Improving business processes to develop standard operation procedures on government building maintenance work in Indonesia

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Abstract. Preventive and corrective work carried out on government structures requires that Standard Operating Procedures for financial planning be developed to put an end to sharp practices which often result in budget wastage. The risk factors that can be instrumental to waste in the planning, implementation, maintenance, and supervision of government structures include Standard Operating Procedure that is not yet developed and organizational functions that are yet to be perfect. Hence, Standard Operating Procedure (SOP) requires good risk management. It will result in risk management strategy to enhance maintenance performance and maintenance of government building with respect to building health, building safety, comfort of the building and ease of constructing government building. The aim of this study is to find out how business processes and activities are organized for the planning, maintenance, implementation as well as supervision of government structures. The methodology used included expert validation, respondent survey and benchmarking analysis to determine its business process. The results of this study indicate that there are 164 activities in 16 business processes for preventive and corrective work relating to execution, planning, and supervision of government structures.

1 Introduction

Government buildings are structures for official purposes which are owned by the government and maintained with funds derived from APBN and/or other legal gains. They include office buildings, hospital buildings, school buildings, country houses, warehouses, and others [1]. They need maintenance to extend their lifespan so that services to the community can be met indirectly. Maintenance of buildings includes requirements relating to health, safety, comfort, and ease of buildings [2].

If buildings are not maintained, they will have a short lifespan. This is because there will be a damage to their structural, architectural, electrical, and mechanical parts. Damage that occurs will cause the failure of the buildings which can result in a collapse. Low-
quality materials used can make the construction to fail [3]. According to the independent daily (2017), people no longer have faith in government buildings found in various institutions because of the various complaints from different users who are of the opinion that the buildings are – below standard. The huge amount of money expended to maintain government buildings has been a source of concern because the quality of work done falls below expectations. The result is that the target of maintaining government structures is not achieved. Factors that make achievement of feasible performance in the maintenance of government buildings impossible include the lack of readiness on the part of workers to undertake these activities and lack of standard procedures to be followed organizations in maintaining government buildings. These factors result in research questions on the organizational structure, business processes, activities, inputs and outputs and time taken for maintaining government buildings.

The government sought to enforce SOP implementation and this led to the issuance of the regulation of the Minister of Government and State Apparatus Number 35 Year 2012 [4]. With regards to governance, SOP assists the government to be more effective and efficient in providing services to different communities. SOP will help companies control their operational activities [5]. Development of Standard Operational Procedures (SOP) in planning, implementation, maintenance, and supervision guard against budget wastage. It is anticipated that the results of this study will lead to an improvement in the maintenance and its effects on government structures.

This research is geared towards finding out the business process leading to the development of standard operational procedure in the process of Maintenance Planning, Implementation, Supervision Works, and Constructing Government Buildings

2 Theoretical study

2.1 Managing building maintenance

A building is a structure located in air, on land or in water, which people use for shelter or residence, business activities, religious activities, culture, social activities, and special activities [3]. Building maintenance is an effort geared towards maintaining the reliability of buildings functional at all times. Building maintenance entails repairing and/or replacing parts of buildings or building materials for the perpetual functionality of the buildings. [1]. Maintenance of buildings takes into consideration comfort, safety, health, and ease of building [1].

2.2 Standard operating procedures

Standard Operating Procedures (SOPs) are a set of instructions that regulate the administrative processes of government with respect to when and how to do, where and by whom (Regulation Empowerment of State Apparatus, No. 52 Year 2011) [6]. The objective of (SOPs) is to unify the perceptions of parties involved to have a better understanding of the tasks to be undertaken [7]. SOPs, as an important component of quality management system, will greatly help to strengthen transparency and reduce errors in the implementation of procedures, as well as improve the efficiency and quality of service by reducing the level of error and uncertainty [8].
2.3 Business processes and activities

The business process encompasses resources, roles, and rules that are required production and delivery of products or services for customers. Majority of the organizational activities are carried out in this process. Nowadays, companies are becoming more aware of the importance of processes for effective performance of business [5]. In this research, Business Process in Maintenance of Government Building is divided into 2 (two) business processes; these are Maintenance and Maintenance. Again, it is divided into 3 (three) namely planning, execution and supervision. Business process activities of budgeting, implementation and maintenance of government buildings are spelt out in line with the literature results and also by archival analysis and interviews with those parties who have carried out the business processes.

