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Working by the rules

Controlling project costs is not necessarily about fancy software and multi-level coding, but about ensuring that certain fundamental principles and some basic rules are followed. Thurstan Ollerearnshaw offers a project manager's perspective on cost management.

Historically, there have been regular reports of cost overruns on construction projects, and particularly in the public sector. Therefore it is important to make sure that the right professional discipline is employed to manage the costs of any construction project. Chartered quantity surveyors (Qs), with the appropriate skills and experience relevant to a project, are obviously essential to successful cost management.

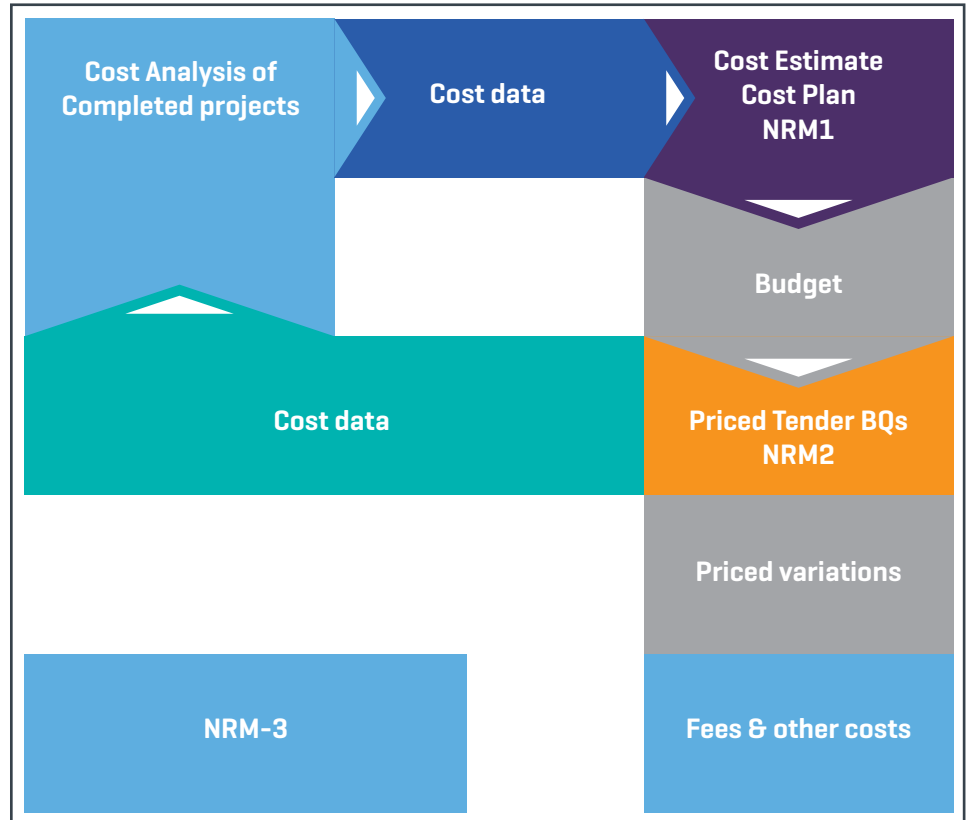
Controlling the final outturn cost of a construction project begins with establishing a cost limit or budget. This acts as the benchmark or baseline against which cost performance will be measured, so getting it right is important. The project manager must guard against both over optimistic and overly pessimistic calculations. In the early stages of a project it is easy for the project team to become swept up by collective enthusiasm, and succumb to the temptation to 'make the numbers fit'.

The danger here is that the budget is effectively unachievable from the start, and that the project ends up being considered a failure when costs inevitably exceed the budget. On the other hand, an overly pessimistic budget, that is loaded with allowances catering for every eventuality may condemn the project as being economically non-viable. The project manager should be able to benchmark the budget, either as a whole or in parts.

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The RICS New Rules of Measurement (NRM) suite is an invaluable tool in allowing comparisons to be made on a common basis. The relationship between the constituent parts of the NRM suite is set out in Figure 1.

Figure 1: Cost data flow



The earlier the budget is set, the more use it will be in controlling costs since traditionally 80% of a construction project's costs are fixed during the first 20% of its lifespan. Detailed information is unlikely to be available during the early stages of design, and this is where the skills of the chartered quantity surveyor and their ability to develop an accurate and usable cost plan come into play. The RICS NRM documents provide a standard set of rules for cost estimating and cost planning that aid communication between the members of a project team. They also help the QS to provide accurate and effective cost advice early enough in the project cycle to allow informed decisions. Organisations have different approaches to budgeting for construction projects, and may require a different presentation of the breakdown of the budget to that described in NRM1.

