



# MONITORING AND EVALUATION (M&E) MODEL OF PROCUREMENT OF GOODS AND SERVICES CONSTRUCTION BUILDING BASED ON DISASTER MITIGATION IN CENTRAL SULAWESI

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**Abstract**— *Monitoring and evaluation (M&E) for emergency procurement project on natural disasters may become more difficult for disaster-related projects in Central Sulawesi: project assessment and monitoring of the design emergency procurement, quality standards are often not determined, and the necessary data may be difficult to be collected. But good monitoring and evaluation not only improve project outcomes for stakeholders, but also very beneficial to the public interest. His paper selects the group of controllers that can be achieved by using the methodology in two major categories: the experimental design (randomized) and the design of quasi - experimental (not-encrypted); estimation of counterfactual by using a random method to form a control group (experimental design), for controlling pre- and post-program of procurement and development of its participants, and to establish the program impacts, relevant data collected from the data base and its follow-up (including the time frame which is quite possible for the program impacts the cost-benefit or cost-effectiveness analysis to measure the efficiency of the project; and qualitative technique that makes it possible to use the method of triangulation. The results showed that there are differences between districts in Central Sulawesi Province in terms of upholding the quality of procurement and services, relating to the quality of each personnel, understanding of procurement regulations, systems training, correspondence between procurement priorities, differences in data standards, rules and regulations as well as the inaccuracy of selecting contractors*

**Keywords**— *Monitoring & evaluation (M&E), emergency ,procurement, disasters*

## I. INTRODUCTION

Procurement of goods and services during disaster risk understanding of the law by a lax standard procurement documents from the emergency [1]. This occurs because of the large amount of funds to be spent quickly and to overcome the problems of humanity. As a temporary shelter, clean water supply. Based on this risk, the expected service users and service providers have the awareness to make efforts to understand the standards documents from the emergency procurement by strengthening the distribution system by recruiting the help of a professional. Low quality of the procurement that occurs during emergency situations is priorities of the management of aid also require proof of transactions and other matters such as efficiency. Essentially, the risk of corruption can be reduced if the management system is carried out correctly, accountable [1,2].

The problem with an “uncoordinated, hurried” approach to procurement, in an environment where “financial controls are reduced, funding levels can soar, and staff change frequently,” is that it is a recipe for corruption and fraud [3]. Procurement officials may engage in corrupt practices because they feel they can get away with it, there is some value in doing so, and they have an opportunity to personally influence the decision being made. In emergency procurement, all three factors are potentially in play [3] . Provide examples of corrupt behaviors that include using emergency authority when there is no real emergency or beyond the time of the emergency, misapplication of discretionary authority, matching specifications against those of the firm desired, restricting bid invitations, and caving to political influences in award decisions [2-5].

The purpose of this study can analyze the quality standard procedure selecting providers of goods and services based construction disaster mitigation and create a model of monitoring and evaluation (M & E) procurement of construction services-based mitigation. Therefore, the procurement of goods and services for construction is the starting point for the creation of quality development outcomes. Users and providers of goods and services for construction need to understand and share the same commitment in implementing regulations related to procurement and construction services. Enforcement of standards of procurement of goods and services based construction buildings mitigation or in emergencies begins with an understanding of the substance of the standards, so that the necessary access to get to know and get quality information procurement are complete [6].

## II. THEORY

Procurement is one form of government action that is critical to the economic recovery of communities. Disaster procurement is also important since hazard events increase complexities and constraints to even well-functioning procurement systems, highlighting the importance of transparency and effectiveness. Procurement systems which fail to respond effectively during and after disasters may have long-term negative impacts on the recovery and resilience of communities. Moreover, while disaster procurement at the federal level is important, the role played by local-level procurement managers is critical. Despite the importance of this issue, there has been little to no scholarly investigation of disaster procurement at the local level [2,5]. Procurement provisions under emergency declarations can give agencies the authority to award a contract without public advertising for bids or make emergency purchases without prior approval. Whether provisions involve waiving a bidding process or granting the ability to bypass routine forms, such provisions are unique to each jurisdiction. Personnel from both the health department and the fiscal agency must know about the specific provisions available to them during an emergency [7-8]. There is no statutory time limit for both request for quotation and direct procurement and can be applied in times of emergencies also. As for direct procurement approvals have to be sought from inspection and acceptance committee. These bureaucracies involved make this procedure unsuitable for corrective maintenance [9].

