

Degradation Of The Flood Control Function Based Community Participation The Role Of Government And Stakeholders Towards Non Structural Flood Control Makassar City

The Role Of Government And Stakeholders Toward Maximum Flood Control Function

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Abstract--The rapid development of the city can indirectly affect land use changes that affect the utilization of space irregularity which in turn can cause problems to the decline in the quality of infrastructure services, particularly flood control infrastructure. This study is a descriptive research study was conducted to determine the relationship the role of government and stakeholders as a latent variable to the maximum flood control function in Makassar. By reviewing and analyzing the role of government and stakeholders on the performance of flood control through SEM modeling the relationship between variables can be understood. The result of this study will illustrate the extent of the role of government and stakeholders, the maximum effect on the function of flood control. Therefore, this study is expected to produce overview of how the role of government and stakeholders as an input in the policy making process, especially in urban flood management in non structural.

Keywords: The role of government, maximum function, Flood Control

I. Introduction

Urban population growth in an increasingly dense city of Makassar is not accompanied by an effective provision of urban infrastructure including urban drainage can cause flooding and inundation problems. One cause flooding which

became a public issue today is the change in land use that is often not in the manner intended. Residential density as the cause of the closing of the land, erosion and sedimentation that occurs in many urban areas. Handling the drainage system in the city of Makassar has not been addressed in an integrated manner by all parties. In a few places to start planning the construction of drainage did not show lack of coordination and involvement of the public and stakeholders. Behavioral and cultural attitudes that often throw garbage in the channel is a problem of the problem in urban flood management. Flood control functions built physically (structure) is a government effort to overcome or minimize the risk of losses due to flood society. However, the government should play a role in providing a space for people to participate in order to flood prevention

II. Basic Theori

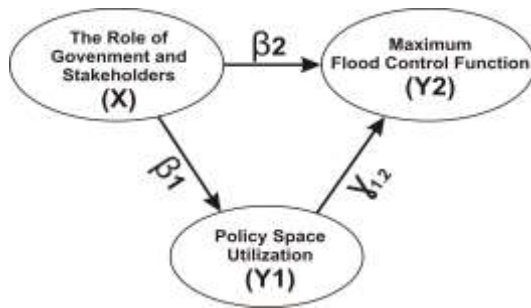
According Suripin (2004) [2], flooding is the amount of water flow that exceeds the capacity of a particular discharge, or overflow of water flow in the riverbed or channel so that the water overflows from the left and right embankment of the river or canal. One of the most dominant cause of the flooding this time is due to changes in land use so that structural development is no longer effective without control is non-structural (Kodoatie, 2005) [4] is a non-structural flood control this is to minimize efforts flood risk through integrated policy. The method is non-structural flood control methods that optimize the function of flood control to flood control. The success of the method to non-structural flood control contributes significantly greater than with the method of the structure. Moreover, the costs incurred for non-structural method is much cheaper than the cost incurred for the structure of the method, because the method is more of a non-structural preventive actions before the occurrence of floods. If the initial cause of the flooding can be minimized, then the cost of construction and repairs will be much cheaper (Robert J. Kodoatie, 2010) [1]. Description of how to determine the role of government and stakeholders towards flood control performance can be analyzed by SEM method for path analysis as in Figure 1 below:

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Understanding the causes of flooding and One of the most dominant cause of the flooding this time is due to changes in land use so that structural development is no longer effective without control is non-structural (Kodoatie, 2005) [4] If the initial cause of the flooding can be minimized, then the cost of construction and improvements will be much cheaper (Robert J. Kodoatie, 2010) [1]. description of how to know the role of government and stakeholders towards flood control performance can be analyzed by SEM method Grouping variable is done in two parts, ie variables that explain (exogenous) also known as exogenous variables and the variables described (endogenous) or sometimes referred to as endogenous variables. The role of exogenous variables, namely government and Stakeholders (X). The maximum flood control function (Y2) as the dependent endogenous variable while the other endogenous variables such as space utilization policy intervening endogenous variables (Y1) and the maximum flood control function (Y2) as the dependent endogenous variable. To see magnitude of the fungsional relationship of each independent variable on the dependent variable, then the developed following simultaneous function.

$$\begin{aligned}
 Y1 &= \alpha_1 + \beta_1 X + \mu_1 \\
 Y2 &= \alpha_2 + \beta_2 X + \mu_2 \\
 Y2 &= \alpha_1 + \beta_1 X + \gamma_{12} Y1 + \mu_2
 \end{aligned}$$