3 Research method

Descriptive qualitative method was used in this research. The regulation relating to building maintenance and previous studies served as input for this study. The arrangement of the instrument to be used in data retrieval was the next step. Then, content and construct validity was carried out to determine the variables used. The following steps were taken out of pilot survey as well as continued survey of respondents. The respondents in this research were authorities in building maintenance’s field. The results of the analysis were then substantiated by experts.

![Methodology of the Research](image)

Also made use of in this study was the delphi method which helped to validate business processes and existing activities to the relevant experts. Hence, the results of validation by experts were processed and re-analyzed. To obtain the approval of previous experts, the results were revalidated.

4 Result and discussion

On premises of the theoretical studies discussed in the literature review, the implementation of maintenance work is categorized into 4 activities, namely, Planning, Implementation, Maintenance and Maintenance Supervision. The results of data collection by experts who performed further analysis revealed 16 business processes. Each business process had activities and the 16 business processes had a total of 164 activities.

| Table 1. Business Process and Activities of Maintenance of Government Buildings |
|---------------------------------|
| **THE STAGES OF MAINTENANCE** |
| **1. MAINTENANCE OF GOVERNMENT BUILDING EMERGENCY** |
| X1 | Work Order |
| X1.1 | Receiving users complaints |
| X1.2 | Dissociating into closely related subsections |
| X1.3 | Checking the conditions of the field |
| X1.4 | Determining the work scale |
| X1.4.1 | **Scale for Small Work** |
| X1.4.1.1 | Undertaking direct execution while presenting the list of consumable materials |
| X1.4.1.2 | Doing the work |
| X1.4.1.3 | Sending a job report to the assignor (pphp) |
| X1.4.2.1 | **Scale for Large Work** |
| X1.4.2.1.1 | Writing an analytics report (letter of suggestion, drawing, boq, photo) |
| X1.4.2.2 | Discussing locations with the assignor |
| X1.4.2.3 | Discussing and waiting for the assignor’s response |
| X1.4.2.4 | Receiving a job assignment letter from the assignor |
| X1.4.2.5 | Doing the work |

| X1 | **Inspection** |
| X2.1 | Making a preventive maintenance schedule |
| X2.2 | Creating checklist of equipment condition |
| X2.3 | Reporting data about equipment’s’ condition |
| X2.4 | Disseminating breakdown news (findings) |
| X2.5 | Creating an analytics report (letter of suggestion, drawing, boq, photo) |
| X2.6 | Discussing locations with the assignor |
| X2.7 | Discussing and waiting for the assignor’s response |
| X2.8 | Receiving a job assignment letter from the assignor |
| X2.9 | Doing the work |
| X2.10 | Writing a Work Settlement Report |

| X3 | **Overhaul** |
| X3.1 | Writing a schedule for preventive maintenance conducted by principal (brand holders) |
| X3.2 | Accepting checklist results of equipment condition |
| X3.3 | Accepting report of equipment condition data from principal |
| X3.4 | Writing breakdown news event |
| X3.5 | Accepting proposal report from principal (plan, boq) |
| X3.6 | Writing a proposal analysis report (letter of proposal, drawings, boq, photo) |
| X3.7 | Sending a proposal report to the assignor |
| X3.8 | Discussing locations with the assignor |
| X3.9 | Discussing and waiting for the assignor’s response |
| X3.10 | Receiving a job assignment letter from the assignor |
| X3.11 | Presenting assignment letter to the principal |
| X3.12 | Overseeing supervision work |
| X3.13 | News of the job completion event |

### 2. GOVERNMENT BUILDING MAINTENANCE OF ROUTINE

| X4 | **Routine Maintenance** |
| X4.1 | Prepare a maintenance schedule |
| X4.2 | Present a schedule proposal to the assignor |
| X4.3 | Discuss and wait for the assignor’s approval |
| X4.4 | Do the work |
| X4.5 | Write a realization plan report |

