PROJECT

RELEVANT TO PAPER P3

A PROJECT – SUCH AS IMPLEMENTING A NEW IT SYSTEM – HAS CHARACTERISTICS THAT SCREAM 'DANGER', AND MANY ARE LESS SUCCESSFUL THAN HOPED. IF YOU ARE AWARE THAT DANGER ACCOMPANIES AN UNDERTAKING, THEN IT MAKES SENSE TO UNDERSTAND THE NATURE OF THE UNDERTAKING AND HOW THE DANGER CAN BE MANAGED.

When I was a student, I saw an advert in my college magazine looking for people to go on a road trip. Eight of us would buy an old minibus, drive it across the continent, and sell it at the end for about the same price we paid for it. The idea was immediately attractive – companionship, new people, new places, new experiences, low cost – and we soon embarked on our adventure.

It was a disaster. What went wrong?:

- We were interested in different things, some of us preferring magnificent scenery, others preferring cities.
- We had different personalities. For example, some were punctual, others laid-back. Some were free-spending, some were careful with money. Some liked rock music, others folk music.
- There were constant arguments and discussions about where to go, what routes to take, how long to spend in different places. The discussions went on and on because no-one felt able to take the lead.
- Costs spiralled because the van broke down a few times. It sold for much less than we had hoped.
- We eventually discovered that the self-appointed map reader had no sense of direction.
- Delays meant that we couldn't get to where most of us thought we were going.
- Delays meant that I missed my flight home, and I certainly did not come back refreshed and enlightened.

This trip had many of the typical features of a project, and highlights many of the risks. In general, a project – such as implementing a new IT system – has the following characteristics:

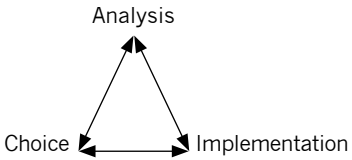
- It is different to one's normal activities.
- It has a start, an end, and a duration.
- Often there is initial enthusiasm about being included in the project team; that is going to solve an important problem and herald in the splendid new IT system.
- Often unique tasks and problems are addressed. New IT system implementation is likely to be rare.
- Team members are drawn from many different backgrounds, each with their own priorities, outlooks, skills and terminologies. The accounts department wants certain reports, the sales department wants others, and IT wants high specification equipment.
- The team members might never have worked together before.
- Often, no benefit is obtained until the project is completed. Abandonment part way through will have incurred costs without yielding benefits.

These characteristics should scream 'danger', and many projects are much less successful than hoped, just as our holiday was. If you are aware that danger accompanies an undertaking, then it makes sense to understand the nature of the undertaking and how the danger can be managed.

PROJECTS AND STRATEGY

The rational strategic planning model (**Figure 1**) is usually presented as three stages: analysis, strategic choice, and implementation. Often these are set out as a linear sequence, but it is preferable to arrange them in a triangle to acknowledge that the three stages inform one another. For example, when the organisation starts implementation, it will undoubtedly discover information which may make it reconsider its analysis and choice.

FIGURE 1: RATIONAL STRATEGIC PLANNING MODEL



Studying Paper P3?
Performance objectives 7, 8 and 9 are linked

MANAGEMENT

Whether shown linearly, or as in **Figure 1**, strategic analysis and choice should be relatively quick. Planning, of itself, neither makes money nor improves performance. Some people think that deciding on a plan is the same as realising the plan, but it is only when the right plans are successfully implemented that gains and improvements are made – and implementation is where the really hard work lies, with effort needed, possibly for years, long after the plan was agreed.

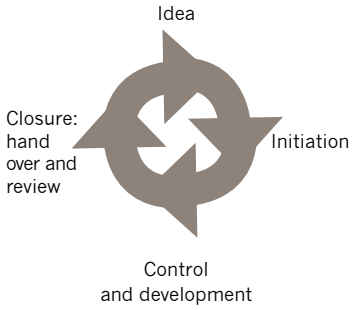
A strategic plan (typically long term and corporate-wide) can never be implemented as a single, monolithic task. A strategy of expanding abroad, for example, would consist of a series of smaller tasks such as finding premises, recruiting, training, equipping the factory, marketing, and establishing a distribution network. Each of these smaller tasks can be regarded as a project, with a start, end, objectives, deadline, budget, and required deliverables. Realising a strategic plan therefore depends on carrying out a complex jigsaw of projects, and if one piece goes missing the whole strategic plan will be in jeopardy. Therefore, successful project management is at the heart of successful strategic planning.