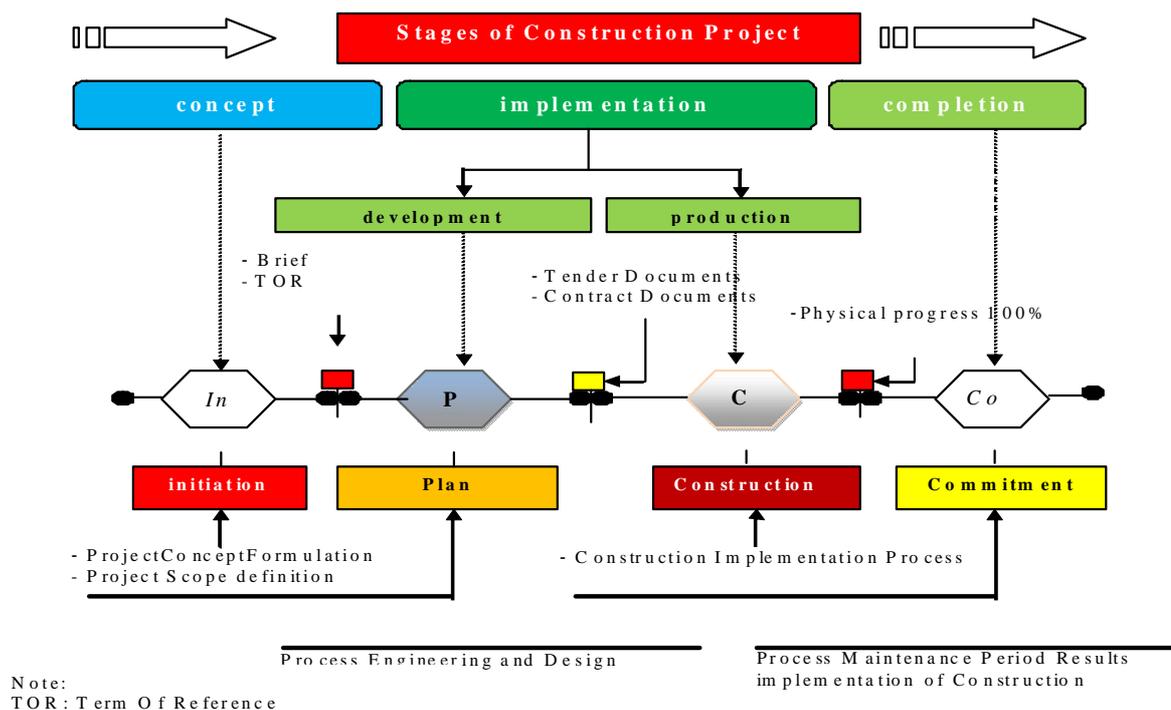


Fig.1. Stages of Construction Project [10].

Procurement monitoring at the local government level can usually be done manually or using simple spreadsheets to record and report data. However, at the program level it may be more convenient to monitor procurement through a database of procurement actions. The database may be designed solely for procurement monitoring or it may support a broader Management Information System (MIS). The evaluation studies should select a random sample of contracts from the Procurement Database. In addition to verifying the information in the database, the studies should include an engineering assessment of the quantity, quality and (if possible) value of work actually completed.

Comparisons should be made with similar types of work implemented using alternative modalities. Interviews with stakeholders including contractors, officials and project beneficiaries should be used to gain a deeper understanding of the process and to develop recommendations for improvements [11,13]. Monitoring and evaluation are important in ensuring that the entire procurement process goes according to established standards. For those who do monitoring need to prepare appropriate strategies to overcome the constraints that exist in the process of procurement of goods or public services. The goods / services of government, involving government financial resources for capital expenditures is very great potential for abuse is not uncommon cause significant losses mainly natural disaster relief funds made possible through the direct appointment process.

