

Monitoring Costs in Project Management

Mihaela Ciopi Oprea

Petroleum-Gas University of Ploiești, Bd. București 39, Ploiești
e-mail: mciopi@yahoo.com

Abstract

In the present paper we present the main aspects of the main categories of costs that must be kept under control when implementing a project, as well as the main methods used to monitor costs. Monitoring costs and reporting performances must allow the project manager a rigorous control of the project under the circumstances of identifying some adequate instruments to collect real data about the recorded expenses while the project advances in time. The analysis of costs goes in parallel with the ongoing project and allows the project manager to make regulating decisions so that the objectives of the project are achieved.

Key words: labor budget, significant events, cost-performance index, cost variances

Introduction

When one wants to propose a project, he will have to take into account and try to fulfill three main objectives that depend one on the other: minimizing time, minimizing costs and maximizing technical and qualitative performances. Thus, one of the main responsibilities of the project manager is controlling costs while the project continues.

Monitoring is the process through which one checks whether all actions take place according to the plan. Monitoring is a necessary condition for control. All efficient control systems must have a stage towards they tend and the values of the real stage that should be taken into consideration before adopting any changes. The project manager should compare all measurements of the project at the current stage with what he considers to be standard values, established within the plan. The differences that appear generate corrective actions through which the project stage is modified in order to achieve the targeted objectives.

In ideal conditions, the initial plans do not change during the project development. Practically it is necessary to permanently update the plans due to random causes like: changes required by client, mistakes in the initial planning, risk and uncertainty factors.

Monitoring costs refers to getting the information about the evolution of recorded costs when implementing the project. The aim of this activity is to ensure that costs are at the planned level that was included in the budget.

Monitoring expenses is a complex process and it takes several *steps* to be fulfilled:

1. Breaking down the project into manageable activities/ tasks;

2. Breaking down the budget for expenses in such a way that for each activity there is a percentage of the total budget;
3. Establishing some accountancy codes that will be given to the activities and designing an accountancy system that will collect all the recorded expenses while the project is ongoing;
4. Drafting reports that present the money that was spent and make forecasts about the expenses at the end of the project.

The main categories of expenses that need to be specifically monitored are the following: salaries; procurement and subcontracting; total expenses for the project.

Monitoring Salaries

The action of monitoring salaries takes the following *steps*:

1. Establishing labor budgets;
2. Establishing the percentage of fulfillment for the project;
3. Designing the instrument to collect salaries;
4. Forecasting the evolution of salaries for the total project.

Labor budgets are expressed as planned hours per person and they are established as follows:

- for each activity in the structure of the project;
- for a step (phase) in the project that corresponds to the fulfillment of certain activities;
- for the entire project as a whole.

The fulfillment percentage is calculated with reference to the labor budget that was established for a step within the project, to the whole labor budget of the project. Thus, one may establish where the project should be at a certain moment in time.

Time sheets are the main instruments to collect salaries. They also help collecting information about the working time for each activity (worked hours per person).

On the basis of the centralized data in the time sheets and by comparing worked hours with labor budgets for the main steps of the project, one may forecast the evolution of salaries for the entire project. These forecasts are based on the explorative technique, which states that past trends are valid for the future as well.

Monitoring Procurement and Subcontracting

The action of monitoring the expenses for the procurement of materials and equipments includes the following *steps*:

1. Establishing the budget for expenses;
2. Designing the control lists for procurement;
3. Following procurement.

The budget established for the procurement of materials, equipments and fulfillment of activities by subcontractors is based on the expense estimate that was designed when the project was launched.

The control lists for procurement contain *data* referring to:

- Types of equipments and materials that are used for each activity and for the entire project;
- The necessary quantity for each type;
- The planned price for procurement.

While different materials and equipments are bought, the control list is filled in with the actual price of procurement, writing down the differences that appear between the planned value and the actual recorded value.

Evaluation of actual costs for the materials that were bought may be done by means of the payments that were made according to the invoices of the suppliers or by means of the costs for each supply order.

In order to control these types of expenses it is useful to take into account aspects such as the following: use of auction for procurement, payment in time to the suppliers, control of loans.

The Use of Auctions for Procurement

Equipment and complex materials acquisition like: pipes, pumps, engines, electronic equipments etc., which meet the quality standards of the project and, at the same time, facilitate low acquisition costs, must use auctions even though they can generate time related disadvantages.

Organizing an auction is a complex process with the following *stages*:

1. Elaboration of lists to follow acquisitions;
2. Elaboration of technical specifications for the acquisition;
3. Sending out the offer demand for acquisitions;
4. Receiving offers from potential suppliers;
5. Offer evaluation and supplier selection;
6. Sending out acquisition orders;
7. Contract negotiation with the selected suppliers.

The *lists to follow acquisitions* must include information regarding: the materials' types that will be purchased through auction; the quantity for every type of material; the code of every project activity which uses that specific material; terms previewed for each stage of the auction process; the previewed costs of the auction and the previewed costs of the acquisition. Such a list is a good instrument to plan and control the materials purchased by auction.

When analyzing the offers, the project commercial manager must consider the following selection *criteria*:

- The price list and the discount offered for the estimated quantity which will be purchased;
- Technical specifications of the suppliers' products and their appropriateness to the project technical specifications;
- Delivery terms and maximum delivery quantities;
- Particular commercial conditions (payments deadline requested, types of payment etc.);
- Respecting the deadline for sending the offer;
- The history of collaboration with the organizations which made offers according to the offer request (considering reputation, seriousness in respecting the contractual specifications etc.).