ALL PROJECTS WILL START FROM AN INITIAL IDEA, PERHAPS EMBEDDED IN THE STRATEGIC PLAN. A PROJECT WILL THEN PROGRESS TO THE INITIATION STAGE WHEN A PROJECT MANAGER WILL BE APPOINTED.

THE PROJECT LIFECYCLE

There are a number of different versions of the project lifecycle, perhaps using slightly different terminology and dividing up each stage differently. Sometimes the differences are there just to differentiate a commercial product such as project management software. Despite differences in detail, all project lifecycles can be depicted as in **Figure 2**.

FIGURE 2: STAGES OF THE PROJECT LIFECYCLE



All projects will start from an initial idea, perhaps embedded in the strategic plan. A project will then progress to the initiation stage when a project manager will be appointed. The project manager will choose a project team and they will carry out a feasibility study. The feasibility study is necessary to establish the following:

- Commercial feasibility – will the likely benefits exceed the cost?
- Technical feasibility – do we think this project has a good chance of working?
- Operational feasibility – will it help the organisation reach its objectives?
- Social feasibility – will our employees, customers and other stakeholders tolerate it?

A feasibility report should be produced and this will have to be studied by senior managers, because if the project goes ahead substantial expenditure might be required.

Note that the feasibility report does not merely have to present management with simple 'yes' or 'no' options, but can set out a range of options, each with particular benefits, costs and time frames. Where there is some doubt as to the potential benefits that will arise from the project, it is particularly valuable to offer a range of choices which allow the organisation to first try out a modest project and later allow the project to be extended. This approach is a useful way to reduce risk. If you are not sure about something, start in a small way and extend later if worthwhile.

THE PROJECT INITIATION DOCUMENT

One of the main outputs of the initiation stage should be the project initiation document, or PID. The term is poor because it implies that the PID is used only at the start of a project, when the project is being proposed, and 'document' might suggest a couple of pages only. In fact, the PID is of key importance both initially and throughout the duration of the project. It should address the following questions:

- What should the project achieve? What are its deliverables? These should be specified in detail so that the project and its scope are well defined from the outset.
- Why is the project is needed (including a cost benefit analysis)?
- How will the quality or acceptability of outputs be assessed?
- Who will lead the project?
- Who will be on the project team and what will be the role and responsibility of each team member?
- What are the risks? How have they been assessed and prioritised, and how will they be managed?
- Who will carry out the work on the project? Which actions will be assigned to in-house staff and which to sub-contractors?
- By when should the project and its various stages be completed?
- What are the constraints on the project?
- What are the assumptions on which the project depends?
- How much budget has been allocated to the project?
- What other resources are needed by the project, and have been allocated to it?
- Who sponsors or owns the project? (generally the department or client who is paying)
- What are the reporting arrangements?

As this shows, the PID is the key reference document and it will be extensive and detailed, containing all the planning information required about the project.

WHAT DETERMINES RISK?

Project risk can be said to depend on three variables:

(i) **How well defined is the project?** A well-defined project will set out in detail exactly what the project is to accomplish (the deliverables), when each stage should be completed, and how each stage will be appraised (quality). These qualities can be summed up in the phrase 'project scope'. Additionally, it is important to set a cost budget in advance. We will see later that there can be tensions between cost, time, quality and scope, but if these have not been defined in the first place, the project will run into difficulties quickly as each member of the project team is likely to be pursuing different goals. A poorly defined project will be short on detail but long on grand ambition.

ONE OF THE MAIN OUTPUTS OF THE INITIATION STAGE SHOULD BE THE PROJECT INITIATION DOCUMENT, OR PID. THE NAME IMPLIES THAT THE PID IS USED ONLY AT THE START OF A PROJECT, BUT IN FACT, THE PID IS OF KEY IMPORTANCE BOTH INITIALLY AND THROUGHOUT THE DURATION OF THE PROJECT.