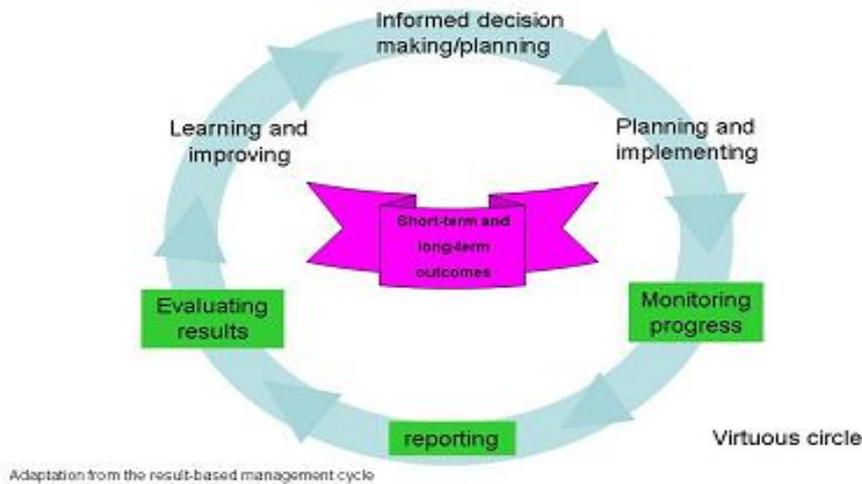


Fig.2. Planing, monitoring and evaluation cycle [12]

Therefore, the parties conducting monitoring and evaluation of the procurement of government goods / services, expected to be able to detect the risks that may arise in the supply, so it is able to identify any strategy needs related to the implementation of the monitoring and evaluation program is reliable. [13-14].



Fig.3. Model monitoring and reporting systems [12].

### III. METHODS AND ANALYSIS

#### RESEARCH DESIGN

This study reviews the performance of the application of quality standards of procurement of goods and services are based on subjective reasons (subjective reasoning) and objective assessment to a complex problem. In this regard, data collection techniques relevant to the nature and type of data that are qualitative interview (interview) or a written reply to a questionnaire (survey forms) addressed to the expert (expert) .Instrument research the most appropriate forms for surveys contains choice questions to be answered or selected by objective considerations and the experience and expertise of respondents (experts) copies at every stage of the survey regarding the evaluation standard model of monitoring the procurement of goods and services based construction buildings mitigation.

#### SORTING AND GROUPING VARIABLES INFLUENCE THE FACTOR ANALYSIS APPROACH

Mathematical formulation factor model can be described briefly as following. A factor model formulated by declaring variables observed, in a set of linear function

$$X_j \text{ to } X_p \dots \dots \dots (3.1)$$

$$X_i - U_i = I_{11}F_1 + I_{12}F_2 + \dots + I_{1m}F_m + S_i \dots \dots \dots (3.2)$$

$$X_2 - U_2 = I_{21}F_1 + I_{22}F_2 + \dots + I_{2m}F_m + S_2 \dots (3.1)$$

$$X_p - U_p = I_{p1}F_1 + I_{p2}F_2 + \dots + I_{pm}F_m + S_p \dots \dots \dots (3.3)$$

$(X-u)px1 = LpxmFpxm + Spx1$  (3.2)  $F$  are all factors that form and  $lj$  a weighting factor values. Tribe error associated only with  $X$ , a number of a number of  $p$  (random errors) and  $m$  weighting factors formed are not observed in the observation data collection or latent. With equations  $p$  and  $p + m$  fruit an unknown quantity, the value of these quantities can be calculated directly without requiring any additional information. Examination of some of the variables that have a high value on a weighting factor of factors done to examine the fundamental structure or commonality between these variables. The fundamental structure owned by a high weighted variables that need to be searched is a logical interpretation by an analyst based on the context of the research undertaken

**RESEARCH INSTRUMENTS**

Monitoring and evaluation (M&E) of disaster management procurement conducted by a systemic approach (input-process-output-outcome-impact) that need to be specified factors, variables and parameters as the indicators in each of the parts of the system (subsystem) enforcement. Factors in this study is intended circumstances or events that affect the occurrence of something or anything that actively contribute to a settlement, the results and the process. The variable in this study is intended as something that has a variation or something that can change that reflects the character of factors. The indicators referred to in this research is something that can be used as a tool to measure, provide guidance and information on the variables. The parameters defined in this study is a size limit or a variable performance benchmarks.