In order to ensure the objectivity of the supplier selection process, it is absolutely necessary to fill in an *auction centralizing-document*, which will allow the direct comparison of prices and other commercial and technical elements.

Monitoring Total Expenses of a Project

By monitoring the total expenses of a project, one should establish the following:

- What is the amount of money that was used after some time since the project started?
- What is the amount of money that should have been spent?
- What is the fulfillment percentage of the project?
- How much should have been fulfilled?
- Which are the forecasts about the total expenses of the project?

Monitoring total costs of the project can be done using one of the two following methods: using graphic representations or indicators.

Monitoring Costs Using Graphic Representations

The action of monitoring the total expenses of a project includes five *steps*:

1. Identifying significant events in the ongoing project;
2. Graphic representation of the budgetary cost related to the significant events;
3. Graphic representation of costs and achievements;
4. Interpreting and using the results;
5. Updating the graphic representation.

A significant event corresponds to the fulfillment of a set of activities in the structure of the project. For each event, one should establish two parameters: the time when it must be fulfilled and the (planned) budgetary cost corresponding to the set of activities.

The curve for (planned) budgetary expenses is drawn using the following coordinates: advance cost and advance time for the project. This curve is obtained by adding up the costs for the fulfillment of each significant event and one should take into account that at the end one should obtain the total cost of the project that was established in the budget. Time management is important and is achieved by means of the fulfillment of the objectives of the project.

In order to present the actual expenses as related to the established expenses in a graphic manner, one needs to collect two types of information for each significant event: time of fulfillment and actual expenses that were recorded to fulfill each significant event. Costs are thus added up and a graph of total expenses is drawn; this graph is represented by using the same system of coordinates and the same time scale as the ones used for the graphs of planned costs.

By comparing the planned costs with the recorded costs, one may notice variations. Ideally, the two graphs should have the same shape, and the points representing the significant events should coincide. When these conditions are not fulfilled, the analysis must offer information referring to the costs and achievements that are involved in the project development until the respective moment. From the analysis of the two graphs, the following unfavorable *situations* may appear:

- A significant event is fulfilled much later than it was planned, but the actual recorded expenses are at the same level as the planned expenses, and this is a warning that there will be exceeding expenses;
- A significant event is fulfilled when it was planned, but the actual costs are higher than the planned costs.

For each unfavorable situation that appears while monitoring the project, one should make regulating decisions. In order to fulfill this, *optimizing methods* should be used and they are as follows:

- Detailed structuring of activities in the project;
- Modifying time management for some activities;
- Modifying the priorities among the activities.

While the project is ongoing, the program may suffer a lot of alterations. That is why, for a correct monitoring of costs, when one knows the revised data of the latest significant events, he should modify the curve for the forecast expenses in such a way that the actual data allow a comparative analysis between the actual costs and the planned costs.

Monitoring Costs Based on Indicators

The main indicators used in monitoring total costs of the project are:

- Budgeted cost for work performed (BCWP), can be calculated by summing every results of all activities of the project;
- Actual cost for work performed (ACWP), represent the cost realized till one moment during the construction of the project;
- Cost-performance index is the measure of productivity in the project, till one moment. It calculates with the relation 1;

$$CPI = \frac{BCWP}{ACWP} \quad (1)$$

- Cost variances is the measure of the difference in plus or in minus of the costs for the same activity and it shows how well the project financially evolves. It calculates with relation 2;

$$CV = BCWP - ACWP \quad (2)$$

- Cost to complete the project represent the cost of work which should be done till the project is finished ;
- Estimated cost at completion the project is a prevision of the financial resources needed to finished the whole project.

Reporting Performances

Monitoring costs results in writing of the reports about the stage of the project. The frequency and the content of these reports are established in the contract and it is a basic condition for an

efficient control. This process, by means of which stakeholders are regularly informed, includes the following:

- Reporting the actual situation about the stage of the project and corresponding costs;
- Reporting recorded progress in a certain time span;
- Reporting evolution and future performances.

Reports on Exceptions

Practically, there appear situations when reporting some problems does not happen when they arise, but at an established date, a thing that may lead to complications that could have been avoided had they been reported in time. In order to avoid such situations, reports on exceptions were included. Exceptions refer to increase of costs, deficiency of materials or late work. These reports allow making regulating decisions in real time so that delay of the project is avoided.

As a conclusion, monitoring costs and reporting performances must allow the project manager a rigorous control of the project under the circumstances of identifying some adequate instruments to collect real data about the recorded expenses while the project develops in time.

References

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Monitorizarea costurilor în managementul pe proiecte

Rezumat

În acest articol se prezintă aspecte privind principalele categorii de costuri care trebuie ținute sub control în etapa de implementare a unui proiect, precum și metodele aplicate în monitorizarea acestora. Monitorizarea costurilor și raportarea performanțelor trebuie să permită managerului de proiect un control riguros al proiectului, în condițiile identificării unor instrumente adecvate de colectare a datelor reale privind cheltuielile înregistrate pe măsură ce proiectul avansează în timp. Analiza costurilor, în paralel cu timpul de avansare al proiectului, permite managerului de proiect luarea deciziilor de reglare prin care să se atingă obiectivele de proiect.