What went wrong? Unsuccessful information technology projects

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Abstract
Information technology (IT) project management is a crucial issue for organizations today. A 1995 study in the USA found that 31 per cent of software projects will be canceled before completion, and more than half the projects will cost an average of 189 per cent of the original estimates. This article examines the results of a survey questionnaire that was sent to Canada's 1,450 leading public and private institutions to find the causes of IT project failure. It found that the three most common reasons for project failure are poor project planning, a weak business case, and a lack of top management involvement and support. It then outlines the reasons behind these failures, thus providing the first steps towards minimizing the risk of future failures.

Introduction

Information technology (IT) project management is a crucial issue for organizations today. The failure rate of IT projects is astounding. A 1995 study in the USA found that 31 per cent of software projects will be canceled before completion, and more than half the projects will cost an average of 189 per cent of their original estimates. With the $250 billion spent each year in the USA on IT application development, we see that the cost of failures and overruns is staggering (Standish Group, 1995).

What were the causes of project failure? How best to manage software projects to avoid excessive costs? In April 1997, a survey questionnaire focusing on IT project management issues was sent to Canada's leading 1,450 public and private sector organizations. KPMG's 1997 Survey of Unsuccessful Information Technology Projects revealed that the three most common reasons for project failure are:

1 *Poor project planning*. Specifically, inadequate risk management and a weak project plan. Risk management becomes more important as the organization gets bigger, so larger organizations need to pay more attention to this area.
2 *A weak business case*. The need for the system should be justified in ways that relate directly to the organization's business needs.
3 *Lack of top management involvement and support*. This often dooms the project to failure before it starts. Securing buy-in from the top, often by a strong business case backed up with a realistic project plan, is an essential step.

Some of the other main findings are:
- Projects fail more often because of schedule overruns than budget overruns.
- Many projects fail because they use new or unproven technology.
- Poor estimates or weak definitions of requirements at the project planning stage also contribute to project failure.
- Projects can run into trouble due to the vendors' inability to meet commitments.
- Of the failed projects, 60 per cent were planned to take less than one year to complete.

This report outlines the reasons behind the failure of information technology projects, thus providing the first steps towards minimizing the risk of future failures. Learn the lessons of past mistakes, and improve project management techniques so that the staggering costs of IT project failures do not affect your organization.

Research method

In April 1997, the Program Management practice of KPMG sent a questionnaire concerning unsuccessful information technology projects to chief executives of 1,450 public and private sector organizations across Canada. The aim of the survey was to collect information on the reasons behind the failure of such projects. Failure was defined as meaning:
- the project budget was overrun by 30 per cent or more; and/or
- the project schedule was overrun by 30 per cent or more; and/or
- the project was canceled or deferred due to its inability to demonstrate or deliver the planned benefits[1].

Projects canceled or deferred due to unplanned changes in business priorities were not covered.

Respondents were asked to rank factors contributing to project failure, from the following areas:
- Project accountabilities.
- Establishing project expectations.
- Risk management.
- Project management – planning.

- Project management – execution.
- The project team.
- Technology architecture.
- Corporate culture.
- Other factors.

Respondent analysis

The response rate for this survey was 14 per cent. Of these responses, 176 arrived in time to be analyzed for this report; of these, 61 per cent reported details on a failed IT project (see Figure 1).

For the purposes of this survey, a small organization was defined as having up to 250 employees, a medium one as having 251 to 1,000 employees, and a large organization as having more than 1,000 employees.

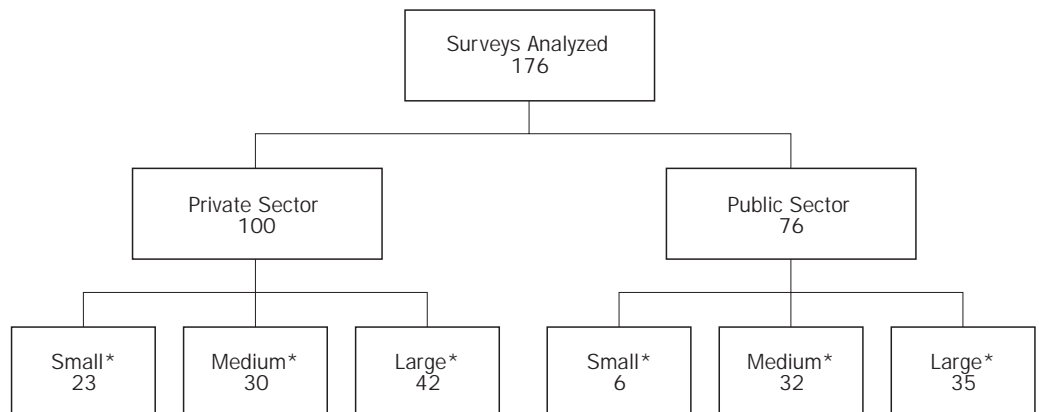Responses came from a wide cross-section of Canadian business (see Figure 2 and Table I).