Results of monitoring and evaluation of the implementation of standard procurement of goods and services (SPBJ) can be shown in the following equation:

$$\bar{a} = \sqrt[n]{a_1 a_2 a_3 a_4 \dots a_n} \dots\dots\dots(3.4)$$

With :

- $\bar{a}$  = the average opinion of the respondents
- $a_1$  = data opinions of respondents number 1
- $a_2$  = data opinions of respondents 2<sup>nd</sup>
- $a_3$  = data opinions of respondents the 3<sup>rd</sup>
- $a_4$  = data opinions of respondents 4<sup>th</sup>
- $a_n$  = data opinions of respondents 5<sup>th</sup>
- $n$  = the amount of data from respondents

**TABLE-1.** EVALUATION CATEGORY ENTRY STANDARD PROCUREMENT DOCUMENTS BASED DISASTER MITIGATION.

Value (%)	Monitoring Category	Evaluation Category			
		Portable	Acceptable	Applicable	User Friendly
<25	Not	Not	Not	Not	Not
25 – 50	Less	Less	Less	Less	Less
50 – 75	Enough	Enough	Enough	Enough	Enough
>75	Good	Good	Good	Good	Good

**IV. RESULTS AND DISCUSSION**

Procurement of goods and services in the region of Central Sulawesi province are closely linked in efforts to bring about development for the welfare of the people in that region. In the implementation of the procurement of goods and services based on disaster mitigation specifically directed to be implemented, systematic, focused and integrated with the aspirations and needs of the community in the region of Central Sulawesi province. Capital expenditures and spending on goods and services in Central Sulawesi province from year to year has increased from the year 2009 up 5.6% of total expenditure Rp533.403.100.000, - rose to Rp 563.350.540.000, - in 2011 rose by 15, 9% to Rp 652.707.420.000, -, the year 2012 has increased very significantly jumped 43.6% to Rp.957.481.000.000, -, capital spending and price of goods to Central Sulawesi Province to fund budget in 2013 to Rp 1.061 .820.910.000, up 13.3% and in 2014 only rose 6.4%, or total expenditure Rp 1.130.150.825.000,

In general, direct spending districts / cities in Central Sulawesi from 2009-2013 year has increased from year to year, this increase was offset an increase in regional revenue in nearly all districts / cities except Banggai islands and districts and Morowali district. The decline in capital spending that occurred in the Banggai Islands and the District Morowali is caused by the breakdown of the Banggai Islands into Banggai Banggai Islands and Sea and Morowali district became Morowali and North Morowali Regency.

**TABLE-2.** ACTUAL REGIONAL GOOD AND SERVICES EXPENDITURES OF DISTRICT/ CITY IN THE CENTRAL SULAWESI PROVINCE YEAR 2009-2013 (MILLION RUPIAHS).

DISTRICT/CITY	2009	2010	2011	2012	2013
(1)	(2)	(3)	(4)	(5)	(6)
Banggai Kepulauan	55.886.313	49.120.377	64.655.437	75.272.879	92.700.930
Banggai	96.497.361	89.211.514	130.002.474	133.617.808	206.398.915
Morowali	134.986.845	112.033.308	98.934.124	119.783.362	174.557.782
Poso	115.530.836	100.947.648	110.156.642	125.723.068	159.190.422
Donggala	78.579.335	85.134.218	134.567.427	128.985.195	149.502.282
Toli-Toli	76.533.021	62.683.317	93.660.491	100.537.893	132.431.515
Buol	74.748.296	59.826.832	84.344.300	63.970.383	96.874.615
Parigi Mautong	93.149.776	96.004.834	126.797.707	128.323.935	166.268.908
Tojo Una-una	92.265.622	95.837.984	97.298.711	90.876.843	140.983.723
Sigi	29.373.186	75.305.237	107.482.177	130.770.745	138.472.994
Palu	70.608.978	87.561.903	119.651.194	122.529.748	176.642.199

