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Application of PMI PMBOK standard in the development of the Construction cost management projects plan.

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Abstract. According to the Anti-Corruption Agency of the Republic of Uzbekistan, the construction sector is the most corrupt sector in 2020. This research describes the methodology for implementing construction cost management processes on the basis of international standards of project management, including the development of a cost management plan for construction projects.

Keywords: project, cost management, standards, price, financial source, discounted cash flow, assumed volume method, measurements, evaluation, control, deviation, rounding, control limits, hierarchical structure of works

Introduction. There are a number of international standards and methodologies for project management, such as PMI PMBOK, P2M, PRINCE2, GOST.

Our research shows that there are sufficient grounds to emphasize the PMI PMBOK standard among related project management methodologies. While other related standards focus on inculcating project management principles and project management culture in users, the PMI PMBOK standard clearly describes the specific steps, management areas, and processes that are appropriate for the project to be successful.

That is, the application of the PMI PMBOK standard in the management of construction projects allows the evaluation of project management processes.

In particular, cost management of construction projects includes the processes required for budget planning, evaluation and development, fundraising, cost financing, management and control to implement the project within the approved budget.

The cost management of construction projects depends primarily on the value of the resources required to carry out the project processes. In managing project cost, the decisions made must take into account how the use of the outcome of the construction project will affect subsequent recurrent costs to manage it. For example, limiting the number of inspections of design drawings can reduce the cost of a project, but this limitation can lead to higher costs in the use of the product obtained.

Another subtle point of cost management is that the value of a project is calculated by different stakeholders in different ways and at different times. For example, when the purchase price is decided or approved, at the time of ordering, at the time of delivery, its actual value is taken into account and recorded for project accounting purposes. In many organizations, forecasting and analyzing the estimated financial results of a project product is not done within the project.

In other cases, such as capital construction projects, these actions can be taken in project cost management. When such forecasts and analyzes are carried out within

a project, additional processes and generally accepted methods of financial management, such as the efficiency of investments, discounted cash flow and payback period of investments, have to be used in project cost management.

As part of the construction project cost management practice, there is a trend of earned value management (EVM) due to the implementation of the assumed volume concept (earned schedule, ES). ES is an extension of EVM theory and practice.

The mastered volume theory replaces the deviation measurements in terms of time used in traditional computers, ES, and actual time (AT).

When using an alternative equation (ES - AT) to calculate time deviations, if the value of the mastered table indicator is greater than 0 (zero), it means that the project is being completed ahead of schedule. In other words, more work will be done than planned on the project at this time.

The table performance index (SPI) of the table is determined using the ES / AT formula, using the indicators in the table of the assimilated value method. This shows the level of efficiency of the work done. The theory of mastered tables also provides formulas for predicting the completion date of a project using mastered table values, real time, and estimated duration.

When managing the cost of construction projects according to the PMI PMBOK standard, *it is necessary to carry out such processes as Cost Management Planning, Cost Assessment, Budgeting, Cost Control.*

In this research, we want to describe the construction project cost management planning process. Cost management planning is the process of determining how the cost of a project is calculated, budgeted, managed, monitored, and controlled.

An important characteristic of this process is that it guarantees the documentation of cost management processes and the tools and methods associated with it.

The construction project cost management processes will be described and formalized in the cost management plan through appropriate tools and methods. The end result of this process is the formation of a Cost Management Plan.

Cost management processes and related tools and methods are documented in the context of value management. For example, a construction project cost management plan might describe:

- *Units of measurement*. For each source, all units used in the measurement process are determined (e.g., man-hours, man-days, weeks to calculate time, meters, liters, tons, kilometers, cubic yards for quantitative calculation, or total amount in currency).
- *Degree of rounding*. This is a level of magnitude that indicates how much the value can be rounded up or down (e.g., from $ 995.59 to $ 1,000), depending on the work structure of the construction project and the scale of the project.
- *Level of accuracy*. An acceptable range (e.g., ± 10%) that can be used as part of a fair assessment of the cost of the construction project is indicated. This may include potential losses.

➢ *Relationships between organizational processes*. The hierarchical structure of works (IIT) provides content for the construction project cost management plan, which allows estimates, budgets, and value control.

➢ *The component of the IIT used to account for the cost of the project is called the control account*. Each control account is assigned a unique code or account number (account numbers) that is directly related to the executive organization's accounting account.

➢ *Control limits*. To control the execution of the cost, it is possible to set the limits of deviations, which allows you to set a pre-agreed amount of change, from which you will need to make some effort to deviate. Boundaries are usually expressed in the form of percentage deviations from the base plan.

➢ *Performance measurement rules*. Performance measurement rules are established for assimilated volume management (EVM). For example, a value management plan:

- Determining the points of the hierarchical structure of the work on which the measurement of control accounts is carried out;
- Introduction of EVM methods for use (eg control events, recorded costs, percentage of completed works);
- Determining the observation methods and calculation formulas for the EVM needed to make a prediction at the end of the estimate at completion (EAC), which is used to check the EAC from the bottom up.

➢ *Report formats*. The formats and frequency of compiling various cost reports are determined.

➢ The construction project cost management plan may also include additional information on cost management operations. Including:

- description of strategic financing options;
- exchange rate fluctuations;
- Project cost documentation procedures.

The level of accuracy of the values of the construction project will also be reflected in this plan. Depending on the scope and scale of the project, the cost estimate for the activity may be rounded to the specified accuracy (100 times, 1000 times) and may also include the amount of costs for contingencies.

Process of development of cost management plan for construction projects, a unit of measurement is defined for each of the resources (e.g., person / day, person / week, etc.).

In the management of the cost of construction projects, the hierarchical structure (IIT) of the works planned to be carried out within the project provides the content of the cost management plan. This ensures a balance between evaluation, budget and cost control. The IIT component used to account for project costs is called the control account (CA). Each control account of the item is assigned a unique code or account number that is directly related to the executive organization's accounting system.

Construction projects will need to determine the limits of deviations to control the execution of costs. This allows you to pre-determine the agreed value of the change, as well as to take into account any measures that may be taken to deviate from it. Boundary values are usually expressed as a percentage of deviation from the base plan.

Assimilated Volume Management Rules (CVM) are used to assess the effectiveness of the work included in the construction project work. The construction cost management plan also defines the formats and periods of cost reports.

The plan also describes all the cost documentation processes. In addition, additional information related to cost management, including a description of the financing strategy, may also reflect the role and responsibilities of those involved in cost management.

The processes to be carried out in the framework of construction project cost management are described in detail in the PMI PMBOK methodology, in particular, as the content of the construction project cost management plan should be considered in detail.

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