Where :

- X = variable *exogenous* which describes the role of government and stakeholders
- Y1 = variable *endogenous intervening* Policy space utilization
- Y2 = variabel *endogenous dependent* Maksimum flood control function
- $\mu_{1,2}$ = Structural relationship value estimation error
- $\alpha_{1,2}$ = Constants estimated structural relationship.
- $\beta_{1,2}$ = The coefficient of exogeneous variables influence the endogenous variables
- $\gamma_{1,2}$ = Coefficient intrvrning endogenous variables influence the dependent variable endogenous.

iii. Methodology

Based on the characteristics of the problem under study , this research is a descriptive study (Descriptif Research) or often

called eksplainatory analysis study . Descriptive research is research on issues such as the current facts of a population that includes assessment of attitudes, or opinions of the individuals , organizations , state or procedure (Etta Mamang Sangaji et al , 2010) [3] . Descriptive study is expected discover facts through the proper interpretation and can be useful as a reference for problem-solving . According to Cooper , HM (2007) [10] , desriptif research is research conducted to determine the value of either one independent variable or more variables without creating or connecting with other variables . In addition this study can also be named as empirical research (Empirical Research) if viewed in terms of the nature and purpose . Empirical research is the study of empirical facts obtained by observation or experience . The main empirical research more emphasis on behavioral aspects of the investigation of opinions (Etta dizzy Sangaji et.all , 2010) [3] . Object studied in empirical research is more focused on the actual events of the person 's perception of events eg case studies . The analysis is expected to test hypotheses and conduct in-depth interpretation of the functional relationship variables . According to Kerlinger (2006) [8] , hypothesis (hypothesis) is the prediction of phenomena or alleged statement about the relationship between two or more variables. FMAndrews et al , (2001) [6] defines a hypothesis is a tentative answer to the problems of research to proven by the data collected . Opinions JWBuckley et al (2006) [7] defines that the hypothesis is a simple form of statement about the relationship between the researcher hope of variables in the problem to be tested in the study . The main data collection or a primary data sample of the population conducted by questionnaire . The analysis technique used is Structural Equation Method (SEM) which is one of the multivariate analysis to analyze the relationship between variables in complex. This analysis is generally used for studies that a lot of variables .

The location and type of study

Were taken at random locations, and the location in the city of Makassar in order to obtain input in analyzing the performance of various flood control. This research is a survey, while the analytical method is an explanatory study. Survey methods explanatory study is a research method that takes from a population and use the questionnaire as a data collection tool population According Sedarmayanti and Syarifuddin Hidayat (2002)[9] The population is the entire set of characteristics of objects research

Table 1: sample population research unit

Research unit	Sample (Respondents)
Official of water resources Development in South Sulawesi province	30
Balai Besar Wilayah Sungai Jeneberang- Pompengan	30
Official of Spatial planning and Building Makassar City	20
Official planning and regional development Makassar city	20
Dinas Kebersihan Kota Makassar	30
Official of Public Works Makassar City	30
Indonesian Association of Hydraulic Engineers South Sulawesi branch	15
International Commision Irrigation and Drainage (ICID) South Sulawesi	15
Representing the community	40
TOTAL	230

Total samples taken are intended to further research untu looking for any correlation of latent variables in the SEM method in which the amount of the minimum data requirement is 5-10 times the number of manifest variables (Hair, 1998) [5] while the total manifest variables in this model as much as 16 variables manifest, so that by 230 the data has been qualified. the number of respondents in the research unit

Table 2:Construction of theoretical models of the structure of the research variables and measurement scales

No	Dimensions of the study variables			Scale of measurement
	Type	Variable	Indicator	
1	Exogenous	The role government and Stakeholders (X)	1.Preparation of fund (X.1) 2.Commitment to the role(X.2) 3.Causus of flooding (X.3) 4.Technical planning (X.4) 5.Maintenance of flood control (X.5)	Likert, 5 option
2	Endogenous intervening	Policy space utilization (Y1)	1.Spatial planning control (Y1.1) 2.Stakeout of spatial planning (Y1.2) 3.Consistency of spatial planning(Y1.3)	Likert, 5 option
3	Endogenous dependent	Maximum flood control function (Y2)	1.Sedimentation (Y2.1) 2.Routine Maintenance (Y2.2) 3.Damage to the drainage network(Y2.3)	Likert, 5 option