Source: Department of Revenue, Finance and Asset Management District

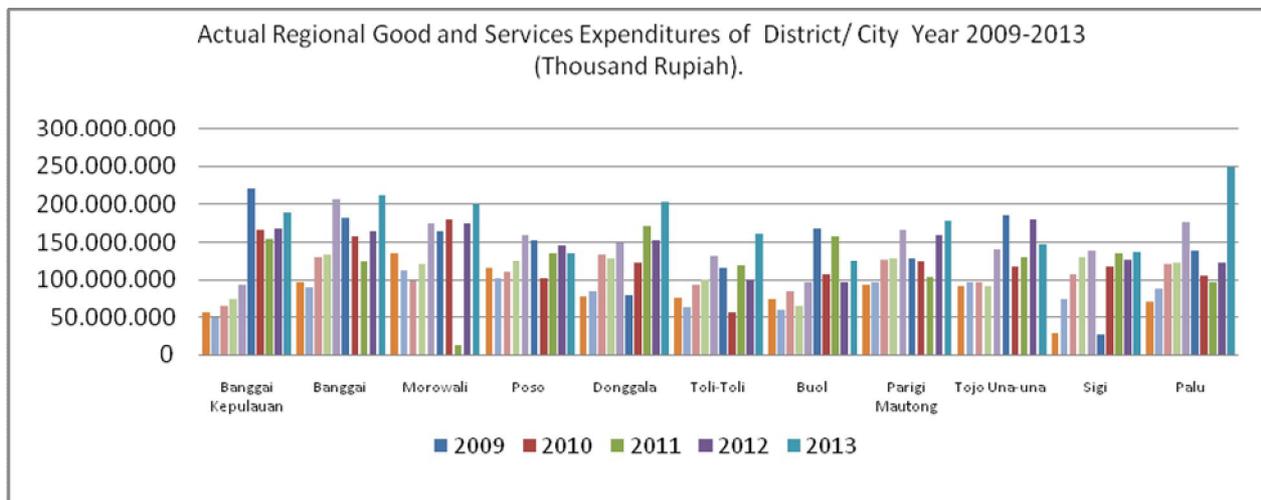


Fig.4. Realization Diagram Actual Regional Good and Services Expenditures of District/ City Year 2009-2013.

Based on the results of a study of 60 respondents about constraints on the implementation of the procurement quality standards of maintenance found several problems that often occur in the field, are: (i) lack of accountability monitoring the organizers of procurement (39.3% of respondents); (ii) quality limitations of the methods of procurement (16.1% of respondents); (iii) limited human resources quality of service users (23.5% of respondents); (iv) the lack of coordination between service users and providers of quality procurement management services (12.7% of respondents); and (v) difficulty understanding the substance of procurement quality standards (11.3% of respondents). If the observed distribution of respondents every district, the results of the analysis showed nearly 75% of respondents in Toli-Toli declare a major obstacle in achieving the quality of the procurement of goods and services procurement construction building-based mitigation is the limited quality of human resources service users, the lack of coordination between service users and service providers and difficulty understanding the substance of procurement quality standards as well as nearly 60% of respondents respectively in Morowali District, Tojo Una-Una and Sigi stated the same thing with the respondent in Toli-Toli. The phenomenon is quite different from the situation in Moutong Parigi district, Donggala which shows about 35% of the respondents found the same thing with the other districts, as shown in Fig 5. From the description of this discussion can be concluded that the implementation of procurement quality constraints dominant in the maintenance of procurement and services is limited accountability monitoring, evaluation and procurement quality standards quality limitations procurement documents used. The procurement of building construction quality based mitigation requires accountable procurement. Terms are felt especially hard in the district outside Parigi Moutong and Donggala because of limited available resources.

Aberration achievement of the quality of procurement of goods and services, ttechnical study ever conducted on the performance quality of the goods and services mentioned that there are 6 (six) deviation implementation of procurement quality achievement, namely: (i) Intervention by certain parties (ii) inadequate regulation (iii) Not all personal / unit want on the monitor (iv) absence of further implications of the results of monitoring and evaluation (v) the performance appraisal system is not adequate (vi) Low reward or punishment standards accepted obscurity compared to the achievement of the results obtained. Implementation of the model is done to monitor and evaluate the implementation of quality standards of goods and services based on disaster mitigation. Implementation of the model starts with the interview survey respondents who have specific experience in the implementation of the procurement of goods / services based disaster mitigation, which supported the minimum educational civil engineer with a background in career services are appropriate and adequate, and comes from: BPPD office (Regional Natural Disaster Management Agency ), the Office of Public Works, the Office of Human Settlements, the Office of Water Resources, and the Office of Procurement Services Unit. At every institution is taken 1 to 2 respondents because the respondents will be divided equally follow a normal distribution according to the selected study sites.

