

Tshwane University of Technology

# Project Management Assignment

Contingency in a project

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## **Introduction**

A construction contingency is an amount added to an estimate to allow for items, conditions, or events for which the state, occurrence, or effect is uncertain and that experience shows will likely results, in aggregate, in additional cost.

No construction project is perfect and there are always some items that are unintentionally overlooked, assumed to be covered by others or are unforeseen altogether in preparing project cost estimates. Therefore, due to risks and uncertainties associated with construction projects, estimators usually add a reserve amount to the estimated project cost. This contingency amount is to absorb the monetary impact of the risks or uncertainties and to prevent cost overrun.

## **The use of Project Cost Contingency**

- Cost Contingency is neither a potential profit nor used for sandbagging the estimate.
- Contingency reserve is used to cover the cost potential risk and uncertainties in the project and is released as each of those risks is realized.
- Contingency is usually included in budgets as a control account and is expected to be spent but with proper and authorized cost control.

## **Methods of determining project contingency cost**

Determining an appropriate contingency cost requires an understanding of how estimators make budget for contingency. The contingency cost, usually expressed as a percentage mark up on the base estimate is used in an attempt to allow for the unexpected conditions.

To improve the approach of setting contingency is the need to connect the extent of the contingency reserve with the extent of the project risk. Project risks need to be first characterized qualitatively using a structured, hierarchical model such risk breakdown structure. Such approach allows the facilitated risk analysis discussion among project experts to be highly structured, more focused and more thorough; it provides a basis for “rolling up” risks into categories for macro analysis; it provides a ready-made structure for risk reporting throughout the project lifecycle and finally, it provide the standard structure needed to benchmark projects against each other and ultimately improve the organization’s ability to manage risk.

Both the probability and impact of project risks need to be also described quantitatively in order to ultimately understand the potential financial impact on the project. Risk can be quantified deterministically, in which they are assigned static numerical values or they can be described probabilistically. Probabilistic methods hold most promise for quantifying risk and impact because they better describe the inherent uncertainty of risk. Therefore if the probability of occurrence of a risk was known, it wouldn’t really be uncertain.

Contingency should be scaled both to the overall magnitude of the risk on a given project. There are several approaches to accomplishing this; the expected value method for example tends to sum the expected values of individual risks calculated by multiplying their estimated impact by their estimated probability. The sum of these values represents the contingency or at least the starting point for determining the contingency.

Table 1.1 presents method of determining contingency cost for construction project and Table 1.2 presents important factors that affects project cost contingency.

**Table 1.1- Contingency – estimating methods**

<b>No.</b>	<b>Contingency Estimating Methods</b>
1	Traditional percentage
2	Method of Moments
3	Monte Carlo Simulation
4	Factor Rating
5	Individual risks- expected value
6	Range estimating
7	Regression Analysis
8	Artificial Neural Networks
9	Fuzzy sets
10	Influence diagrams
11	Theory of constraints
12	Analytical theory constraints

**Table 1.2- Factors affecting project cost contingency**

<b>No.</b>	<b>Factors</b>
<b>A</b>	<b>Project Related Factors</b>
a.1	Project location e.g. project in a flood plain, in the coastal zoning etc
a.2	Project duration ( Project Completion period)
a.3	Project size
a.4	Project site condition ( Arrival and access, weather conditions, ground water issues etc
a.5	Inadequacy of dispute settlement procedures and construction claims
<b>B</b>	<b>Management related factors</b>
<b>b.1.</b>	<b>Contractor</b>
b.1.1	Contractor's previous disability and un-experience in similar project
b.1.2	Time allowed for preparation of the estimate is pressed
b.1.3	Estimator's experience
b.1.4	Staff's inexperience
b.1.5	Unstable financial situation of the company
b.1.6	Cost, time, scope, safety and quality uncontrolled
<b>b.2</b>	<b>Client( Owner)</b>
b.2.1	Owner's financial instability ( delays of payment certificates and claims)
b.3	Consultant ( designer)
b.3.1	Incomplete designs ,ambiguities, errors, omissions, inadequate or inconsistent detailing
<b>C.1</b>	<b>External Risk( Country Related Factors)</b>
c.1.1	Economical and Financial
c.1.2	Inflation rate fluctuations( resources price fluctuations)

## **Management of Contingency**

Contingency is closely managed and examined on rice projects. During the entire project design and construction process, each project budget performance, including projected contingency usage should be reviewed more often by the director of project planning. Part of the review is an evaluation of the contingency usage to date, a detailed estimate of risk remaining in the project and a related projection on how much contingency will be needed to complete the project. Contingencies are adjusted during the project process. Every project has different levels of complexity and risks based on timing, materials used, size etc. normally the project starts with a standard contingency based on the project type and contingency is not to be used for scope increases. This is a departmental policy that has to be adhered to no matter how important the change is or how much it makes sense; no scope addition can be made without appropriate approvals at the senior level.

