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## How to manage scope, time and cost of project management plan to develop manufacture information system

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# How to manage scope, time and cost of project management plan to develop manufacture information system

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**Abstract.** The information system project must be built with the right processes as especially the project management. The Right Management Project will create a good and right product. And also will reach optimal satisfy users. So we must management the project very well. In management project have triple constraints that are scope, time and cost management. In this research manage scope, time and cost of project management plan to develop manufacture information system with study case on a company that manufacture plastic bag because the stakeholder want to know how complete the application will be built and how long it will be take and how much it will be cost to develop manufacture information system. It is done to minimize project failures before start to develop. So the researches focus to manage scope, time and cost of project management to develop manufacture information system. This paper present outputs from our research such as product scope, project scope, work breakdown structure (wbs), project duration which are equipped with predecessor and milestones, Gantt chart tables, as well as project cost estimates.

## 1. Introduction

In the construction of an information system project, planning is the main thing that must be prioritized, without a careful planning a project will not run well and structured [1]. Without a proper planning, project will result in a fatal failure. For example the case that occurred at Fox Meyer, which failed when implementing an ERP system in the company [2]. According to the analysis of the failure that occurred on Fox Mayer may cause by several factors, specifically planning, implementation and lack of testing on the final results of the project [3]. The importance of involving the end user in planning is very helpful to develop a system that suits the user's needs [4]. For this reason, in making a good planning, Project Management Plan document is needed to control the workflow of the project.

A study of a good and correct project management plan reveals several stages that must be passed in making a project management plan, the first stage is planning where in this case the Project Manager will mapping the project, determine the problem to solve, identify stakeholders, set project goals, determine the scope of the resource along with the main tasks. The second phase is Build Up, in



this phase the Project Manager will gather the entire project team and plan assignments for each individual, after the assignment is complete it will proceed to the scheduling step, and then meeting with the entire team to get a proposal related to the schedule, after that will be continued to the cost estimation stage, in this phase the Project manager will estimate the overall cost of the project starting from the team salary to the material costs needed during the project development, the last stage is implementation where this is the stage where will apply all plans that have been made [5].

Project Management Plan is used to plan the process flow of each project activity in detail, both in terms of scope, cost, scheduling and human resources. This is a triple constraint in every project development [6]. This document from the Project Management Plan will be used to assist the system development team in building the project [7]. In this case the Project Manager has an important role in project planning, the project Manager is tasked with making the Work Breakdown Structure (WBS), estimating project costs, scheduling and determining the project's internal team.

In fact, many companies are unaware with planning process of information system project. Actually in plastic bag company where we have a research too is same. The company wants to develop an integrated management information system. So this research focuses to manage scope, time and cost of project management to develop manufacture information system. This research will present many outputs. There are: product scope, project scope, work breakdown structure, project duration which are equipped with predecessor and milestones, Gantt chart tables, and project cost using the standard "A Guide to the Project Management Body of Knowledge (PMBOK) fifth edition" [8]. And the template documents use the standard "Project Management Docs" based on PMBOK [9].

## 2. Methods

The researcher group the method into 3 group. The First is method of develop information system will take from Kendall namely SDLC [10]. This method to create work breakdown structure in Project Scope. The second is method of data gathering. There are interview, observation to the company, and collect document. The Internal document from Organization Process Assets (OPA) and the external document from Enterprise Environmental Factors (EEF). This method is an analytical method that is done in 3 ways [11]. And the third is global method of project management according to PMBOK standart. In Project Scope Management has 4 steps, there are plan scope management, collect requirements, define scope (product and project) and create WBS. While in Project time management has 6 steps, there are plan schedule management, define activities, sequence activities, estimate activity resources, estimate activity durations, develop schedule. project schedule management uses the Critical Path method with Gantt Chart tools to create project scheduling [12]. The last in Project Cost Management has 3 steps, there are plan cost management, estimate costs, determine budget. In cost management plan documents using the Activity Based Costing method, where this method is a method for estimating project costs based on the activities carried out [13].

## 3. Results

This research result many document but in this paper we present 5 outputs, such as product scope, project scope, work breakdown structure (wbs), project duration which are equipped with predecessor and milestones, Gantt chart tables, as well as project cost estimates.

### 3.1. Product scope.

The results of product scope of manufacture information system are having 3 modules that collect form 20 sub module include.

*3.1.1. Sales and marketing.* In this sales and marketing system there are 6 modules with each feature in it. The first module is Order and Processing used to process orders submitted by customers, the second is a Contract for Business to Business transactions, the third is Pricing to determine cost of goods sold, sales price based on level and also promotion price, fourth is Billing to display the amount of money the customer has to pay and also can directly print the invoice for the transactions made by

user, the fifth is Credit for sales transactions that has any debt or account receivable and paid when due, the sixth Credit Checking to display notifications about sales transactions on credit.

**3.1.2. Finance and accounting.** In the finance and accounting system there are 6 modules with each feature in it. The first module is Financial Reporting to display information about financial statements, second is Account Payable to display credit purchase reports, third module is Account Receivable to display credit sales reports, fourth module is General Ledger to display company ledger reports, fifth module is Cash Management to display reports finance specifically intended to monitor financial outflows for employee expenses, sixth module is Fixed Asset to display all assets owned by the company.