For example, stating that the new IT system will improve inventory management is almost useless. Is the firm moving to just-in-time? Is it going to develop sophisticated demand-forecasting algorithms? Is the warehouse to be automated? Will labour and machine use be part of the system?

In addition, if the project is not well defined, even if most participants happen to have a similar vision initially, the project will be susceptible to drift. This means that as the project progresses, ideas change and the project deliverables change. To some extent, project drift is inevitable because as the project is worked on, more information is discovered and it would be foolish not to take note and alter the project where necessary. However, altering projects part way through is usually expensive in terms of time and money if work has to be redone or abandoned. What must be avoided is ongoing, 'nice-to-have' project drift, in which new features are added little by little without proper evaluation of costs and benefits. By defining the project in detail at the start, the firm will have thought carefully about deliverables and the need for subsequent amendments should be minimised.

(ii) **The size of the project**. It is pretty obvious that there will be more risk associated with large projects. More stakeholders will be involved, possibly including customers and suppliers. There will be more coordination problems and the financial investment will be greater. Project failure, will cause great disruption and many people will be affected. By contrast, small projects will be easier to control and if they go wrong, damage is likely to be confined to a smaller number of stakeholders.

(iii) **The technical sophistication of the project**. A project which depends on well understood solutions is much less likely to go wrong than a project which is attempting to use cutting edge, experimental technology.

So, if you are put in charge of a large, poorly defined, sophisticated project, you might like to look round for another job, as if the project fails to deliver (and it probably will) you could be the number one scapegoat.

Of course, there can be a good business case for embarking on large sophisticated projects, as these can allow companies to differentiate their products and services. If standard, hesitant, safe solutions are always used then more ordinary performance will result. It might be part of a business's strategy to adopt radical solutions to gain competitive advantage. However, there can never be any excuse for a project being ill defined at the start.

Risks must be managed and the following approach can be used:

1 Define the risks. What could go wrong?
2 Assess the risks. This will be a combination of estimating the financial effect if the risk event occurs, and the probability of the risk occurring. Some risks would have large financial consequences but could be very unlikely to happen. Others might have trivial financial consequences.
3 Prioritise the risks. What are the really serious events that need to be addressed first?
4 Deal with the risks. Generally, there are four approaches:
   - Tolerate the risk, either because the event is unlikely to happen and/or the consequences will be immaterial.
   - Treat the risk, or do something to ameliorate it. For example, if the consequences of missing a deadline are serious, have additional resources available that can be used to speed up the process if necessary.
   - Transfer the risk. Insurance is a form of risk transfer, as is sub-contracting. So if you are worried about an IT project missing important deliverables, consider sub-contracting part of it and build in penalty clauses.
   - Terminate the risk. In other words, the event would be so serious that you do not want to risk it occurring at all. For example, if there were a security breach during a project that requires sensitive data to be held, this could be devastating to a company, so the company might decide not to hold that data, despite it possibly yielding good marketing information.

THERE CAN BE A GOOD BUSINESS CASE FOR EMBARKING ON LARGE SOPHISTICATED PROJECTS, AS THESE CAN ALLOW COMPANIES TO DIFFERENTIATE THEIR PRODUCTS AND SERVICES. IF STANDARD, HESITANT, SAFE SOLUTIONS ARE ALWAYS USED, THEN MORE ORDINARY PERFORMANCE WILL RESULT.

THE PROJECT MANAGER

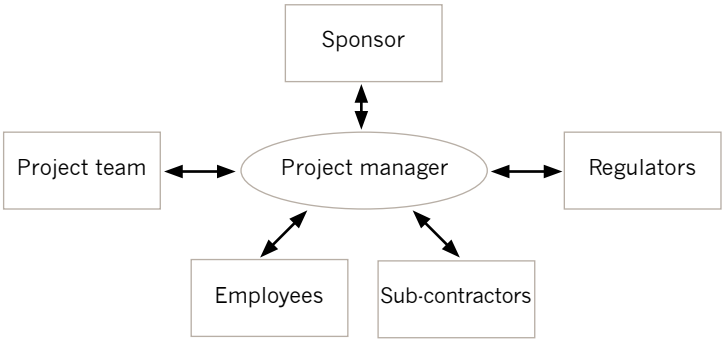
You will see from the contents of the PID that there are a number of classes of stakeholder in projects, typically:

- the sponsor
- the project team
- other employees, sub-contractors and regulatory authorities, such as health and safety inspectors.