## **Risk Management and contingencies**

The basics of creating a contingency plan starts from performing a detailed analysis of the risks the project is facing. It is also helpful to consider new and on ongoing projects as what will happen if the plan A does not materialise. Plan A is used as the initial response to address the identified risk whereby if the plan fails then the contingency plan can be used.

Principles used in risk assessment process

- **Address all business-critical operation's** - all critical business functions must be identified to help in outlining methods to be used to cut the losses.
- **Identifying risk** - for every function in the project/business, risk analysis must be conducted to show different risks the project is facing and to check the potential of the risk to harm the project.
- **Prioritizing risks**- the result of risk analysis usually has various potential risks; it might cause problems if the risks are not prioritised as they might be too much to handle at once. When creating a contingency plan one must make sure that they don't over plan, be careful of over-preparing for something that might not even happen, adequate planning is required to be able to respond quickly and effectively to crisis when it occurs.

Risk impact or chance charts can be used to assist in finding the balance, these methods are used to analyse the impact of the risks and they also assist in estimating the likelihood of the occurrence of the risk. The results of these methods tell which risk needs more attention to be mitigated.

## **Contingency Planning Challenges**

- The challenging facing the contingency planning is that most people are too attached to plan A, they do not sure much interest in developing a strong plan B even though plan B is needed as it will assist when plan A fails to materialise.
- There is often a low probability of a crisis occurring so people do not prioritise to generate the contingency plan.

Developing the plan

## Guidelines for preparing the contingency plan

- The aim of this plan is to support the business operations.
- Define the time period- define what needs to be done during the first hour of the execution of the plan.
- Identify what will cause the contingency plan to be implemented, decide which actions will be taken and decide whose is responsible at that time and what reporting processes they must follow.
- The plan must be clear and simple so that whoever who reads it find it simple to understand the plan.
  
- Contingency plans must be included in the standard operating rules where training is provided in the plan and also ensuring that everyone is kept updated on the changes.
- Manage the risks- when managing the risks one must look for opportunities to minimize wherever is possible, this might assist to even cut the risk.

## **Maintaining the plan**

Key steps in the contingency plan maintenance process:

- The plan must be communicated to all the parties involved in the project or in the organisation.
- Everyone must be informed of his/her roles and responsibilities with regards to the plan.
- Training must be provided to the people to assist them to be effective in doing their respective work.

The plan must be reviewed on regular basis to ensure that it is up to date and suitable.

## **Contingency Funds and Project Risk management**

Despite the growing acceptance of project risk management, there remain a number of common pitfalls that project managers should avoid. Among these pitfalls is the misuse of contingency funds for purposes other than the mitigation of potential risk. If ignored these pitfalls could tarnish the image of project risk management and void some of the gains that have been made in recent years.

To the uninitiated, sorting through the challenge of risk management definitions can be frustrating. Contingency funds, management reserves and budget allowances are all key project management concept and each serve a specific purpose. The interchangeable use of these terms and attempts to use them in cross-purpose situations can be disastrous. The idea of having contingency funds in the budget is not new. However, it is useful to remember why these funds are allocated so that they are not misused.

Contingency is established to mitigate or eliminate the adverse impact of the unforeseen or under-predicted events. Therefore, contingency should be utilized and managed exclusively within the framework for which it is established. Other allowances in the project budget differ from contingency and they are not risk-based or dependent, those allowances are derived from the events which are expected to occur and included in the scope of the project.

## **Setting Contingency**

Care must be exercised when setting contingency for risks. Contingency should be sufficient to cover the costs or time required to avoid, transfer, mitigate or bear the realization of risks. Risk changes with time and

completion progress. The available contingency should reflect these changes by readjustment through periodic reassessment and quantification of risk. It is not enough to have contingency fund that is large enough. It is equally important for the contingency fund not to exceed the needs. Over budgeting of the contingency have two undesirable effects:

- The company is deprived of funds that might be better utilized in other ways or on other projects.
- Unspent contingency monies will find their way to funding scope changes, enhancements, and other elements that should properly be purchased with allowance or reserve resources.

Therefore, it is imperative that clear rules be established regarding how much contingency is approved in the budget.

### **Conclusion**

There is a consensus that cost contingency is a reserve budget for coping with monetary impacts of risks and uncertainties associated with a project. It should be noted that contingency budget is not intended to absorb the impacts of escalation, major scope and extraordinary. Therefore, to keep a project within budget, calculate of adequate contingency is essential. It is also important for the estimator to be aware of different contingency calculation method and select the most appropriate one based on the project characteristics. Used properly, risk contingency reserve can act as a shield against the damage that a project can sustain through the occurrence of risks.

### **References**

Alberto De Marco; Buerthey j.I.T; Emmanuel Abeere-Inga; K Panthi; PED Love; Marta Rosso; Ramani Sundaram; S Laryea