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Notes on Effective Project Cost Control

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INTRODUCTION

These notes on effective project cost control derive mainly from my own experience in developing and implementing project financial and cost control systems in two project organizations, but primarily in Civil & Civic Pty Limited, an Australian project management organization operating in the building and construction industry. It appears that certain issues in project cost control continue to cause difficulties, whose solutions are rarely discussed in the literature. Therefore, although I first drafted these notes many years ago, they may still be sufficiently relevant to warrant publishing now. The following notes briefly discuss the percentage completed problem; the evaluation of current performance and forecasting final costs and variances; focus of control on negative and positive variances; commitment costing; control by self control; project change control; and formal and informal project control.

THE PERCENTAGE COMPLETED PROBLEM IN PROJECT CONTROL

This is a perennial problem in performance measuring, which has been occasionally mentioned in the project management literature over the years, but seldom with solutions. I have sometimes described it as “the 99% complete problem”. An example from ship-building projects which was given by Baker et al 1976 typifies the nature of the problem:

An area with which the writer is most familiar is the use of percentage complete reports for reporting progress on US ship construction in the US Navy. If ever a tool was designed to lead management down the primrose path, the percentage complete report must come close to receiving the top award in that category. The writer found in some four shipyards, that when ships were reported to be 85% complete they were only about 70% complete on average. When they were reported as 95% complete they were only about 82% complete, on average. In one case, a ship was reported 99.99% complete for over a year!

We had just this type of problem in Civil & Civic on a complex building project in Melbourne in the early 1960s. When we realized what was happening – admittedly a bit too late to recoup the situation to the extent we would have liked – we changed our cost control procedures very substantially, and rapidly.

The solution was simple in essence, but required quite a lot of up-front detailed analysis and synthesis in practice. We simply insisted that the work breakdown structure as it applied to cost control was broken down into units whose durations were not greater than the formal cost control review periods (normally a month for most of our projects).

Therefore, at each review period, most of the time/cost items would either have been completed, or not yet started. Even if the assessment of the percentage complete of work currently in progress was not totally accurate, it was not going to significantly affect the overall assessment of work completed to that time.

I know that IBM used this approach on many of their projects, so the effectiveness of this approach is not confined to the construction domain (as would be rather obvious in any case). The strange thing to me is that I have not seen this approach significantly advocated in the mainstream project management literature.

EVALUATING CURRENT PERFORMANCE, AND FORECASTING FINAL COSTS

Allied to the percentage complete problem, but in a much more detailed context, are questions as to how to evaluate performance to date in the context of how that performance is likely to impact on the final results.

In the general management context, Koontz & O'Donnell (1978:472) long ago noted that feedback is essentially historical, and that

One of the difficulties with such historical data is that they tell managers in November that they lost money in October (or even September) because of something that was done in July. At this late time, such information is only a distressingly interesting historical fact... What managers need for effective management control is a system of control that will tell them, in time to take corrective action, that problems will occur if they do not do something about them now.

Koontz & O'Donnell introduce the subject of "feed forward control" by saying that

The time lag in the management control process demonstrates the need for future-directed control if control is to be effective.

One common way many managers have practiced it [feed forward control] is through careful and repeated forecasts using the latest available information, comparing what is desired with the forecasts, and taking action to introduce program changes so that forecasts can be made more promising

These comments apply equally to performance evaluation on projects. As part of the new project cost control system we developed and installed in Civil & Civic in 1962, we introduced a forecasting system that focused on forecast final costs and variances, rather than current costs and variances, as the primary cost control tool.

The main advantage of this approach was that the project managers had to analyse current costs and variances themselves, forecast the final position, and justify their forecasts, and any corrective action being initiated.

FOCUS OF CONTROL – NEGATIVE OR POSITIVE VARIANCES

A matter of practical importance that has drawn frequent comment is the nearly universal tendency to focus control effort on minimizing negative variances, in spite of the intellectual recognition that equal effort applied to maximizing positive variances might be more productive. As Drucker (1977:420) expressed it,

Business typically looks upon the budget as an early warning system for danger and lack of performance, and this is an important function. But performance against budget should also be seen as an early warning system for opportunities, that is, for performance that is

better than expected.

Burt & Masters (1982:55) said much the same thing.

