

CHAPTER 3



PROPOSED MODEL

This chapter will present the existing model and the proposed model for the human resource allocation of the Mechanical Department. The existing model consists of three steps: Demand; Planning; and Allocation. The proposed model has divided into five steps: Work Scheduling; Resource Assignment; Allocation Plan; Allocation; Monitoring. Then both models will be implemented to the multi projects which are Ratchaburi Thermal Power Plant Construction Project and Krabi Thermal Power Plant Construction Project. The Ratchaburi is the project 1 and the Krabi is the project 2 in this study. The project 1 started before the other.

3.1 Existing Model

As Mechanical Department (MD) has no model of its human resource allocation, the existing model gained from the Chief of Mechanical Department (CMD) who is responsibility of all projects under the MD. The resource allocation planning comes from the Chief of Mechanical Project Department (CMPD) of both projects who plan the allocation related to resource usage of the work in the project schedule. Then the planning of both projects is collected to allocate the resource to the projects following CMPD's plans. The exit model can be divided into three steps: Resource Demand; Allocation Plan and Allocation. Figure 3.1 shows the exiting model.

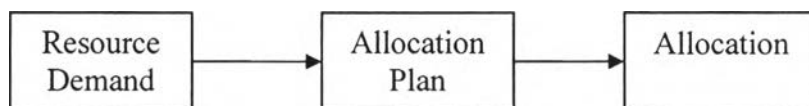


Figure 3.1: The exiting model

Step 1: Resource Demand

In the past practice, the starting and finishing dates of the projects are already fixed and the CMD assigned the CMPD of both projects the tasks to review and plan the new revision of the mechanical work schedule including job activity, milestone and duration, human resource and budget. All relevant data related to the Project Schedule including the human resource demand and its budget are also estimated in this step. Therefore, the human resource demand for the projects depends on the CMPD.

Step 2: Allocation Plan

According to the work schedules for construction, both CMPDs estimate the allocation plan of the human resource. It means that the estimation and the human resource allocation plans depend on their demands of the CMPD's and the plans are individual allocation plans of each project. It means that both plans are independent. The plans are submitted to the CMD and, then, the CMD checks resource usage and looks for its peak. Number of the resource usage in the unit at the peak amount is provided for the resource allocation. There are two types of allocation plan: MD to the project 1 and the project 1 to the project 2.

1. MD to Project 1 and 2

The resources, which are fixed and consist of CMPD, HPS, ENG, FORE, ADM. and some inspectors, are allocated from MD to Project 1 and 2 at the beginning regarding to the plan and when there is additional demand from the Projects. This allocation depends on the demand of CMPD.

2. Project 1 and 2 to MD

The resource demands of the projects are decreased when the job activities or the projects are completed. Then the resources are allocated from Project 1 and 2 to MD when their demands are decreased. This allocation is also under the demand of CMPD.

Step 3: Allocation

The demand data from both CMPDs are collected and then the human resource is arranged and allocated to both Projects by the CMD. The resource is allocated following the plans so that the allocation depends only on the project demands. Therefore, problems can easily occur after the allocation. The problems can be divided into two types: Over-supply of Resource and Resource Shortage. These problems can easily delay the Projects and lead to human resource over budget (as has been mentioned in Chapter 1).

3.2 Proposed Model

The proposed model of human resource allocation planning for the Mechanical Department (MD) is created. The model is developed from the existing model. This section will explain the details of the proposed model and its implementation.

3.2.1 Assumptions of Proposed model

The proposed model can be applied for the other departments of TPC who employ similar methods for their human resource management. However, there are differences in environments among the departments. Thus, assumptions used for model development of each department are different and the method model should be adapted under the assumptions of each department before implementation. The assumptions of the proposed model for MD are:

- **Average cost**

The costs related to human resource are average costs so that the results are not always the actual costs.

- **Average skill**

There is no standard practice for human resource management. Moreover, knowledge and skills of the resource are different. Therefore, the average competencies of the resources are used for analysis.

- **Single resource**

The human resource is a single resource that is assigned to work in only one section. In practice, some of resources are multi-resources who are able to work in more than one section in certain duration.