**3.1.3. Manufacturing and production.** In the Manufacturing and accounting system there are 8 modules with each feature in it, the first module is Production Planning to determine the production planning that is directly sold to the customer and also determine the supplier as a supplier of raw materials, the second is Quality Control to inform about goods that are worth selling or not feasible for sale, the three Plant And Equipment Maintenance for the system can inform the production equipment data used, the fourth is Shipping to inform about transactions that must be sent and the delivery schedule, the fifth Purchasing to provide information about supplier data, the sixth Procurement to provide information about suppliers that have best deal and also information about customers who also have the best deal, the seventh Distribution for the system that contains the delivery of goods from the warehouse to the store, the eighth Inventory Management which contains the data of goods at the warehouse

### 3.2. Project scope.

This document create with SDLC method of develop information system by Kendall [10]. This method to create work breakdown structure in Project Scope.

**Table 1.** Work breakdown structure.

WBS Code	Work	Predecessor
1	Analysis	
2	Design	I
3	Development	II
4	Implementation	III
5	Closing	IV

In accordance with the SDLC method proposed by Kendall, the WBS of this project is divided into 5 stages namely Analysis, Design, Development, Implementation and Closing.

### 3.3. Work breakdown structure.

The result work breakdown structure have 300 task from 5 project scope and 20 module.

### 3.4. Schedule management.

Schedule management is manage with project duration, predecessor and milestones.

**Table 2.** Scheduling.

Work	Duration	Predecessor	Start	Finish
Analysis	77 days		04/11/2019	06/03/2020
Design	62 days	I	09/03/2020	19/05/2020
Development	250 days	II	20/05/2020	07/07/2021
Implementation	37 days	III	08/07/2021	08/09/2021
Closing	2 day	IV	09/09/2021	13/09/2021

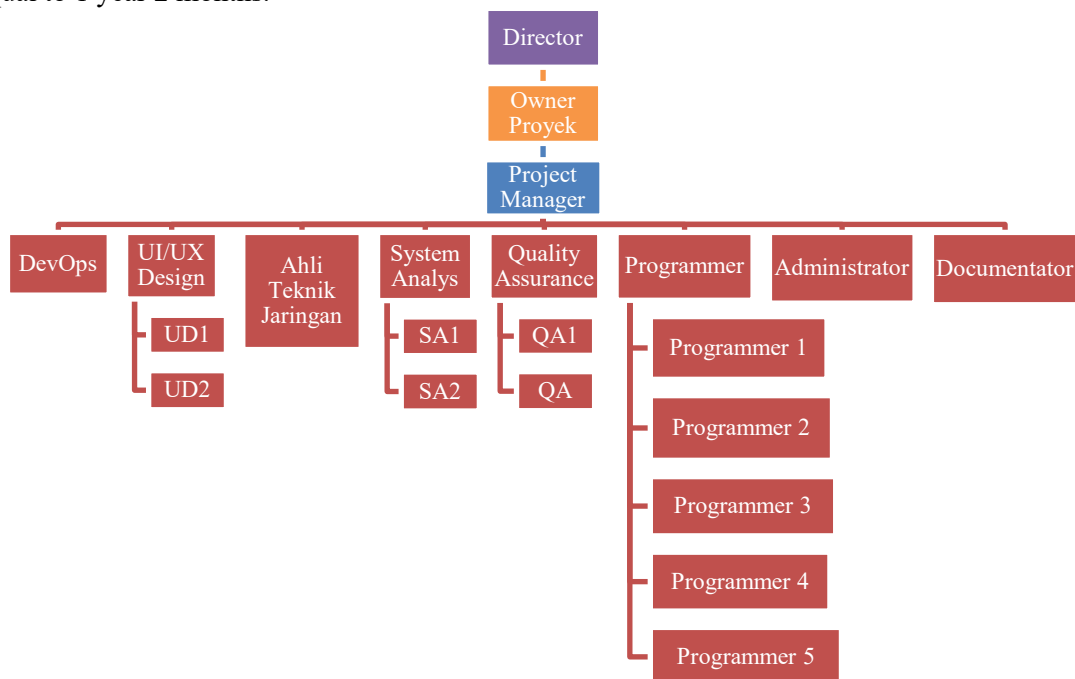


Based on table 2, the next step is to calculate the estimated duration of the project to determine the critical path.

**Table 3.** Calculation result.

Work	Early Start	Early Finish	Late Start	Late Finish	Total Slack
Analysis	11/4/2019	3/6/2020	11/4/2019	3/6/2020	77 days
Design	3/9/2020	6/25/2020	3/9/2020	10/15/2020	0 days
Development	6/26/2020	8/11/2021	10/15/2020	10/15/2021	0 days
Implementation	8/12/2021	10/12/2021	9/3/2021	10/15/2021	2.63 days
Closing	10/13/2021	10/15/2021	10/13/2021	10/15/2021	2 days

Based on table 3, it can be concluded that the works becomes critical lies in the Development and Design stages. The total duration required in the construction of this project is 431 working days, or equal to 1 year 2 months.



**Figure 1.** Organization structure.

### 3.5. Project cost estimates.

The budget plan is very necessary in the design of the construction of a system. Where it will be a reference for the project manager to adjust the budget and actual costs that will be spent during the project implemented.

**Table 4.** Budget plan.

Work	Duration	Cost
Analysis	77 days	IDR 49,790,828
Design	62 days	IDR 12,085,288
Development	250 days	IDR 169,990,352
Implementation	37 days	IDR 10,990,528
Closing	2 days	IDR 2,517,430
<b>TOTAL</b>	<b>431 days</b>	<b>IDR 245,374,426</b>

#### 4. Conclusion

Finally this research has 4 findings. First manufacture information system can manage scope to be 3 modules that collect form 20 sub module include. The second, this document create with SDLC method of develop information system by Kendall and have 300 task from Analysis, Design, Development, Implementation and Closing Primary task. The third is total duration required in the construction of this project is 431 working days, or equal to 1 year 2 months. And the last is about the budget that will be spent during the project implemented IDR 245,374,426

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