Funds from the sponsor flow through the project team and on to other departments and sub-contractors. In return, project deliverables should flow back towards the sponsor.

The project team will often be multi-disciplinary and it will be led by a project manager. The project manager is enormously influential as to whether or not the project ends in success, and he or she must combine technical knowledge, leadership ability, and project management skills.

FIGURE 3: RELATIONSHIPS BETWEEN PROJECT MANAGER AND STAKEHOLDERS



The tasks of the project manager can be summarised as:

- **Ensuring that the PID is comprehensive**. This can be a complex task because it will mean ensuring that deliverables, budget, resources, project team, deadlines and so on have been determined. As was emphasised earlier, there is no point embarking on a semi-defined project, so the project manager should be strong enough to resist management pressure to be seen to be doing something. If the project is started before the PID is complete, things will be done but they will probably be the wrong things.
- **Communication with the sponsors**. Even when projects run smoothly, sponsors will expect updates on progress. Often, however, even in well planned projects, problems will be encountered and it is then that communication with the sponsors is particularly important. This will keep the sponsors informed but will also give the sponsors opportunities to make choices, for example to spend more or to cut back on deliverables.
- **Team leading**. The project team is likely to consist of people from a number of departments with different skills and priorities. The project manager should be capable of creating a cohesive, well motivated team where participants work well together.
- **Communication with sub-contractors and regulatory authorities**.

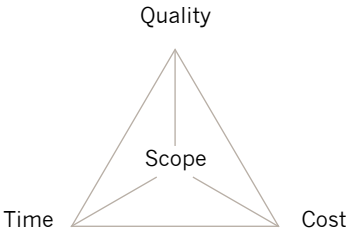
EVEN WHEN PROJECTS RUN SMOOTHLY, SPONSORS WILL EXPECT UPDATES ON PROGRESS. OFTEN, HOWEVER, EVEN IN WELL-PLANNED PROJECTS, PROBLEMS WILL BE ENCOUNTERED AND IT IS THEN THAT COMMUNICATION WITH THE SPONSORS IS PARTICULARLY IMPORTANT.

- **Technical appreciation of project issues**. For example, someone running a construction project will need to understand relevant technical issues when these are raised in meetings.
- **Organisational ability, including the ability to delegate tasks**.
- **Technical competence in project management**. For example, an understanding of critical path analysis (to monitor and control progress through time), and cost reports to monitor and control expenditure.
- **An ability to balance project cost, time, scope, and quality**.

THE CONTROL STAGE: COST, TIME, SCOPE, AND QUALITY

All projects have targets relating to cost, time, scope, and quality; these should be defined in the PID.

FIGURE 4: THE CONTROL STAGE



However, certain priorities or pressures are likely to apply to each variable, depending on the nature of the project. For example, a project involving safety-critical systems will rightly put great emphasis on quality because the consequence of technical failure will be very serious. However, managers need to be aware of the impact of the following compromises:

- Increased emphasis on quality places the project in danger of taking longer and costing more.
- Increased emphasis on meeting the cost budget may compromise quality, the project may take longer, or the scope could be narrowed.
- Increased emphasis on meeting time deadlines may also compromise quality, cost over-runs are more likely (perhaps because overtime has to be paid), or scope could be narrowed.
- If the emphasis is to ensure that the project scope is not reduced, then cost and time might increase, and quality might decrease. Naturally, if scope is increased, whether through project drift or through more pre-meditated changes to the project, costs, time and quality will all be severely jeopardised.

TYPICALLY, PROJECTS CONSIST OF A NUMBER OF SEPARATELY IDENTIFIABLE STEPS WHICH CAN BE BROKEN DOWN, HIERARCHICALLY, UNTIL MANAGEABLE WORK PACKAGES ARE PRODUCED WHICH CAN BE ASSIGNED TO THE APPROPRIATE PEOPLE. THIS IS THE PROCESS OF DERIVING THE WORK BREAKDOWN STRUCTURE FOR THE PROJECT.

None of these compromises is bound to happen, but project managers should be aware that such tensions exist and that a balance has to be maintained by management action, if necessary negotiating with the project sponsors to gain approval for changes.

