

# CHAPTER 5

## PROJECT EVALUATION

### 5.1 Evaluation Objectives

The objective of the evaluation is clarified in advance in order to specify its direction. For this project, the objectives is to measure impact of project when PRINCE2 is applied in relocating Mobile Service Center (MSC).

### 5.2 Evaluation Factors

In general, the success and effectiveness of project are defined as fulfilment of its objectives:

- within the allocated time period
- within the budget cost
- at the proper performance or specification level
- and satisfaction by users (Kerzner, Harold 1992)

The above statement is used for identifying evaluation factor for comparing performance of the project before and after implementing PRINCE2 methodology. In this case study, two indicators selected as evaluation factor are the 'Effectiveness of project planning' and the 'Effectiveness of project control'.

#### *5.2.1 Effectiveness of project planning*

In bidding a project, generally, the main aspects of customers consideration in choosing supplier or contractor are specification of proposed product, contract price and possibility to complete project before the due date. If the specifications of the product proposed by suppliers are comparable then customer has to consider the other two aspects which are price and duration of project.

Since the budget for operating project is part of project total budget if the budget for operating project decreases then project total budget will diminish as well. This means:

- opportunities for sales to apply 'Pricing Strategy' to attract potential customer
- chance for company to gain higher profit

Effectiveness of project planning is identified by duration of project plan and budget for operating project. Both can be calculated from the project plan.

i) *Duration of project plan*

Duration of project plan indicates the effectiveness of project planning in term of time. Project duration is started from the day when project plan is approved by senior project manager until product is handover to customer.

ii) *Budget for operating project*

Apart from the project duration, budget for operating project indicates effectiveness of project planning in term of cost. The budget for operating project is the budget allocated for implementing project during project implementation.

### 5.2.2 *Effectiveness of project control*

The effectiveness of project planning alone is insufficient to assure project success. Because it might be possible that project plan is effectively created, but project members are not able to achieve project objectives according to the plan and that is finally result in project failure. Therefore, successful project requires not only effective planning but also effective control to monitor project status against plan and take appropriate action if necessary in order to complete project within timeframe, budget and proper performance.

In control project, project manager has to monitor schedule performance and cost performance not independently, but in an integrated manner. The effectiveness of project control is reflected to schedule variance and cost variance at the end of the project. The lower schedule variance and cost variance are, the more effective project control is.

In this case study project, schedule variance and cost variance can be calculated by using the following formula.

$$\text{Schedule variance (SV\%)} = \frac{\text{Planned duration} - \text{Actual duration}}{\text{Planned duration}}$$

$$\text{Cost variance (CV\%)} = \frac{\text{Planned budget} - \text{Actual cost}}{\text{Planned budget}}$$

### 5.3 Baseline Project

To evaluate outcome of the project after implementing PRINCE2, one project is selected as baseline for comparing with the case study project. The baseline project dealt with installation and commissioning the MSC at Phitsanuloke province. The reason of selecting this project is because it has closest environment with the case study project. Although each project is unique, there are some similarity and difference between the case study project and the baseline project that can be identified as follow.

#### Similarity

- Both projects have the same configuration (same number and type of hardware equipment) therefore the actual effort required to do the works of both project is fairly the same.
- The project manager who is responsible to the two projects is the same person so there are little difference in experience and knowledge of project manager in managing this kind of project.

- These two projects are initiated by the same customer so the workflow and works related with customer are comparatively similar.

### Difference

- Installation works are conducted by different team
- Different commissioning team is assigned to work for the projects

Although these two factors have impact to the result of project but they have relatively small effect when compare with those caused by ineffective project management.

Finally, when considering similarity and difference between baseline project and case study project, we can conclude that in overall they are comparatively similar.

Normally, Siemens use software called 'Phoenix' for planning most of project in the company. It is software developed for used internally. Using Phoenix in planning a project, firstly, it needs information about configuration of the project such as capacity of subscriber and number of transmission connected to the exchange as input data for the programme. Then the Phoenix programme can automatically calculate budget and effort required for carry out the project. After that planner can modify number of resources assigned to each task in order to adjust the timeframe of the project. The planned duration and budget for operating the baseline project are calculated by the Phoenix programme.

In addition, after each project is phase-out, the information related to project such as actual duration of project and project cost are forwarded to the Phoenix programme. The feedback information is updated to Phoenix database for better and more realistic planning future project. The project-related information of most projects is stored in the Phoenix database. Therefore the actual duration and cost of the baseline project are extracted from the Phoenix database.

## 5.4 Results of Project Evaluation

### *i) Effectiveness of Project Planning*

The effectiveness of project planning is identified by two indicators which are duration of project plan and budget for operating project. Both indexes, extracted from the existing project and PRINCE2 project, are summarised as shown in Table 5.1.

Effectiveness of Project Planning	Existing Project Management	PRINCE2 Method
Duration of Project Plan (Days)	92	86
Project Budget (Baht)	4,923,928	4,572,342

Table 5.1: Duration of project plan and budget for operating project before and after using PRINCE2

The result of the evaluation shows that the duration of project plan and budget for operating project decreases after implementing PRINCE2 methodology. This can imply that implementing PRINCE2 will increase the effectiveness of project planning.

