Project Budgeting using the Project Management Knowledge Areas

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How comfortable are you with your project budgets? How much faith do you have in the numbers? We are, or should be, concerned that we will omit an important expense or that unforeseen expenses will arise. Unanticipated expenses can cause your budget to fall short and create embarrassing project situations or even work stoppage.

Can you think of examples in past projects where your budget fell short? Could you have anticipated that expense beforehand? Could you have prepared better? This discussion is about reminding ourselves of the importance of awareness of the Project Management Institute (PMI®) knowledge areas when creating or revising budgets.

I am a strong proponent of the study of the PMI knowledge areas. I believe that a thorough understanding of the information derived from these processes can help you create budgets that are less likely to fall short. The purpose of this session is to review the PMI knowledge areas to remind you of how this information can be used to create effective budgets.

The objectives of this presentation are to:

- Define nine *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. Project Management Knowledge areas.
- Analyze each of *PMBOK® Guide* Project Management Knowledge areas to determine the impact on initial project budgeting.
- Recognize the importance of change management in the various knowledge areas to adjust project budgets as a project changes.

Let's review each of the knowledge areas and look at how they can help you create and maintain effective budgets:

Project Integration Management

Integration of knowledge is really the background for this discussion. Integration management is the tool for successfully developing project budgets. Integration management includes "the processes and activities needed to identify, define, combine, unify, and coordinate the various Process Groups."

"Integration, in the context of managing a project, is making choices about where to concentrate resources and effort on any given day, anticipating potential issues, dealing with these issues before they become critical, and coordinating work for the overall project good. The integration effort also involves making trade-offs among competing objectives and alternatives." (PMI, 2004, p. 77)

By recognizing that an integration of project knowledge, or by considering all knowledge areas, before your project begins, you will build a better foundation. And from that foundation, using integrated change control, you can update project budgets based on changes in any of the knowledge areas.

Project Scope Management

How many of you have ever worked on a project that had a scope change? All of us. How can we budget for scope changes? First of all, scope definition is essential to successful projects. All stakeholders need to agree to scope and sign off on the understanding of deliverables and requirements. The better you are at defining scope at the beginning of the project, the more likely your budgets are to hit the mark.

Have you ever worked on a project where the customer says that there isn't time for planning – where the team is asked to just get started developing the deliverables? What happened? I bet there was a significant amount of re-work and sunk-cost from going down the wrong path.

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Isn't it a joy to work customers/companies that recognize the importance of planning that includes clear definitions of deliverables and detailed scope definitions?

Does this mean, then, that if you do a great job of defining deliverables that scope changes will not occur? No, absolutely not, this is where integration again comes into play. Budgets should be updated along with changes in scope. And don't forget that when you a lot of small project changes, it can add up to a scope change requiring updates to your budgets.

What tools should be in place to manage scope? A change management plan accounts for not only *major* changes but also *scope creep* that can add up to a *major* change. Don't forget to update budgets when the scope changes! And keep informing your stakeholders and the business owner.

Project Time Management

The activities performed in Time Management are essential to budget development. These activities are your base tools for creating and maintaining budgets. It's pretty obvious how most of these activities affect your budgets, but I'd like to point out the importance of maintaining these estimates as actual work is performed to be sure that excesses are accounted for and that time remains for all necessary project activities. Let's review these processes. Let's start with:

Activity Definition – identifying specific schedule activities that need to be performed to produce the various project deliverables. It includes creating lists of activities that need to be performed.

Activity Sequencing – identifying and documenting dependencies among schedule activities. Create Network diagrams with dependencies and update activity lists.

Activity Resource Estimating – calculating the type and quantities of resources required to perform each schedule activity. Create a Resource Breakdown Structure and calendar.

Activity Duration Estimating – estimating the number of work periods that will be needed to complete individual schedule activities.

Schedule Development and Control – analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule. And then controlling any changes to the project schedule. (PMI, 2004, p. 123)

What is Schedule Control? Schedules that are updated to actual to reflect time that is either under or over budgeted. Schedule "baselines" to compare to actual to determine when changes need to be made to budgets. Requested changes and corrective actions that are taken into account for schedule and project plan updates.

Project Cost Management

"Project Cost Management includes the processes involved in planning, estimating, budgeting, and controlling costs so that the project can be completed within the approved budget." (PMI, 2004 p. 157)

It includes:

Cost Estimating – developing an approximation of the costs of the resources needed to complete project activities. What tools have we covered so far that may help you develop these estimates? Yes, Scope Management assists in defining all activities and Time Management by thinking through each step of each process to ensure that no steps are left out. Other tools include various estimating techniques and project management software.

Cost contingency reserves can be determined at the individual activity level for better analysis as the project proceeds. For example, if you track time for each activity and compare to your original baselines, you will have a better handle on your costs and overruns at all times.

Cost Budgeting – aggregating the estimated costs of individual activities or work packages to establish a cost baseline. This topic is the whole point of our discussion today. A cost management plan determines budget updates for approved project changes.