### REPAIR STAGE

#### 1. REPAIR PLANNING FOR GOVERNMENT BUILDING

| X5 | **Government Financial Planning for Repair** |
| X5.1 | Prepare budgeting concept Work Plan and Budget of State / Institution Ministry |
| X5.2 | Presentation to the planning section |
| X5.3 | Moving into the budget section |
| X5.4 | Presentation to the government / finance ministry |
| X5.5 | Accepting indicative ceilings |
| X5.6 | Having discussions on budget |
X5.7 Getting a definitive cap
X5.8 If, in the current year, there is a change in the need for improvement which results in the change of budget, the budget revision will be submitted
X5.9 Ceiling can be used
X6 **Planning Managed by Self**
X6.1 Writing a Letter of Instruction of Planning Task
X6.2 Carrying out a damage survey
X6.3 Demanding user validation for damage
X6.4 Processing Data
X6.5 Planning the Plan for Budget
X6.6 Forming an Image Planning Repair
X6.7 Forming RKS
X6.8 Measuring Job Volume
X6.9 Making a comparison of market unit prices (3 prices)
X6.10 Making Budget Plan, Image and RKS Valid
X6.11 Examining technical planning / results of design process
X7 **Direction Planning For Procurement Of Direct Consultation Services**
X7.1 Writing Terms Of Reference (TOR)
X7.2 Creating a Contract Design
X7.3 Assessing Budget Plan
X7.4 Writing a Task Order to the procurement official
X7.5 Submitting the procurement document
X8 **Planning Selection of Simple Selection Consultancy Services**
X8.1 Writing Terms Of Reference (TOR)
X8.2 Creating a Contract Design
X8.3 Assessing Budget Plan
X8.4 Applying General Procurement Plan
X8.5 Writing a General Procurement Plan Invitation Letter
X8.6 Implementing a General Procurement Plan (Discussing TOR)
X8.7 Writing a Letter of Invitation Procurement Plan
X8.8 Implementing LPP (Discussing the draft contract and Budget Plan)
X8.9 Writing Auction Application to ULP
X8.10 Presenting Auction Documents To ULP
X9 **Planning Election of General Selection Consultancy Services**
X9.1 Writing Terms Of Reference (TOR)
X9.2 Creating a Contract Design
X9.3 Assessing Budget Plan
X9.4 Applying General Procurement Plan
X9.5 Writing a General Procurement Plan Invitation Letter
X9.6 Implementing a General Procurement Plan (Discussing TOR)
X9.7 Writing a Letter of Invitation Procurement Plan
X9.8 Implementing LPP (Discussing the draft contract and Budget Plan)
X9.9 Auction Application to ULP
X9.10 Presenting Auction Documents To ULP

2. IMPLEMENTATION OF GOVERNMENT BUILDING REPAIR

X10 **Procurement Process of General Selection Construction Service (Above 5 Billion Rupiah)**
X10.1 Preparing TOR, material specification to be used
X10.2 Preparing TOR, material specifications to be used
X10.3 Assessing BoQ, RKS, Drawing and making HPS
X10.4 Applying General Procurement Plan to ULP
X10.5 Writing a RUP Invitation Letter
X10.6 Implementing RUP (Discussing TOR)
X10.7 Writing a Letter of Invitation Procurement Plan Implementation
| X10.8 | Implementing RPP (Discussing the draft contract and HPS) |
|------|----------------------------------------------------------|
| X10.9 | Auction Application to ULP                              |
| X10.10 | Presenting Auction Documents To ULP                  |
| X11  | **Procurement Process of Simple Selection Construction Service (200 million to 5 billion Rupiah)** |
| X11.1 | Creating TOR, material specification to be used         |
| X11.2 | Creating TOR, material specifications to be used        |
| X11.3 | Assessing BoQ, RKS, Drawing and making HPS              |
| X11.4 | Applying General Procurement Plan to ULP                |
| X11.5 | Writing a RUP Invitation Letter                         |
| X11.6 | Implementing RUP (Discussing TOR)                      |
| X11.7 | Writing a Letter of Invitation Procurement Plan Implementation |
| X11.8 | Implementing RPP (Discussing the draft contract and HPS)|
| X11.9 | Auction Application to ULP                              |
| X11.10 | Presenting Auction Documents To ULP                   |
| X12  | **Procurement Process of Direct Construction Services Below 200 Million** |
| X12.1 | Creating TOR, material specification to be used         |
| X12.2 | Creating TOR, material specifications to be used        |
| X12.3 | Assessing BoQ, RKS, Drawing and making HPS              |
| X12.4 | Creating SPT to procurement official                    |
| X12.5 | Presenting procurement documents                        |
| X13  | **The Process of Implementing Maintenance Monitoring** |
| X13.1 | Making contract documents                              |
| X13.2 | Assessing the contract documents                        |
| X13.3 | Accepting the contract documents                        |
| X13.4 | Contractors, and Supervision Consultants Go into Coordination |
| X13.5 | Holding coordination meetings for improvement implementation |
| X13.6 | Overseeing and supervising the implementation of activities |
| X13.7 | Making an evaluation report recap                       |
| X13.8 | Assessing the recap of evaluation report of the implementation of the activity |
| X13.9 | Assessing the results of the activities                 |
| X13.10 | Presenting a letter of application to PPHP              |
| X13.11 | Undertaking job inspection activities                   |
| X13.12 | PPHP Events Report                                      |
| X13.13 | BAST 1                                                  |
| X13.14 | Presenting a letter of application to FHO if there is a maintenance period |
| X13.15 | Doing the job inspection activities for maintenance     |
| X13.16 | BAST 2                                                  |