- **Target**

The target of model application depends on the purpose of each Department. The target of this model for MD is to focus on how to allocate the human resource to fulfill its requirement at time with lower cost in the Mechanical Work Schedule.

- **Similar job**

The Job activities of both projects are similar so that the resource workload of both projects is similar.

- **Similar resource**

The human resources have similar knowledge, skills and experiences. Therefore, the resources can be exchangeable between the two projects for the same tasks. Moreover, MD has enough human resource for both projects.

3.2.2 Components of Proposed model

The model under the assumptions is divided into five steps: Work Scheduling, Resource Assignment, Allocation Plan, Allocation and Monitoring. Flow chart of the proposed model is shown in figure 3.2.

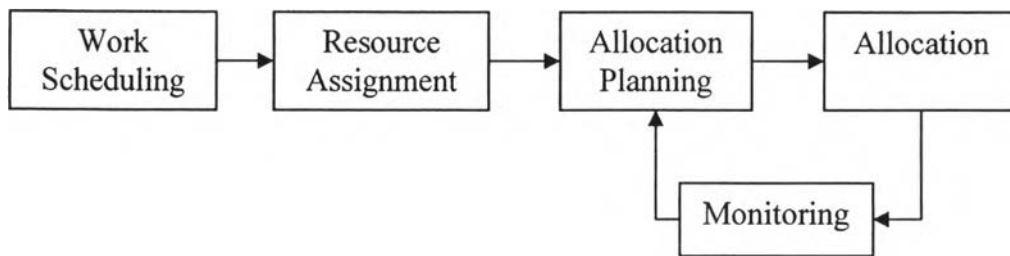


Figure 3.2: The proposed model

Microsoft Project Program is used as a tool to come up with the proposed model so that step of the allocation is as follow.

STEP 1: Work Scheduling

Mechanical work schedules of multi projects from CMPDs are combined and looked for the resource demand. Then the demand is computed from resource at that time by summing up the requirement for resource for all activities scheduled.

STEP 2: Resource Assignment

The resource is grouped and numbered to respond to job activity. Then the resource is pooled in the Mechanical Department which is the human resource pooling center. The pooled resource is resource availability for the demand. The numbers and the job activities are presented in Microsoft Project program in terms of work in hour and task, respectively. Finally, the resource is assigned for the demand.

STEP 3: Allocation Plan

The resource utilization is estimated and planned. Then the resource allocation plan is established against the demand to ensure that the plan will meet the resource requirement time. In addition, the resource usage chart identified unit and position of the resource and time of usage in this step. Project 1 is scheduled to start before project 2. There are four types of the allocation plan which are MD to Project 1 and 2, internal of Project, Project 1 and Project 2, and Project 1 and 2 to MD.

1. MD to Project 1 and 2

The resources are plan to allocate from MD to Project 1 and 2 at the beginning according to the plan, when there is demand of resources after returning of some resources from the projects and when there is additional demand from the Projects due to other reasons.

2. Internal of Project

The resources are planned to allocate from one job activity to others, when one's demand decreases because of the other's demand increases. This step is managed by CMPD.

3. Project 1 and Project 2

The resources are planed to allocate from one to the other project, when one reduces its resources as the other's demand increases. This means that the resource need not return from one to the main office before being allocated to the other project.

4. Project 1 and 2 to MD

The resources are planed to allocate from Project 1 and 2 to MD when their demands are decreased and when the projects are completed.

STEP 4: Allocation

The availability resource is allocated to fulfill the demand and following with the allocation plan.

STEP 5: Monitoring

The allocation in terms of unit and position at each time are monitored and compared to the demand. In case the resource demand has to be changed due to schedule, the allocation is adjusted base on such change. STEP 3 is reconsidered.

The unit derived from monitoring result will be compared to the resource demand in order to get the difference between resource allocation to the project and the demand. The calculation is as follow:

$$\text{Unit} = \text{Resource allocation} - \text{Resource demand}$$

There has three types of the unit: plus (+), zero (=) and minus (-) which indicate the value of the resource allocation in comparison with that of the resource demand when it is higher, equal and less, respectively. The plus and minus values indicate the over supply of resource and resource shortage, respectively. In general, the department is considered successful if the unit is zero