It is interesting to reflect on the fact that the bulk of the literature on management controls assumes that all variations from target will be in the negative or undesirable sense. The concept of using control to grasp opportunities is significantly absent.

Whilst Civil & Civic certainly had plenty of examples where the focus was on maximizing positive variances, I am bound to record that the preponderance of management focus on variances was on efforts to minimize forecasts of substantial negative variances. I can confirm this at a personal level because part of my role in the company was trouble-shooting, which was generally related to trying to recover negative variance situations.

COMMITMENT COSTING

We introduced commitment costing on Civil & Civic projects in 1962, against strong opposition from the financial accounting people. The essence of commitment costing is that, as soon as we had placed an order for products and services at an agreed price, this amount was recorded in our project cost control system as a committed cost, as if the money had already been spent. The concept is simple, and its implementation worked very well indeed for us. It certainly facilitated effective project cost control.

CONTROL BY SELF CONTROL

Even in modern times a good deal of the writing on management control appears to assume that imposed control is the way to go. This traditional perception of control was expressed many years ago by Kast & Rozensweig (1981:454) as follows

A prevalent traditional view is that control is a function of the formal structure and authority (right to command) relationship

These authors equated self control with (Gregory's) Theory Y approach for managing open/adaptive/organic organisational forms (which I believe are characteristic of many projects) thus (p. 457):

If we are basically optimistic concerning our subordinates' ability, we are likely to delegate more, live with loose controls, and rely on people to control their own work activities and behaviour.

Even as traditional a source as Allen (1964:339) supports the concept of control by self control, and makes the following observation about evaluating and taking corrective action.

The accountable manager is generally in the best position to evaluate his own performance and to take corrective action as the activity progresses

However, Allen points out that self control is not enough on its own. He advocates the following two checks and balances:

1. Assurances that the accountable manager has been fully informed and given the opportunity to take corrective action
2. Further reporting of the variance, if it is still significant, to a higher level of management.

The focus in Civil & Civic was firmly on self control. Project managers were expected to do their own performance measuring, evaluation, and forecasting, and to take appropriate corrective actions. The reporting system was essentially exception reporting, to help the next management level rapidly identify areas which might warrant closer scrutiny, particularly with relatively inexperienced project managers. The word “monitoring” was never used in Civil & Civic. The next level of management saw its role as helping the project manager so a better job in a wholly positive sense – not as a sort of policeman, as is often implied by the word “monitoring”.

PROJECT CHANGE CONTROL

This is of the utmost importance on projects. It is vital that projects have effective change control systems covering potential and actual changes to project scope, time, cost and quality objectives.

Changes to project scope are arguably the most difficult to control, as they normally involve flow-on changes to one or more of the time, cost and quality objectives. With regard to controlling changes in costs resulting from change instructions, we instituted the following approach in Civil & Civic.

The initiating document for a change was a “variation advice”, which was essentially an advice of receipt of instructions to vary something. There were four categories of variation advice:

- No change in costs
- Change if price agreed with client on the spot
- Variation instruction by client, with price not agreed immediately, and work not to start until price is agreed
- Variation instruction by client, with price not agreed immediately, but work to proceed before price is agreed. This prompted a provisional variation advice.

From this point we used “confirmation of variation advices” and “change notices” as documents that confirmed variation advices, and which initiated appropriate changes in the cost control system.

FORMAL AND INFORMAL CONTROL

The focus in the literature is on formal controls. Very little is said about informal controls. One of the exceptions is due to Chapman 1972, who said:

The literature of project management tends to place relatively heavy emphasis on the formal systems of control and review. Although these systems contribute to the effectiveness of project management, they are too frequently mistaken as the key attributes of project management

Later, Chapman said that most NASA managers made only limited use of the formal control and information systems. Principal reliance was on informal, unwritten, face-to-face or telephone

discourse.

This reflects my own experience on projects. Whilst there is no doubt that effective formal control systems are necessary for effective project control, everyday on-going control is even more important, and informal activities are a vital part of this.

Finally, Koontz & O'Donnell (1978:466) made the very relevant point that, "*the most direct form of control is assurance of the quality of managers*". This point was also mentioned by Drucker (1977:411), who says "*.... people decisions are the ultimate control of an organization*".

CONCLUDING

Although these notes were originally prepared many years ago, they reflect project cost control practices that worked very well in one particular application area, and hopefully may be useful for practitioners in other areas.

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