirit to contribute something.	.083	.408	.484	.100	.155	.422	.253	-.075
C.6c	Willingness to share idea.	-.033	.472	.512	.220	.144	-.343	-.184	.134
C.7c	Response to rising ideas.	-.123	.482	-.059	.558*	.116	-.173	-.182	.204
C.8d	Appreciate other participants' ideas.	.048	.779*	-.026	.022	.025	.070	-.092	-.125
C.9d	Patient to hear other participants sharing their ideas	-.039	.752*	.010	.105	.044	-.180	-.112	.208
C.10d	Willingness to avoid conflict.	.086	.603*	.080	.230	-.507	.090	.256	-.053
C.11d	Listen to disagreement of other participants on your idea and effort to clear.	.221	.610*	.259	.206	.025	.084	.334	-.230
C.12d	Effort to find solution if there is conflict or deadlock.	.059	.680*	.180	.246	-.130	.008	.125	.026
C.13e	Acceptance of the given task/duty.	-.066	.175	.214	.686*	-.310	-.064	.311	.008
C.14e	Effort to do something useful if you do not get any task/duty.	-.005	.170	.136	.833*	.079	.097	-.159	-.024
C.15e	Effort to do something for the success of the program.	.077	.190	.266	.618*	-.050	.042	.224	-.181
D.1a	In initial stage of CAP, I felt my capability for involving in the program is inadequate.	-.061	.004	.076	-.031	-.137	.065	-.762*	-.033
D.2a	During the process of CAP, I felt my knowledge increased as well as my capability.	.577*	-.108	.366	.116	.221	-.099	.269	.334
D.3a	Transfer of knowledge from NGO (facilitator or advocate) to community occurred during the process.	.643*	-.099	.086	.154	.016	.270	.263	.233
D.4a	I feel that knowledge that I got during the process of CAP is very useful for the success of the program	.192	-.044	.109	.032	.700*	-.014	.334	.081
D.5b	In initial stage of CAP, there is gap among community in interaction and communication.	.250	-.273	.028	.051	-.143	.456	-.138	.512*
D.6b	During the process of CAP, I felt communication and interaction among community was going better.	.613	.100	-.029	-.115	.588	.061	-.022	-.092
D.7b	Social cohesion of community has been increasing because of the activities in CAP.	.573*	.013	-.063	-.015	.477	.242	.092	-.145
D.8b	The activity of focus group discussion (FGD), drawing the dream village by children, making village miniature and workshop is helpful in achieving better social cohesion, interaction, and communication.	.744*	.056	-.092	-.002	.160	-.150	.084	.247
D.9b	Better social cohesion, interaction, and communication of community achieved during CAP are very contributive to infrastructure reconstruction process.	.755*	.109	-.028	-.169	.032	.052	.137	-.071
D.10c	There was no conflict in the whole process of CAP.	.015	.041	.045	-.002	-.042	-.830*	.080	-.003
D.11c	There is some conflict in the process of CAP, but community can resolve by themselves.	.442	.229	-.052	-.228	.068	-.047	.185	.611*
D.12c	I was very pleasure and did enjoy involving in the process of CAP.	.847*	.082	.071	-.003	.136	.011	.048	.171
D.13d	The results of meeting represent voices of community.	.613*	-.120	.089	-.039	-.165	-.127	-.374	-.094
D.14d	CAP encourages community awareness of participation in participatory development program.	.755*	.046	.063	.093	-.033	.043	-.148	-.022
	Cumulative contribution ratio	19.95	36.41	44.24	50.49	55.81	60.43	64.53	68.38

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
(a) Rotation converged in 11 iterations
* Significant value

and C.12d. Component III is enthusiasm and motivation of community that is most correlated with C.1a, C.2a, and C.4b. Component IV is openness and activeness of community, correlated with C.7c, C.13e, C.14e, and C.15e. Component V is associated with a community feeling of usefulness of knowledge transferred by facilitators (D.4a). In the meanwhile, Component VI is the situation of no conflict during CAP (D.10c), component VII is associated with a community feeling of incapacity to involve in CAP (D.1a), and Component VIII is related to the gap among the community at the initial stage of CAP (D.5b) and some conflicts during the process (D.11c).