Findings

Failure types

Project failure was defined in three ways: overrunning its budget by 30 per cent or more; overrunning its schedule by 30 per cent or more; or failing to demonstrate the planned benefits. Of these, failure by over-running schedule was by far the most common. A total of 87 per cent of failed projects exceeded their initial schedule esti-mates by 30 per cent or more. This compares to 56 per cent of failed projects that exceeded their estimated budget by the same amount, and 45 per cent of failed projects which failed to produce the expected benefits (see Figure 3).

Project size

A high number of failed projects were "small" projects; that is, they were scheduled to take 12 months or less to complete. Of failed projects, 60 per cent fell into this category. Looking at this 60 per cent, nearly all respondents (92 per cent) with small projects reported that these projects went over schedule. Of those with large projects (projected schedules of over 12 months) a lower percentage (86 per cent) found meeting these schedules a problem (see Figure 4).

Common reasons for project failure

Common reasons for project failure were:
- Poor project planning (specifically, risks were not addressed or the project plan was weak).
- The business case tor the project was weak in several areas or missing several components.
- A lack of management involvement and support.

The most common reason for project failure was poor project planning – in two distinct areas.

First, risks were not addressed as part of the project planning process. Respondents ranked various risks as being particularly significant, with slippage from the schedule coming first (see Table II).

Some comments from respondents:
- "The original time line was unrealistic, and not revised once completion of en-hancements was identified."
- "I attribute the failure of this project primarily to the management of the scope of the project. Changes in scope that were introduced were not properly evaluated prior to inclusion in the project."

Figure 1
Survey response statistics

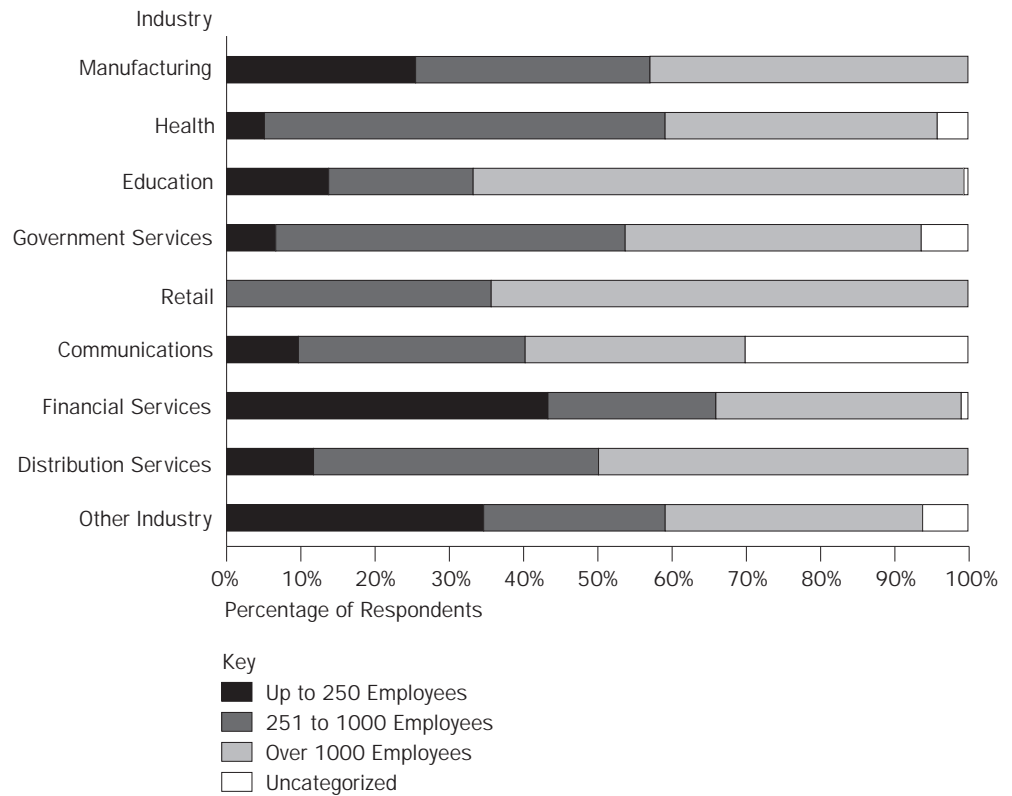*Where information was given

Figure 2
Industry response by organization size

Table I
Industry response by sector

Industry sector	Percentage of respondents
Manufacturing	24
Health	23
Education	12
Government services	9
Retail	8
Communications	6
Financial services	5
Distribution services	4
Other industry	9
Total	100

- "Cutbacks across the organization led to more competition for scarce IT resources, and the IT personnel were too 'stretched' to do more than simply firelight."
- "The turnover of key individuals associated with the project was a major problem."