To further analyze the relationship between latent variables and manifest variables or variable constructs can be developed operational framework modeling Structural Equation Model (SEM) that can have the ability to involve latent variables (variables that are not observed directly) into the analysis. SEM illustrates the latent variables in the form of ellipses and manifest variables in the form of a square box , as figure 2 below

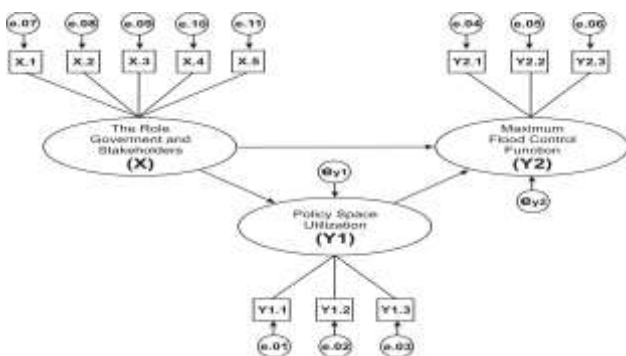


Figure 2: SEM of modeling operational framework latent variables X1, Y1, Y2

Table 3: Characteristics of exogenous latent variable the role of government and stakeholders (X) and indicator variables (X1 -- X5)

Indicator variable role of government and stakeholders	Distribution of Respondents (%)				
	Strongly disagree	Disagree	Between agree and disagree	Agree	Strongly agree
Preparation of funds (X.1)	0	7,82	19,56	64,78	7,82
Commitment to the role (X.2)	0	0,87	7,40	60,86	30,86
Causus of flooding (X.3)	0	0,87	22,60	63,04	13,47
Technical planning (X.4)	0	1,30	6,52	78,26	13,91
Maintenance of flood control (X.5)	0	0	14,78	71,30	13,91
The role of government and stakeholders (X)	0	0,87	8,27	74,34	16,52

Sources of Data : Primary data processing.

Overall all indicators of the role of government and stakeholder responses mendapaat agree and strongly agree answers high average above 80 % but the most dominant is the commitment to the rule of 91.72 % . Thus the expected role of the government and all stakeholders implement policies consistently to the rules that may affect the performance of the flood control.Distribution of respondents can be seen in Figure 3 below:

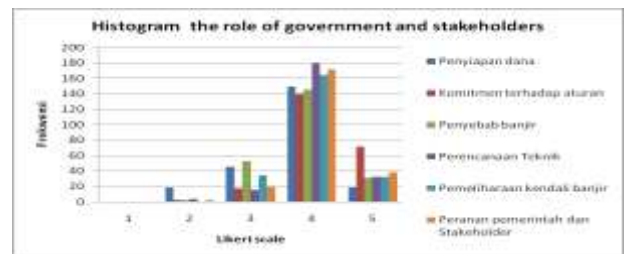


Figure 3 : Distribution of frequency laten variable the role of government and stakeholder (X)

: Characteristics of exegenous latent variable of policy space utilization (Y1) and indicator variables spatial planning control (Y1.1), Stakeout of spatial planning (Y1.2) and consistency of spatial planning (Y2) as table 4 below

Table 4: Characteristics of exogenous latent variable of policy space utilization and indicator variables (Y1.1 – Y1.3)

Indicator Policy space utilization	Distribution of Respondents (%)				
	Strongly disagree	Disagree	Between agree and disagree	Agree	Strongly agree
Spatial planning control (Y1.1)	0	0	19,56	25,21	55,21
Stakeout of spatial planning(Y1.2)	0	8,70	10,86	68,26	12,17
Consistency of spatial planning (Y1.3)	0	0	20,87	67,82	11,30
Policy space utilization (Y1)	0	0	20,44	70,87	8,69

Sources of Data : Primary data processing.