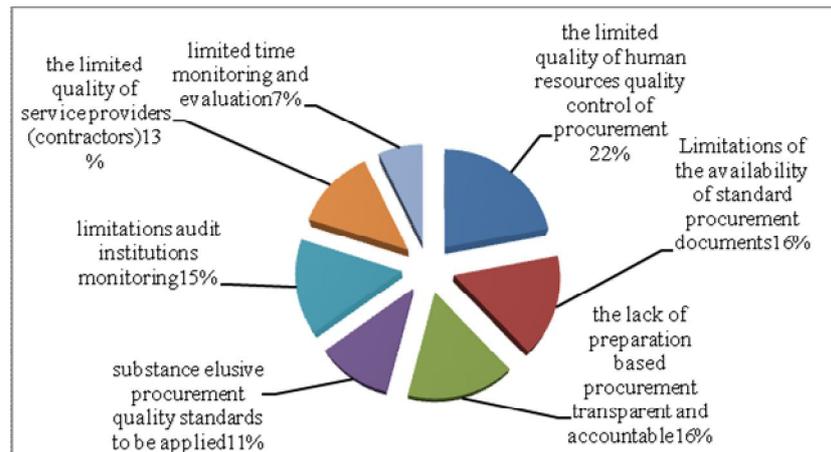


Fig .5. Constraints implementation of quality standards procurement.

TABLE-3. IDENTIFICATION OF CONSTRAINTS ON THE IMPLEMENTATION OF THE PROCUREMENT QUALITY STANDARD DISASTER MITIGATION PROJECT.

IMPLEMENTATION OF QUALITY STANDARDS PROCUREMENT	PERCEPTION OF RESPONDENTS (%)		
	SOURCES OF BASELINE	MONITORING	EVALUATION
• Limitations of Human Resource Quality	15,7	35,5	13,2
• limited funding	37,6	29,6	39,3
• limited time service users	12,0	8,1	16,1
• substance procurement quality standards	13,4	11,4	11,3
• Procurement priorities	15,1	9,3	12,7
• Risks and Challenges	6,4	6,1	7,4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

In this study, been some research location that is central Sulawesi and 6 (six) other places are districts in Central Sulawesi (Sigi reGENCY, Donggala, Parigi Moutong, TojoUna-Una, Toli-Toli, and Morowali). The choice of location is based on a purposive sampling method, where the election because a particular purpose. So the number of respondents is 60 people who have competence in the application of the procurement of goods / services.

TABLE-4. RESULTS OF MONITORING AND EVALUATION (M&E) STANDARDS ENFORCEMENT PROCUREMENT DOCUMENT-BASED DISASTER MITIGATION.

No.	MONITORING AND EVALUATION	BPPD	CK	BM	SDA	ULP	MEAN
1.	<b>Have (M-1)</b>	6,00%	3,60%	4,80%	4,90%	5,63%	4,91%
	a. How to recognize	1,18%	0,63%	0,70%	0,88%	1,00%	0,85%
	b. how to get	2,50%	1,63%	3,13%	2,00%	3,13%	2,40%
	c. How to archive	2,32%	1,35%	0,97%	2,02%	1,50%	1,56%
2.	<b>Understanding (M-2)</b>	15,00%	13,88%	14,00%	13,88%	11,63%	13,63%
	a. understanding of the language	3,75%	3,75%	2,75%	2,25%	3,00%	3,04%
	b. understanding of substance	11,25%	10,13%	11,25%	11,63%	8,63%	10,59%