Cost Control – influencing the factors that create cost variances and controlling changes to the budget. It includes:

- Influencing the factors that create changes to the cost baseline
- Ensuring requested changes are agreed upon
- Managing the actual changes when and as they occur
- Assuring the potential cost overruns do not exceed the authorized funding periodically and in total for the project
- Monitoring cost performance to detect and understand variances from the cost baseline
- Recording all appropriate changes accurately against the cost baseline
- Preventing incorrect, inappropriate or unapproved changes from being included in the reported cost or resource usage
- Informing appropriate stakeholders of approved changes
- Acting to bring expected cost overruns within acceptable limits.

Project Quality Management

How does Quality Management affect your budgets? By minimizing re-work and cost overruns due to quality that differs from scope. Let's define Quality Management per PMBOK. "Project Quality Management processes include all the activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it is undertaken." (PMI, 2004, p. 179)

First and foremost, I want you to recognize that quality does not necessarily mean *high* quality. Part of Quality Management is recognizing the level of quality that is determined when developing project scope. Are we creating a Subaru or a Cadillac?

Quality Planning identifies which quality standards are relevant to the project and determines how to satisfy them.

Quality Assurance and Control includes monitoring results to verify compliance and identifying ways to eliminate causes of unsatisfactory performance. The concept of "prevention over inspection" means that it costs less to prevent quality issues than it does to correct; meaning better control over your budgets.

Good Quality Management techniques will assist in stable budgets!

Project Human Resource Management

"Human Resource Management includes processes that organize and manager the project team". (PMI, 2004 p. 199)

How can HR affect your budgets? Many times Human Resources cause the significant risk to your project budgets. What are some risk factors for HR? Illness, incompetence, poor teamwork, and wage strikes are a few examples.

It is important to include resources early on in a project to ensure proper planning. Who is the best person to give you an estimate of how long it will take to perform a task? Yes, the person that will actually do the work! That

means that it is important to involve team members early in the planning process when developing lists of deliverables and the tasks to develop those deliverables. "Early involvement of team members adds expertise during the planning process and strengthens commitment to the project." (PMI, 2004, p. 199)

Don't forget about the cost and importance of team development/training!

Project Communications Management

"Communications Management is the Knowledge Areas that employs the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information." (PMI, 2004 p. 221)

How can performance reporting affect your budgets? Performance reporting includes status reporting, progress measurement and forecasting. You need to ensure that the Communications Plan includes procedures necessary to provide *timely* and *accurate* status and performance reports. And don't forget about the importance of communicating potential budget changes to project stakeholders.

And most importantly, remember to study Lessons Learned documentation from previous projects or from similar projects!

Project Risk Management

We have talked a lot today about risk and the affects on your budgets of recognizing and accounting for possible risks. "Project Risk Management includes the processes concerned with conducting risk management planning, identification, analysis, responses, and monitoring and control on a project; most of these processes are updated throughout the project." (PMI, 2004 p. 237)

Risk management is absolutely critical to the development, maintenance, and eventual effectiveness of your project budgets.

Risk Management includes:

Risk Management Planning – deciding how to approach, plan, and execute the risk management activities for a project. The risk management plan assigns resources and estimates costs needed for risk management in the project cost baselines.

Risk Identification – determines which risks might affect the project and documenting their characteristics. But don't forget to determine risk "triggers" and track the possible risks!

Qualitative and Quantitative Risk Analysis – includes analyzing the affects of possible risks. The impact of risks must be analyzed and included in project budgets. Take contingency plans into consideration as well as the risk probability.

Risk Response Planning – developing options and actions to enhance opportunities, and to reduce threats to project objectives and budgets. Be sure to include opportunities as well as threats in your budget planning.

Risk Monitoring and Control – tracking identified risks, monitoring residual risks, identifying new risks, executing risk response plans, and evaluating their effectiveness throughout the project life cycle. Don't forget to include budgets in your risk monitoring and control.

Project Procurement Management

"**Project Procurement Management** includes the processes to purchase or acquire the products, services, or results needed from outside the project team to perform the work." (PMI, 2004, p. 269)

What are some ways that procurement has affected your project budgets?

Contractual and legal implications can include health, safety, security, performance, environmental, insurance, intellectual property rights, equal employment opportunity, licenses, and permits. Which is a safer type of contract from a budget standpoint? Fixed-price or time and materials? Yes, fixed-price, but remember that scope changes will also change your fixed price!

Make vs. buy decisions should be made early in the planning processes to ensure proper budgeting. That means also hiring your own staff vs. using outside contractors (outsourcing).

Don't forget to include contingencies for losing a vendor. And definitely don't forget to budget for funds availability.

Summary

I hope that if you got anything out of this presentation, it is that you recognize the importance of remembering the big picture when creating and maintaining project budgets. And since there are so many various factors involved, using a systematic approach based on the project management knowledge areas should assist you in developing and maintaining complete and accurate project budgets.

References

PMI (2004) *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)*. Newtown Square, PA: Project Management Institute