Table 6 Results of test for the model assumption validity of the complete model with each link function

No.	Test criteria	*Valid*	Link function 1	2[a)]	3[b)]	4	5
1	Model Fitting Information	*< 0.05*	0.029	-	-	0.170	0.036
2	Pseudo R-Square:						
	– Cox and Snell	*Larger is*	0.395	-	-	0.410	0.389
	– Nagelkerke	*better*	0.446	-	-	0.462	0.438
	– McFadden		0.231			0.242	0.226
3	Test of Parallel Lines	*> 0.05*	0.135	-	-	0.153	0.255
4	Threshold: (1)	*< 0.05*	0.001	-	-	0.076	0.000
	(2)		0.000	-	-	0.000	0.000

Notes (*) :
1. Logit
2. Complementary log-log
3. Cauchit
4. Negative log-log
5. Probit

a) The log-likelihood ratio value and/or parameter estimates cannot converge.
b) The log-likelihood ratio value and/or parameter estimates cannot converge, and the test of parallel lines cannot be performed.

A regression was conducted for the complete and reduced models with the Logit and Complementary Log-Log link functions, as well as other link functions (e.g., Negative Log-Log, Cauchit, and Probit). The complete model analyzed 97 respondents and used 32 probable explanatory variables. **Table 6** illustrates that the complete model with Logit and Probit link functions met all requirements of model assumption validity. Complementary log-log and Cauchit link functions had no result, because the log-likelihood ratio and/or parameter estimates cannot converge. In addition, the test of parallel lines cannot be performed for the Cauchit link function.

In the meanwhile, a negative log-log link function did not meet the requirements of the model fitting information. Therefore, among all link functions, the Logit and Probit performed best. However, the Pseudo R-Square test illustrates that the Logit link function has a higher value than the Probit. Therefore, the Logit link function was chosen as the most appropriate link function for the complete model.

Table 7 illustrates the result of the Complete model with the Logit link function. Two thresholds of the model equation were significant. Moreover,

five explanatory variables significantly contributed to the level of community participation: age (B1), community attitudes of response to rising ideas (C.7c), transfer of knowledge from NGO to community during CAP (D.3a), a gap among community in interaction and communication in the initial phase of CAP (D.5b), and better social cohesion, interaction, and communication of community achieved during CAP are very contributive to infrastructure reconstruction process (D.9b).

Regarding the signs of the variables, two variables exhibited positive regression coefficients (D.3a, D.9b), and three had negative coefficients (B1, C.7c, D.5b). Since the sign for age was negative, as age increases, the level of community participation decreases. In the meanwhile, the parameter D.3a, transfer of knowledge from NGO to community during CAP, had a "positive" coefficient, meaning that as the occurrence of this activity increased, the level of community participation increased. Such interpretation is applied equally to the other parameters. The increase of the response of community members to rising ideas will lead to the lower level of community participation. This may be because the responses of some people make others reluctant to share their ideas. In addition, they sometimes bring them into conflict. Moreover, the increase of a gap among the community in interaction and communication in the initial phase will decrease the level of community participation. On the other hand, a positive parameter D.9b predicts that better social cohesion, interaction, and communication of community will positively affect the level of community participation.

The reduced model with various link functions was also performed. It analyzed 97 respondents and used 25 significant explanatory variables that resulted from the factor analysis and three variables of personal attributes. Therefore, four variables were excluded from the complete model analysis. It was determined that the Logit link function performed best, beacuse it met all