All indicators of overall space utilization policy responses received answers agree and strongly agree that high average above 75 % but the most dominant is the control room at 80.42 % and 80.42 % of control illustrates that both of these indicators are very important influence on space utilization policies that affect the performance of the flood control

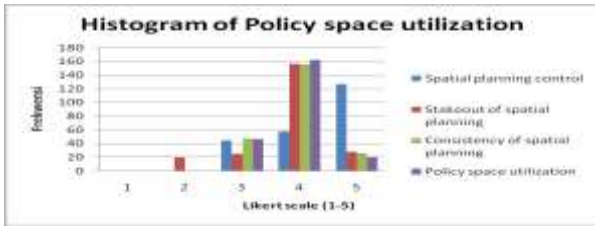


Figure 3 : Distribution of the frequency response latent variable space utilization policy (Y2) and indicators (Y21 - Y23)

Characteristics of endogenous latent variable maximum flood control function (Y2)
 Observations on the value of the latent variable scores maximum flood control function (Y2) is indicated by the manifest variable sedimentation (Y2.1), routine maintenance (Y2.2), damage to drainage network (Y2.3) as Table 5 below :

Table 5 : Characteristics of endogenous latent variable maximum flood control function (Y2) and indicator variables (Y2.1 s / d Y2.3)

Indicator variable of Maximum flood control function	Distribusi jawaban Responden (%)				
	Strongly disagree	Disagree	Between agree and disagree	Agree	Strongly agree
Sedimentation (Y2.1)	0	0	31,74	61,30	6,95
Routine Maintenance (Y2.2)	0	0	0,87	74,78	24,34
Damage to drainage network (Y2.3)	0	0	37,40	50,43	12,17
Maximum flood control function (Y2)	0	0	2,60	87,40	10,00

Sources of Data : Primary data processing.

Overall all performance indicators flood control response received answers agree and strongly agree that high average above 60 % but the most dominant is the routine maintenance of 99.12 % suggests that this indicator is very important and a big influence on the flood control performance .Distribution of answers respondents can be seen in Figure 4 below

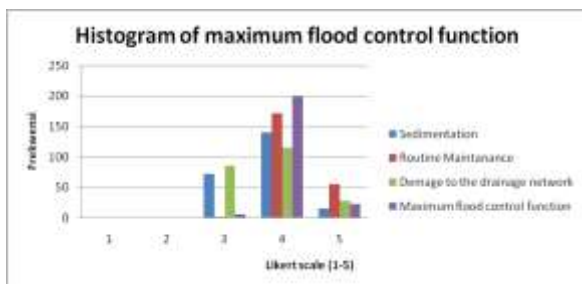


Figure 4 : Distribution of frequency response function of the latent variable maximum flood control (Y2) and indicators (Y2.1- Y2.3)

IV. Conclusion

Based on these result, we conclude on some of the following :

1. The role of government and stakeholders and a commitment policy for spatial arrangement affects the function of the maximum flood control
2. Policy that is based on space on space utilization with effective rules can provide optimal results on the function of flood control.
3. Exogenous variables as well as the role of government and stakeholders endogenous variables intervening space utilization policy affects the function of the maximum flood control.

References

[1]. Kodoatie,Rober J,Syarief Roestam (2010), *Tata Ruang Air*, Andi Offset,Yogyakarta 55281.

[2]. Suripin (2004), *Sistem Drainase Perkotaan yang berkelanjutan*,Andi Offset Yogyakarta 55281

[3]. Etta mamang,Sopiah (2010), *Metodologi Penelitian*, Andi Offset, Yogyakarta 55281

[4]. Kodoatie, Roestam, *Pengelolaan Sumber Daya Air Terpadu*, Andi Offset Yogyakarta 55281.

[5]. Hair, J.F (1998) *Multivariate Data Analysis*, Englewood Cliffs, NJ; Prentice-Hall Intl

[6]. Andrews,FM., L.Klem, T.N.Davidson, P.M.O'Malley, dan W.L.Rodgers,2001, *A Guide for Selecting Statistical Analyzing Social Science Data 2nd Edition*, The Institute for Social Research. The University of Michigan,USA

[7]. Buckley,J.W.,M.H., dan H.Chiang, 2006, *Research Methodology & Business Decision*, National Assaotion of Accountant and the Society of Management Accountants of Canada.Sage Publication, Inc.,California, USA

[8]. Kerlinger,F.N,2006, *Fondation of behavioral Research*, Third Ed.New York : CBS Publishing Japan,Ltd

- [9].Sedarmayanti dan Syarifuddin Hidayat (2002),
Metodologi penelitian, Penerbit Mandar Maju
Bandung.
- [10].Cooper,H.M.,2007 *Integrating Research A
Guide for Literature Review*, 2nd Edition, Sage
Publication,Inc,California USA