There are several factors behind this result that should be mentioned. The first factor is the 'product-based planning' technique. By applying product-based planning technique, if products were broken down to enough detail and dependencies as well as relationships of products were correctly defined, this technique could help project manager to schedule plan more effectively. Because project manager could schedule even some parts of works which were not dependent to run in parallel. That led to reduction of plan duration and save budget for operating the project. In addition, the created product breakdown structure also helped project manager to visualise the whole products which would be created in the project, dependency and sequence of product development.

By applying new estimating approach, the project's members were suggested to perform estimating at the activity level as described in previous chapter so the result of estimation was more accurate and realistic than before. Besides, the estimation was done

twice, first by project manager and second by the responsible staffs. The estimation result was come up from the optimization of outcome from both project manager and from the responsible staff. This made the estimation result become more acceptable because it was balanced out by optimistic and pessimistic view in estimating.

Since the typical project management has no risk management, normally, project manager includes some extra effort for each work package in order to avoid the problem of project delay and over budget at the end of project. That causes the duration and cost of project plan quite over what it should be.

In this case study project, project manager regularly performed risk management according to PRINCE2 recommendation. Most of potential risks were detected and preventive actions were created for such risks in advance. Therefore the result of estimation was the actual effort required for performing the work package, not include the addition because of risk. Consequently, applying risk management in managing a project not only increase chance for project success but also promote effectiveness of plan too.

The last factor which had highly impact to effectiveness of project planning is project management software. Since planning required project manager to plan and re-plan several times in order to have project result to fit in the project constraint. Manual calculating the result of project plan was difficult and very time consuming. Project management software could save project manager's time in plan and re-plan as well as checking the project impact in term of time and cost when there was change to plan. In addition the project management software also enable project manager to create several alternative plans; to check the result of each plan and to select the most beneficial one.

#### *ii) Effectiveness of Project Control*

Effectiveness of Project control is one of the project objectives which is expected to be improved. Effectiveness of project control is measured by percentage of cost variance and percentage of schedule variance. After implementing PRINCE2 methodology to the case study project, the effectiveness of project control was evaluated by comparing schedule variance and cost variance of PRINCE2 project with those of

the existing project management. Table 5-2 shows the summarised data of cost variance and schedule variance from the existing project management system and PRINCE2 methodology.

Effectiveness of Project Control	Existing Project Management	PRINCE2 Method
<b>Schedule</b>		
• duration plan (days)	92	86
• project duration (days)	106	72
• schedule variance (%)	15.21%	-16.28%
<b>Cost</b>		
• project budget (baht)	4,923,928	4,572,342
• project cost (baht)	5,763,244	3,923,727
- Labour cost	5,100,471	3,540,140
• cost variance (%)	17.04%	-14.18%

Table 5.2: Schedule Variance and Cost Variance before and after using PRINCE2

The result of evaluation shows that project duration, project cost and labour cost decrease after applying PRINCE2. In addition, schedule variance reduced from 15.21% to -16.28% while cost variance fell from 17.04% to -14.18%. That means implementing PRINCE2 can improve effectiveness of project control.

However the project evaluation also revealed that schedule variance (%) and cost variance (%) were -16.21% and -14.18% which were significantly different from 0. That implied the project plan was not accurate because project could complete under what was planned. The reason behind that was project manager performed planning based on the data from project which didn't use PRINCE2. But, in the future if there is historical data from PRINCE2 compliant project and they are used in planning, then project plan should become more realistic.

There are several factors behind the improvement of project control that should be mentioned. The first factor is 'stage' component. It was observed that after breaking down project into stages and creating stage plan for control work during stage, project control became more effective. Since stage plan focused on shorter period it could contain more detail of work than project plan. There is a matter of fact that project can only be controlled according to level of plan. Furthermore, normally, stage plan was produced near the end of the current stage. Project manager could develop the next stage plan with knowledge of the performance and detected problems of the passing stage so the stage plan was fairly accurate and realistic. In summary, for control successful project stage plan is definitely required since it's not only more accurate and realistic but it also contain more detail for better control.

In this case study, risk management was introduced in managing the project. Since the unexpected events and their probability to occur were identified in advance, the preventive plan and contingency plan (if possible) could be prepared. Furthermore, risk reviewing was regularly done. So the number of unexpected events, which actually occur in the project, were decrease. In addition, when the unexpected events really happened, they caused small impact to the project. The case study project ran fairly smooth according to plan.

Having regularly feedback report to higher management showed improvement in project monitoring. The required feedback data were defined early and used for developing control report. The appropriate frequency of reporting was also identified at start of the project, moreover, the feedback reporting was done in both project manager level and supervisor level. So project management could realise actual progress and project deviation. In addition, the regular feedback helped project management to detected problem earlier when they were not too serious, so it's easier to solve the problems and they had less effects to the project. The project management could see the right information at the right time.

By applying the Earned Value Analysis in managing the project, assessing stage status was conducted effectively, because it helped project manager and senior project manager to visualise project status. Both cost status and schedule status were evaluated at the same time. The Earned Value Analysis could clearly shown relation between cost



status and schedule status. In addition it also allowed project manager to forecast the estimated cost at completion so that project manager could ensure that project objective was still achievable.

Since change usually happens in every project and it is undeniably effect to project, implementing change control assured that change in project was under controlled. Because each person had limit authorisation for change and each change had to pass impact analysis before taking any actions. Change control prevented project to expand from its original size and scope so project had higher chance for success.



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