Table 7 Parameter Estimates of Complete Model with Logit link function

		95% Confidence Interval	
	Parameter	**Estimate**	**Sig.**
Threshold :	[reord2_partcpLev = 1]	-.998	.001*
	[reord2_partcpLev = 2]	1.223	.000*
Location :			
B1	Age	-.749	.006*
B2	Income	.273	.325
B3	Education	-.068	.783
C.1a	Pay attention	.023	.950
C.2a	Willingness to attend	-.656	.094
C.3b	Recognition about the issue of the program	-.556	.096
C.4b	Awareness to attend	.602	.160
C.5b	Spirit to contribute something	-.405	.282
C.6c	Willingness to share idea	.767	.055
C.7c	Response to rising ideas	-1.191	.002*
C.8d	Appreciate other participants' ideas	.202	.566
C.9d	Patient to hear other participants sharing their ideas	.175	.623
C.10d	Willingness to avoid conflict	.280	.499
C.11d	Listen to disagreement of other participants on your idea and effort to clear	-.349	.397
C.12d	Effort to find solution if there is conflict or deadlock	.431	.241
C.13e	Acceptance of the given task/duty	-.133	.732
C.14e	Effort to do something useful if you don't get any task/duty	.485	.211
C.15e	Effort to do something for the success of the program	.301	.383
D.1a	In initial stage of CAP, I felt my capability for involving in the program is inadequate	-.207	.440
D.2a	During the process of CAP, I felt my knowledge increased as well as my capability	-.286	.528
D.3a	Transfer of knowledge from NGO (facilitator or advocate) to community occurred during the process	1.231	.005*
D.4a	I feel that knowledge which I got during the process of CAP is very useful for the success of the program	.331	.371
D.5b	In initial stage of CAP, there is gap among community in interaction and communication	-1.116	.001*
D.6b	During the process of CAP, I felt communication and interaction among community was going better	.254	.573
D.7b	Social cohesion of community has been increasing because of the activities in CAP	-.327	.414
D.8b	The activity of focus group discussion (FGD), drawing the dream village by children, making village miniature and workshop is helpful in achieving better social cohesion, interaction, and communication	-.500	.208
D.9b	Better social cohesion, interaction, and communication of community achieved during CAP are very contributive to infrastructure reconstruction process	.886	.031*
D.10c	There was no conflict in the whole process of CAP	-.163	.577
D.11c	There is some conflict in the process of CAP, but community can resolve by themselves	.156	.720
D.12c	I was very pleasure and did enjoy involving in the process of CAP	-1.089	.054
D.13d	The results of meeting represent voices of community	-.456	.212
D.14d	CAP encourages community awareness of participation in participatory development program	.217	.567

* Significant different from zero (Sig. < 0.05)
Link function: Logit.

requirements for the test of model assumption validity (see **Table 8**). On the other hand, the rest of the link functions resulted in statistics test values similar to those of the complete model.

Table 9 illustrates the estimated parameters of the reduced model using the Logit link function. The variables identified as significant and their signs on the regression coefficients were similar to those in the complete model. To obtain the most appropriate model, it was necessary to compare all criteria between the complete model and the reduced one. **Table 10** summarizes the comparison of the two models.

Table 8 Results of test for the model assumption validity of the reduced model with each link function

No.	Test criteria	*Valid*	Link function *				
			1	**2**	**3**	**4**	**5**
1	Model Fitting Information	*<0.05*	0.046	0.045	0.000	0.170	0.051
2	Pseudo R-Square:						
	– Cox and Snell	*Larger is*	0.350	0.350	0.471	0.410	0.347
	– Nagelkerke	*better*	0.394	0.394	0.531	0.462	0.391
	– McFadden		0.197	0.197	0.292	0.242	0.195
3	Test of Parallel Lines	*> 0.05*	0.423	0.395	0.022	0.153	0.203
4	Threshold:(1)	*<0.05*	0.001	0.000	0.013	0.076	0.000
	(2)		0.000	0.077	0.001	0.000	0.000

Notes (*) :
1. Logit
2. Complementary log-log
3. Cauchit
4. Negative log-log
5. Probit

Looking at the model fit information; both complete and reduced models have the significance level of a chi-square statistic less than 0.05, indicating that both models provide a significant improvement over the baseline intercept-only model. According to R^2, the complete model is better. Moreover, the test of parallel lines illustrates that the significance the chi-square of the reduced model was larger than that of the complete model. Parameter tables also illustrate the same significant variables with similar signs of regression coefficients.

Regarding the accuracy of classification (see **Table 11** and **Table 12**) , the complete model correctly classified 28 (77.8%) of 36 cases of category LOW, 23 (67.6%) of 34 of category MEDIUM, and 15 (55.6%) of 27 of category HIGH. In the meanwhile, the reduced model correctly classified 26 (72.2%) of 36 cases of category LOW, 16 (47.1%) of 34 of category MEDIUM, and 15 (55.6%) of 27 of category HIGH.

It would be better to retain the reduced model, rather than the complete model, because it was better at predicting the highest category. The tables reveal that the reduced model correctly classified 23.7% of the total cases in the category HIGH, larger than the compete model that correctly classified 21.6% of the total of category HIGH.