3. SUPERVISION OF GOVERNMENT BUILDING REPAIR

| X14  | **Implementation of Supervision of Selection of Providers (Goods and Services)** |
|------|--------------------------------------------------------------------------------|
| X14.1 | Assessing Procurement Plan                                                     |
| X14.2 | Assessing the procurement plan announcement                                    |
| X14.3 | Assessing SK Procurement Committee                                             |
| X14.4 | Assessing the Procurement documents on KAK HPS, the evaluation methods including the Authorization |
| X14.5 | Assessing BA documents Aanwijzing                                              |
| X14.6 | Assessing proposed Winners                                                     |
| X14.7 | Assessing the winner determination                                             |
| X15  | **Self-Monitoring**                                                            |
| X15.1 | Accepting SPT with SPMK, Picture, BOQ, RKS and completeness of activity document from Partner who will carry out the activity / project, prepare the disposition sheet. |
| X15.2 | Assessing the received documents.                                              |
| X15.3 | Dispersing for follow-up                                                       |
| X15.4 | Assessing the documents and preparing the draft of field supervisor's assignment |
| X15.5 | Assessing and initialising the Supervisory Task Force |
| X15.6 | Signing the Supervisory Task Force. |
| X15.7 | Undertaking supervision, monitoring / monitoring in the field in terms of quality, quantity and rate of achievement of volume. |
| X15.8 | Filling the BHL, proposing/evaluating and making technical recommendations on job changes in line with the SPK / Contract. |
| X15.9 | Holding meetings on-site and/or elsewhere on a regular basis, making weekly and monthly reports. |
| X15.10 | Going over the field, researching and initialising Minutes of Weight, and BAST Work submitted by Partner / Contractor. |
| X15.11 | Signing Minutes of Weight, BAST of work submitted by Partner / Contractor. |
| X15.12 | Handing over the results of supervision. |
| X16.1 | Accepting SPMK, Picture, BOQ, RKS and completeness of activity documents |
| X16.2 | Assessing the received documents. |
| X16.3 | Dispersing for follow-up |
| X16.4 | Following up on studying the documents and preparing a draft of monitoring supervisory duty letters |
| X16.5 | Assessing and initialising Monitoring Supervisory Tasks |
| X16.6 | Signing of Letter of Assignment Monitoring of Field Supervisor. |
| X16.7 | Carrying out monitoring in the field in terms of quality, quantity and rate of achievement of volume. |
| X16.8 | Assessing BHL and proposing / evaluating and reviewing technical recommendations on job changes in accordance with SPK / Contract. |
| X16.9 | Attending meetings at the site and/or elsewhere on a regular basis, making weekly and monthly reports. |
| X16.10 | Reviewing the field, researching and initialising Minutes of Weight, and BAST Work submitted by Partner / Contractor and supervisory consultant. |
| X16.11 | Signing Minutes of Weight, BAST of work submitted by Partner / Contractor. |

These business processes will translate into SOP (Standard Operational Procedure) that will be used as a guide for maintenance activities, planning, implementation and supervision of maintenance work on government buildings. They are a series of activities that produce useful/valuable output [9]. In addition, Business Process is a key element in ensuring that projects are executed in line with specified requirements [10].

5 Conclusion

The results of data collection and analysis revealed that there are 16 (sixteen) business processes which consist of activities that will produce output relating to Maintenance and Planning. Each of these business processes will become SOP (Standard Operational Procedure) which is used as a guideline for implementing maintenance activities, planning, and supervision of building maintenance work on the government buildings which is expected to become a reference for a better and structured implementation in every process.
The results of data collection and analysis revealed that there are 164 activities. These activities are associated with a series of flowcharts through which sequences of activities can be understood. The flowcharts also include information about inputs for starting activities, outputs of activities, personnel in charge of each activity, and duration of the activities. From the series of business process and activity flowcharts, a Standard Operational Document of Maintenance and Maintenance Procedure for Government Building has been prepared.

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