PROJECT PLANNING AND MANAGEMENT TOOLS

Typically, projects consist of a number of separately identifiable steps which can be broken down, hierarchically, until manageable work packages are produced which can be assigned to the appropriate people. This is the process of deriving the work breakdown structure for the project. Each work package, or task, will have four components:

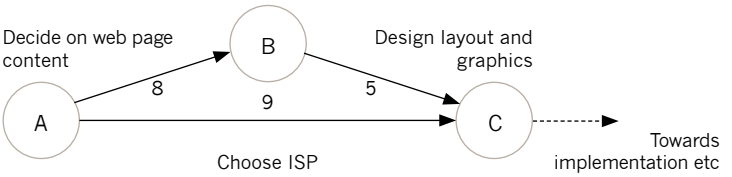
- task name and description
- costs, both marginal and any fixed element
- duration
- who is responsible and, in particular, whether the work will be carried out internally or externally.

So now the project manager knows who is doing what and how much each element should cost. Using a relatively simple cost accounting system, material, labour, overheads and third party costs can be coded to the work packages, hence to the project, and actual costs can be compared to budget for control purposes.

Still to be taken into account is the time that each work package will take, but whereas costs are cumulative, times need not be as often several tasks can be undertaken simultaneously. A more sophisticated approach is needed which sets out the relationship of the tasks or activities to one another, identifying those tasks which can be concurrent and those which can only be consecutive. For example, if the project was to set up a new website for the company, the task of choosing the internet service provider to host the website can be undertaken at the same time as designing the graphics and layout of the web pages. However, the layout and graphics couldn't be finalised before the company has decided what information the web pages should show. These three tasks could be set out in a network diagram, or critical path analysis, as shown in **Figure 5** over the page.

CLOSURE IS THE STAGE AT WHICH THE FINISHED PROJECT IS HANDED OVER TO THE PROJECT SPONSOR – WHETHER IN-HOUSE OR CUSTOMER. THE SPONSOR NEEDS TO CHECK THAT THE AGREED DELIVERABLES HAVE BEEN PROVIDED AND THAT THE PROJECT HAS BEEN SUCCESSFUL IN THAT RESPECT.

FIGURE 5: NETWORK DIAGRAM / CRITICAL PATH ANALYSIS



The numbers represent the time that each activity takes (let's say in days). The project cannot proceed further until both content and layout have been decided. These are consecutive steps, one taking eight days and the next five days, so this small part of the project cannot be accomplished in less than 13 days. It does not matter that it takes only nine days to choose the ISP: everything has to wait for the content and design activities to be completed. These are critical activities, and if either were to take another day, completion of the whole project would be delayed by a day. Therefore, the project manager has to monitor critical activities very carefully. Choosing the ISP is a non-critical activity and it could be delayed by up to four days before impacting on project completion.

Once project slippage is likely, the project manager has a number of choices, all of which should be discussed and perhaps negotiated with the project sponsor:

- live with the slippage
- reduce project scope
- reduce project quality
- bring in more resources, such as hiring sub-contractors to help out (which will, of course, increase costs)
- move resources from non-critical to critical activities if skills are interchangeable.

Even small projects can be broken down into many tasks, each with its own definition, personnel assigned, costs, start time, finish time and defined relationships with other tasks. Controlling this manually can be very arduous and project management software can be very useful in tracking each activity and, therefore, the progress of the project as a whole.

CLOSURE

This is the stage at which the finished project is handed over to the project sponsor – whether in-house or external customer. The sponsor needs to check that the agreed deliverables have been provided and that the project has been successful in that respect. There might be some negotiation of over costs, for example if deadlines had been missed. The sponsor should formally sign-off the project to provide evidence that the project is concluded.

A post-implementation review should also be carried out, ideally involving the sponsor, the project team and some of those affected by the project. This will identify:

- what went well
- what didn't go so well
- if the expected benefits had been forthcoming
- if cost and time budgets were met
- if anything needs to be done to improve the outcome.

The last question is why we talk about a project management lifecycle. Successful projects will spur people on to have ideas about how matters can be further improved and so the process starts again. Unsuccessful projects will result in lessons worth learning – such as be careful with whom you go on holiday.

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