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Specialists in Strategic, Enterprise and Project Risk Management

Risk-Adjusted Cost Estimating

1 Introduction

At each stage of the procurement process, cost plays an important part in decision making and the determination of 'value for money'. While at first sight cost may appear to be a simple matter, actual tender prices are only part of the total cost of accepting an offer, and a purchaser must consider all costs to determine the 'money' side of the value-for-money assessment.

Costs that might have to be taken into account over and above a tendered price may include:

- The cost of a tenderer making up weaknesses that are not bad enough to necessitate rejecting the offer but would be picked up in negotiating a final contract, such as increased detail in operating manuals or training in excess of that included in the original price;
- Contingency holdings to cover potential failures of highly attractive but risky components of an offer;
- Areas in which systems, infrastructure or processes that fall outside the scope of the works being procured would have to be changed or enhanced to make the tendered offer viable, such as an IT or communications interface required to enable a new system to be implemented;
- Owner's staff costs that will arise if an offer is selected, such as supplementary management effort or technical specialists required to ensure that the supplier holds to their declared time lines and technical commitments.

In general, these additional costs will be subject to a significant amount of uncertainty and are referred to as risk adjustments.

2 Analysis

Tender cost analysis can be affected by both complexity and uncertainty. When these are compounded with the time pressures that always arise in tender evaluation, a structured approach to cost risk adjustment is essential.

There are many ways to approach cost risk adjustment. One of the most common is to identify risks and gaps in the cost and place a probability and impact against each one. This is rarely realistic though since:

- Some risks overlap with one another;

- Some risks are mutually exclusive; and,
- Few risks are true events that have two or more completely distinct outcomes, but rather most are characterised by uncertainty in the value of costs rather than the occurrence of the costs.

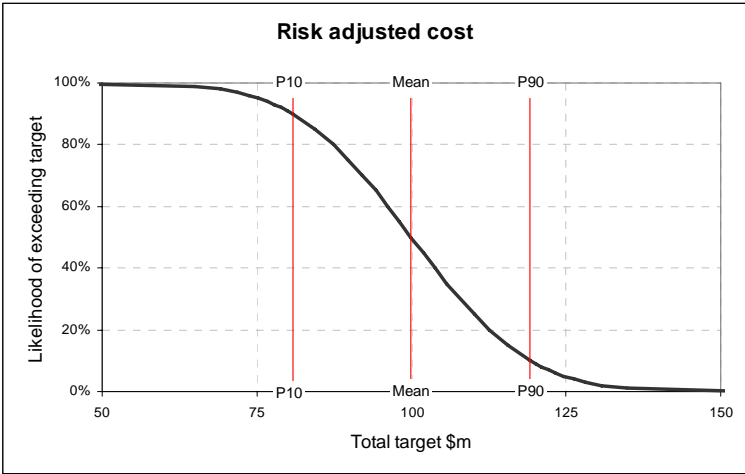
Following an approach that has proved cost-effective in quantitative project risk analysis, cost risk adjustment is best addressed in terms of scenarios, cost components and the relationship between them. This provides a way of making a realistic assessment of the variations from the tendered cost and recording the rationale for the assessment.

The outcome of the initial analysis is an estimate of the potential variation in each cost component. As these are uncertain values – cost distributions – they are generally aggregated using Monte Carlo simulation. This is a proven means of drawing together uncertainties about events and values affecting costs and other quantitative measures.

3 Outputs and Interpretation

The main characteristic output of a cost risk adjustment is a cumulative distribution showing the range of outcomes that might arise and the likelihood of exceeding any particular value in that range. A typical example is shown in Figure 1.

Figure 1: Cost risk adjustment output



The cost used to make a value for money assessment may be chosen at the mean or, more commonly where purchasers are risk averse, towards the right hand end of the range, say at the P₉₀.

It is not uncommon to find one supplier offering a low tender price subject to significant risks that may make it more expensive than an alternative with a higher tender price and less risk, as illustrated in Figure 2. A risk averse purchaser may see the tender with the higher initial price as likely to be less costly in the long run and, if the non financial aspects of the offers were similar, providing better value for money.

Figure 2: Risk adjusted cost comparison

4 Conclusion

Risk adjusted cost estimating provides a way of making a tender selection based on the total cost to the purchaser of accepting each offer. The process for evaluating a risk adjusted cost is straightforward and, so long as it is managed well, it will:

- Add to the evaluators' understanding of the merits of the alternatives on offer;
- Provide a sound basis for measuring and comparing the financial aspects of a set of tenders; and,
- Create a concise, documented summary of the issues affecting each tender and their financial implications.

5 Related Tutorial Notes

Additional related information is provided in further tutorial notes available on our web site at www.Broadleaf.com.au, in particular notes on:

- Quantitative risk modelling;
- Introduction to project range analysis;
- Interpreting range analyses in quantitative models;
- Estimating liability limits for supply contracts.

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