5. Conclusions

Table 9 Parameter Estimates of Reduced Model with Logit link function

	Parameter	95% Confidence Interval	
		Estimate	**Sig.**
Threshold :	[reord2_partcpLev = 1]	-.960	.001[a]
	[reord2_partcpLev = 2]	1.123	.000[a]
Location :			
B1	Age	-.605	.016[a]
B2	Income	.102	.690
B3	Education	-.033	.889
D.2a	During the process of CAP, I felt my knowledge increased as well as my capability	-.214	.610
D.3a	Transfer of knowledge from NGO (facilitator or advocate) to community occurred during the process	1.049	.012[a]
D.7b	Social cohesion of community has been increasing because of the activities in CAP	-.329	.343
D.12c	I was very pleasure and did enjoy involving in the process of CAP	-.813	.100
D.8b	The activity of focus group discussion (FGD), drawing the dream village by children, making village miniature and workshop is helpful in achieving better social cohesion, interaction, and communication	-.218	.534
D.9b	Better social cohesion, interaction, and communication of community achieved during CAP are very contributive to infrastructure reconstruction process	.769	.042[a]
D.13d	The results of meeting represent voices of community	-.150	.641
D.14d	CAP encourages community awareness of participation in participatory development program	-.033	.925
C.8d	Appreciate other participants' ideas	.032	.911
C.9d	Patient to hear other participants sharing their ideas	.483	.142
C.10d	Willingness to avoid conflict	.304	.421
C.11d	Listen to disagreement of other participants on your idea and effort to clear	-.529	.131
C.12d	Effort to find solution if there is conflict or deadlock	.329	.320
C.1a	Pay attention	.158	.647
C.2a	Willingness to attend	-.474	.184
C.4b	Awareness to attend	.186	.599
C.7c	Response to rising ideas	-.779	.017[a]
C.13e	Acceptance of the given task/duty	-2.99E-005	1.000
C.14e	Effort to do something useful if you don't get any task/duty	.206	.539
C.15e	Effort to do something for the success of the program	.283	.386
D.4a	I feel that knowledge which I got during the process of CAP is very useful for the success of the program	.426	.190
D.10c	There was no conflict in the whole process of CAP	-.057	.833
D.2a	In initial stage of CAP, I felt my capability for involving in the program is inadequate	-.055	.825
D.11c	There is some conflict in the process of CAP, but community can resolve by themselves	-.188	.617
D.5b	In initial stage of CAP, there is gap among community in interaction and communication	-1.050	.001[a]

[a] Significant different from zero (Sig. < 0.05)
Link function: Logit.

Table 10 Result of Ordinal Regression for Complete and Reduced Model by Comparison

No.	Test criteria	Complete Model	Reduced Model
1	Link Function	Logit	Logit
2	Model Fitting Information	(Sig.) 0.029	(Sig.) 0.046
3	Pseudo R-Square:		
	– Cox and Snell	(Sig.) 0.395	(Sig.) 0.350
	– Nagelkerke	(Sig.) 0.446	(Sig.) 0.394
	– McFadden	(Sig.) 0.231	(Sig.) 0.197
4	Test of Parallel Lines	(Sig.) .135	(Sig.) .423
5	Sig. Parameter	(-) Threshold 1 (+) Threshold 2 (-) B1 (Age) (-) C.7c (+) D.3a (-) D.5b (+) D.9b	(-) Threshold 1 (+) Threshold 2 (-) B1 (Age) (-) C.7c (+) D.3a (-) D.5b (+) D.9b

This paper aims to explore the factors that influence the level of community participation

Table 11 Classification Table of Complete Model with Logit link function

			Predicted Response Category			Total
			LOW	MEDIUM	HIGH	LOW
Level of Participation	LOW	Count	28	8	0	36
		Expected Count	13.4	14.8	7.8	36.0
		% within Level of Participation	77.8%	22.2%	.0%	100.0 %
	MEDIUM	Count	5	23	6	34
		Expected Count	12.6	14.0	7.4	34.0
		% within Level of Participation	14.7%	67.6%	17.6%	100.0 %
	HIGH	Count	3	9	15	27
		Expected Count	10.0	11.1	5.8	27.0
		% within Level of Participation	11.1%	33.3%	55.6%	100.0 %
Total		Count	36	40	21	97
		Expected Count	36.0	40.0	21.0	97.0
		% within Level of Participation	37.1%	41.2%	21.6%	100.0 %