However, it is crucially important to establish the cost limit or budget early on, and to include allowances for risk and contingency within it. The risk allowance can include separate allowances for design development, construction, employer change and employer other risks as recommended in NRM1, or a quantified assessment of the cost and probabilities of the identified risks as recommended in BS8534. In addition to the risk allowance, it is recommended that a separate contingency is added to cover unexpected and unidentifiable occurrences that might befall a project. This provides the first rule in cost management:

Rule 1: Establish a budget and include appropriate allowances for risk and contingency. Once a budget is established, the next task is to ensure that the design team designs to cost.

The next stage in the cost management process is to check all costs and commitments against the budget. By applying basic principles and adopting simple rules, problems can be avoided. Commitments (either contracts awarded or purchase orders issued) can only be authorised if there is sufficient budget to cover them. Where an insufficient budget exists, or where there is no budget at all, then it must be created by appropriate authorised transfer from the risk and contingency allowances. So the second rule is:

Rule 2: Commitments can only be entered into when there is a budget for them.

In the same way, all payments made must be tracked against authorised commitments (i.e. a contract must be awarded or a purchase order issued), and only up to the amount of the commitment, never beyond it. Most companies have systems in place to receive, track and authorise payments. The QS must establish a similar method to track payments, and allocate them against the appropriate sections of the budget to ensure that payments do not exceed the value of the commitment. Hence the third rule:

Rule 3: Payments can only be made against approved commitments.

Costs are managed and controlled by predictive forecasting that allows decisions to be made before commitments are entered into. Identifying variances as they occur only allows costs to be monitored. For the project manager it is more important to know in advance that a cost overrun might occur, than to know by how much costs have actually overrun.

When dealing with fixed price work packages or cost accounts spending more than the authorised commitment is difficult, especially if Rule 3 is applied. However, when it comes to reimbursable work packages it can be a different matter. In addition to tracking and recording actual costs as they are incurred, the project manager needs a forecast of costs to complete. Simply taking the amount remaining between the original commitment and the cost to date may often not provide the correct forecast. It is better practice to properly assess the cost to complete – often from first principles – and add that to the cost to date to provide an accurate forecast final cost. Systems such as earned value analysis (EVA) provide an understanding of the performance or efficiency to date, and make use of that to predict future performance.

Control can only be effective if it is applied early enough, since only the costs that remain to be committed or spent can be changed. The maxim of simple controls applied early in preference to complex control mechanisms applied too late, should be adopted wherever possible. This gives us rule 4:

Rule 4: Be predictive [look forward].

By transferring risk and contingency amounts as approved changes to create current control budgets, the project manager will be aware of how those allowances are diminishing over time. At the same time, forecast overruns should be balanced by a corresponding under-run in contingency, so as to allow the project manager to determine how much is potentially going to be consumed. This allows them to take decisions to approve additional costs, or to seek alternative solutions.

Plotting the actual risk and contingency remaining against a planned drawdown allows the trend to be examined. The application of professional judgment as to the sufficiency of the remaining allowances by both the project manager and the QS, is another essential in the management of cost. The project manager and QS need to assess, based on the current status of the project, whether the amounts are sufficient, which gives rise to the fifth rule:

Rule 5: Monitor risk and contingency.

The third stage in the process of cost management is reporting. Cost reports generally comprise 4 classes of data, which are generally presented hierarchically with increasing detail at the lower levels. At the highest level an executive summary showing current control budget (CCB), forecast final cost (FFC), variance and spent to date may be all that is required (see Table 1).

Table 1: The 4 data classes of cost reporting

Data classes			
Control	Forecast	Variance	Spent
Original approved budget	Committed costs [contracts awarded]	FFC-CCB (under)/overrun	£
Approved changes	Uncommitted costs		% of committed
Current control budget	Forecast changes		
	Forecast final cost		

While more complexity may be added, the data in the table should provide the basis for a simple cost control system. Additional data may include change in CCB or FFC in the period, percentage of FFC or any other metric that the project team consider important to track.

To assist in the understanding of the report it is useful to summarise a number of key metrics such as:

- CCB and FFC;
- variance (between FFC and CCB);
- amount and % spent;
- number and value of changes approved;
- number and value of pending changes;
- amount of risk and contingency remaining;
- value of the priced risk register; and
- potential cost items not included in the report such as EOT claims.

An understanding of not only the current position, but also how it is changing allows the project manager to gauge how 'healthy' their cost position is. The skills of the QS in analysing, presenting and interpreting the data are invaluable in assisting the project manager's understanding. This gives us the sixth rule:

Rule 6: Understand the cost report.

In summary, the main flaws traditionally encountered in cost management processes and systems stem from inaccurate estimates, late information and insufficient detail. Adopting NRM should help chartered quantity surveyors improve the accuracy of cost plans and estimates, by allowing them to benchmark them more easily against previously achieved costs. This should translate into realistic and achievable budgets being set for projects.

Timely presentation of information is obviously important, as is sufficient detail to allow a better understanding of the effects of design decisions or proposed changes. Coupled with a continuous forward look and the inclusion of the techniques of EVA, costs on the project should be successfully managed.

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