3.	<b>Applying (M-3)</b>	42,81%	35,56%	31,94%	36,56%	31,56%	35,47%
	a. physical documents	3,24%	3,75%	1,25%	2,49%	2,50%	2,49%
	b. executive competence	10,31%	10,31%	4,68%	4,69%	8,43%	6,30%
	c. data management	3,75%	2,50%	2,38%	4,12%	2,50%	2,97%
	d. utilization tool	8,88%	7,25%	6,88%	8,88%	5,63%	7,40%
	e. utilization of materials	9,13%	5,00%	10,00%	9,13%	5,00%	7,31%
	f. methods of implementation	7,50%	6,75%	6,75%	7,25%	7,50%	7,14%
4.	<b>Supervise (M-4)</b>	11,63%	11,25%	13,88%	7,63%	11,00%	10,88%
	a. achievement uniformity	4,13%	3,75%	4,38%	2,63%	4,00%	3,73%
	b. Achievement of quality assurance	7,50%	7,50%	9,50%	5,00%	7,00%	7,15%
	<b>Value Monitoring</b>	<b>75,44%</b>	<b>64,29%</b>	<b>64,61%</b>	<b>62,96%</b>	<b>59,81%</b>	<b>65,22%</b>
5.	<b>Evaluating (M-5)</b>						
	a. Portable	60,00%	36,00%	48,00%	49,00%	56,25%	49,11%
	b. Acceptable	75,00%	69,38%	70,00%	69,38%	58,13%	68,14%
	c. Applicable	77,84%	64,66%	58,07%	66,48%	57,39%	64,49%
	d. User Friendly	77,50%	75,00%	92,50%	50,83%	73,33%	72,51%

In general, monitoring results in the category of "good enough" with 59.81% which is the lowest in the Procurement Services Unit (ULP) and the highest on the Regional Disaster Management Agency (BPPD) by monitoring the value of 75.44%, followed by the Department of Resources Water Resources (SDA) (62.96%), the Department of Highways (BM) (64.61%), and the Department of Human Settlements (CK) (64.26%). This suggests that the Regional Disaster Management Agency (BPPD) and the Department of Human Settlements (CK) as the central unit in charge of managing the procurement of goods and services had been monitoring the implementation of the procurement documents properly in accordance duties and functions, while the Procurement Services Unit (ULP) better position ourselves as a procurement official controls the extent of the procurement documents may be owned, understood, and applied by field practitioners in the field of consultancy and the procurement of goods / services. Results if the data derived from the logic models show that the level of fairness of the analysis is quite good because it is not much different from the results of the monitoring assessment among stakeholders. Thus it can be said that the level of achievement of the reach of uniformity in the quality assurance of goods / services procurement of emergency in the region of Central Sulawesi and the surrounding areas in both categories

Evaluation of the implementation of the procurement documents reviewed in 4 (four) aspects of assessment, namely: (1) portable (2) acceptable (3) applicable and (4) user friendly. Regional Disaster Management Agency (BPPD) and Procurement Services Unit (ULP) assess fairly portable document procurement (respectively above 50.0%, ie 60.0% and 56.25%) due to first get the book printed documents procurement than Department of Human Settlements, Department of Highways and Department of Water Resources. The third unit is more dominant in the technical manuals rather than the procurement documents. In general, the fifth unit is working well enough to understand the language and the technical substance of the procurement documents as acceptable average value is 68.14%, which means that means that the content of the discussion document management easy to learn and understand. Similarly applicable aspects and user friendly. Results of evaluation of these two aspects that are in good enough category, with each average is 64.49% and 72.51%. In general, the results of an evaluation of any aspect of being in good enough category (50.0% - 75.0%) except for portable aspect, which is located in the unfavorable category (25.0% - 50.0%). This indicates that the socialization of the procurement documents (how to identify, acquire, and archive) further improved in all units of the relevant stakeholders management procurement of goods and services based on mitigation, including universities, so that in the future the community created a standard minded procurement of goods and services based mitigation. In addition it should be considered a book procurement uniform documents so as not to give rise to many interpretations that make a gap for abuse of authority. Procurement Monitoring and Evaluation Program system of disaster management. Monitoring and evaluation (M&E) is one activity in one cycle of procurement, management is important to look at the performance of the parties involved in the process of procurement of public goods and services. Monitoring can also be defined as a process of information gathering and analysis (based on the indicators set) basis systematic and continuous program of activities, so that corrective action can be done to further refinement of the program. The process of evaluation of the quality of the procurement of government goods / services if implemented properly can generate useful recommendations to the parties conducting monitoring and evaluation. Monitoring and evaluation (M&E) system procurement disaster countermeasures covering all areas of the county and city in the province of Central Sulawesi, provide feedback for the Consultancy's performance, strategic decision making, and help provide a solution. "This system will create tangible benefits for supporting decision makers. In detail the purpose of e-monitoring and evaluation is:

- Make admin agency
- View the procurement process plans and disaster management
- Update the plan and procurement process for disaster management

From the analysis of information systems in Table 4 we can conclude the necessity of a system program monitoring and evaluation that deal specifically procurement of natural disaster (emergency procurement) by increasing (upgrade) IT facilities that exist in the respective districts, implements warehouse in data integration, implementation of Service Oriented Architecture (SOA ) in the process of the integration of existing information systems.