Table 12 Classification Table of Reduced Model with Logit link function

			Predicted Response Category			Total
			LOW	MEDIUM	HIGH	LOW
Level of Participation	LOW	Count	26	9	1	36
		Expected Count	15.2	12.2	8.5	36.0
		% within Level of Participation	72.2%	25.0%	2.8%	100.0%
	MEDIUM	Count	11	16	7	34
		Expected Count	14.4	11.6	8.1	34.0
		% within Level of Participation	32.4%	47.1%	20.6%	100.0%
	HIGH	Count	4	8	15	27
		Expected Count	11.4	9.2	6.4	27.0
		% within Level of Participation	14.8%	29.6%	55.6%	100.0%
Total		Count	41	33	23	97
		Expected Count	41.0	33.0	23.0	97.0
		% within Level of Participation	42.3%	34.0%	23.7%	100.0%

through the case study of Community Action Planning (CAP) in Yogyakarta City Indonesia, by performing a Two-step Cluster Analysis (TCA) and Ordinal Regression Analysis. Some important matters can be concluded as follows:

1) The results of the TCA strengthened the result of the previous study, in that the level of community participation in CAP occurred in the top rungs of the participation ladder by Arnstein (i.e., citizen control, delegated power, and partnership, classified as citizen power) , meaning that the level of community participation in CAP performed well.

2) Ordinal regression analysis for the level of community participation resulted in the reduced model with the logit link function and was appropriate.

3) Based on the ordinal regression analysis, there were five factors contributing to the high level of community participation. Those factors are the lower age of participants, the occurrence of transferring knowledge from NGOs to the community, less community responses to rising ideas, less gaps among the community in interaction and communication in the initial phase of CAP , and the occurrence of better social cohesion, interactions, and communication of the community achieved during CAP.

REFERENCES:

1) Destamal, Yoshitake, Tetsunobu, and Deguchi, Chikashi: *Community Participation in Infrastructure Reconstruction after Earthquake, Case Study of Community Action Planning (CAP) in Yogyakarta City, Indonesia*, Japanese Society of Civil Engineers Western Branch Meeting, IV-039 (2009.3) -CD

2) Arnstein, Sherry R.: *A Ladder of Citizen Participation,* edited by Jay M. Stein; Classic Readings in Urban Planning, Chapter 8: Housing, Social and Community Planning, McGraw-Hill, Inc., USA, pp. 357-375, 1995.

3) Soekamto, H., Suprapto , R., and Noor, I.: *Community Participation in Poverty Eradication Program (Study of Implementation on Urban Poverty Project at Bandulan Village–Sukun Malang)* , available at http://publik.brawijaya.ac.id/simple/us/jurnal/pdffile/Hadi%20Soekamto%20_98-03_-partisipasi%20masyarakat) , accessed on 2009/01/11, simtechinfo, 2005. (in Indonesian) .

4) Syamsul Bahri : *Community Participation in the Development of Irrigation Infrastructure, Case Study of the Community Participation in the Rural Areas Infrastructure Development Project in Titian Teras Village, Merangin Regency – Indonesia,* Master Thesis, Magister Perencanaan Kota dan Daerah Jurusan Ilmu-ilmu Teknik, Sekolah Pascasarjana Universitas Gadjah Mada Yogyakarta, 2006.

5) Wahyuni, Sri: *Meningkatkan Partisipasi Masyarakat Dalam Pembangunan Pertanian: Perlunya Implementasi "PRA", Pendekatan Kultural Dan Struktura,* ,

Indonesia : available at http://ejournal.unud.ac.id/abstrak/(5) /soca-sriwahyuni-pendekatan/pra(1) , accessed on 2009/01/10 , Pusat Penelitian dan Pengembangan Sosial Ekonomi Pertanian. Bogor, West Java, 2008.

6) Hadi, Sudharto P: *Public Participation in Indonesian EIA*, available at http://www.unep.ch/etu/publications/15/75/to/83, accessed on 2009/01/10, 2003.

7) Maria Noviana Ida Budiningsih: *Community Participation in Neigborhood Quality Improvement Project, a Case Study in Kampung Kricak, Yogyakarta, Indonesia,* Master Thesis, Magister Perencanaan Kota dan Daerah Jurusan Ilmu-ilmu Teknik, Sekolah Pascasarjana Univrsitas Gadjah Mada Yogyakarta, 2006.