TABLE-5. GAP ANALYSIS E-(M & E) AND TARGET ARCHITECTURE (M & E) EMERGENCY PROCUREMENT.

E-(M & E)	TARGET ARCHITECTURE
<p>Not to All Use Standard Database Not Integrated All data have not been in Backup Separate data between central and local Not to use the mobile system Not to Support Service</p>	<p>All standardized Integrated Data Base Data Backup Fulfilled Data Warehouse Using a mobile system SOA</p>

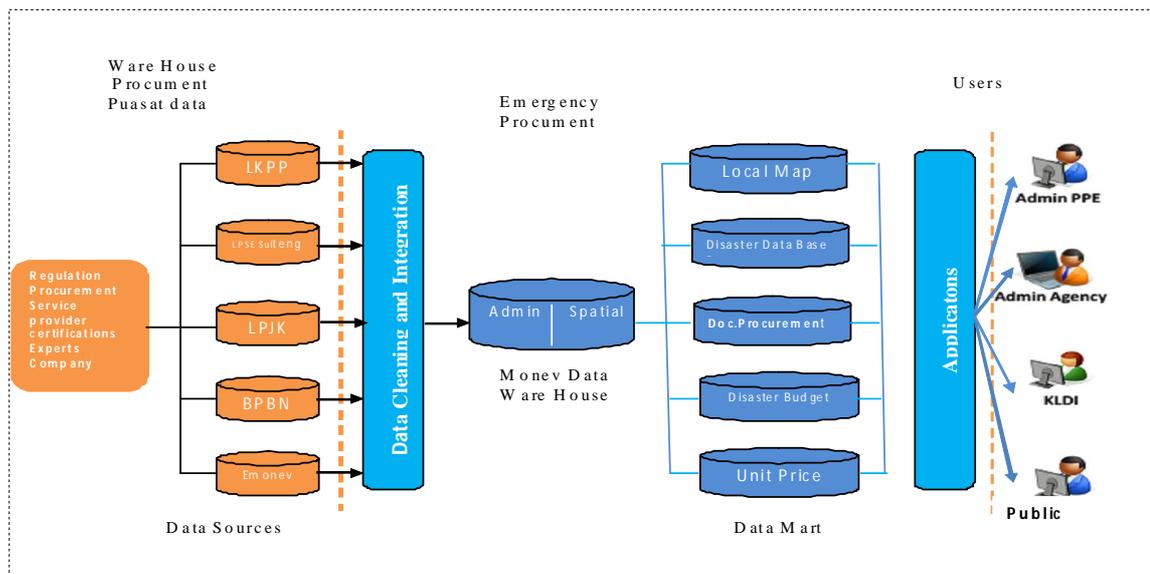


Fig. 5. Information Systems Architecture [15-16].

From Fig 5, the future plans for the process of data sharing is all the data that is stored in a distributed or centralized to be multi-user, the data of each center into a data mart, admin in the respective district or unit of work data is input the data directly as a map of the disaster, budget plans, procurement plans that are integrated with LKPP, LPSE, LPJK, and IBRA. This is to facilitate the development of a data warehouse as a replica of the data that is scattered.

## V. CONCLUSIONS

Monitoring and evaluation (M&E) system and a breakthrough is the development of the manual monitoring system that already exists. Through this system, the expected performance of the goods / services of the government will increase. In particular, monitoring and evaluation system procurement countermeasures disaster in Central Sulawesi, the system was developed to meet the objectives of monitoring and evaluation, such as providing feedback on their performance consultancy, strategic decision-making, and help provide a solution. This system will create tangible benefits for supporting decision makers. e-M & E not only contain information on the implementation of procurement of goods / services of the government alone, but includes the unity of business process.

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