Second, the plan was weak. The four most common deficiencies in project plans are shown in Table III.
Some comments from respondents included:
- "Learning the new development tools took much longer than planned."

Figure 3
Type of project failure
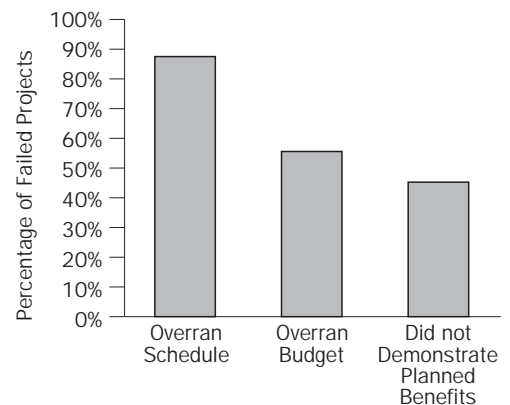
- "Activities in the plan were reported as being done, when in fact they were not."
- "We had insufficient information systems staffing to stabilize the initial phase quickly."

A weak business case was the second most common reason for project failure. The business case was most likely to be weak in, or missing, the components shown in Table IV.
Some comments from respondents included:
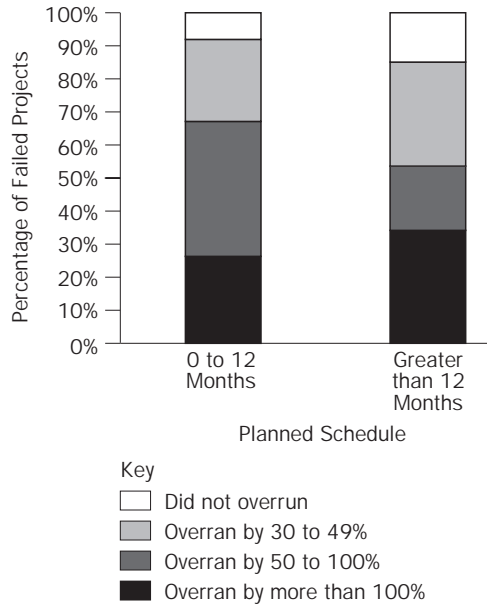
Figure 4
Overrun vs planned schedule

- "The complexity of the dcliverables was not understood by the key users."
- "A major change in the funding climate took place without reassessing the importance of the project."

Finally, a lack of management involvement and support was cited as the third most common reason for project failure.

Some comments from respondents included:
- "The business sponsor and main contact was *not* committed to the success of the project since he had a vested interest in the 'old' systems."
- "The executive management ideals did not remain consistent with the established policies and procedures which they endorsed up front."
- "The president and CEO was the sponsor but did not want the detail."
- "Senior management support and lack of follow through with middle management was a problem, as was the entrepreneurial attitude of the business areas cultivated by senior management – the project was a corporate head office project."

Other important reasons for project failure
It is clear through the comments received from respondents that other important reasons contributed to project failure. The patterns which they build are persuasive.

Many projects had problems with new or unproven technology. Some 14 per cent of respondents who reported failed projects found that new technology, often in beta version or otherwise not fully tested, had contributed to the failures.

Some comments from respondents included:
- "The vendor's 'beta' software was not ready. Enormous amounts of time were spent testing software that was not ready for use."
- "New unproven software was a problem: the purchased application was not fully developed (too many bugs). The product was relatively new (almost beta); therefore no track record was established."
- "The vendor's product was not ready for market."

Many projects ran into trouble because the vendors did not meet commitments. Some 15 per cent of failed projects reported a problem with the vendor's ability to deliver a product to meet objectives and timelines, and sometimes even to deliver any product at all.

Some comments from respondents included:
- "The vendor could not deliver a finished product."

Table II
The four most important risks not addressed as part of the project planning process

Ranking	Factor	Percentage of respondents who identified risk as a problem
1	Slippage from the schedule	73
2	Change in scope of technology, functionality or business case	51
3	Cost overruns associated with one or more project components	45
4	Change in any key individuals such as the business sponsor, project manager or vendor manager	38

Table III
The four most common deficiencies in project plans

Ranking	Factor	Percentage of respondents who identified project plan as a problem
1	Incorrectly estimated activity durations	63
2	Incorrect assumptions regarding resource availability	52
3	Inadequate assignment of activity accountabilities	51
4	Missing or incomplete review and approval activities	47

• "It is somewhat doubtful that the supplier could have delivered the system, due to his over-committed and over-extended position on other major projects with third parties."
• "The application vendor underestimated the scope, and didn't have enough skilled resources."
• "Vendor inability to meet objectives and fill commitments was a factor."

Poor estimates or definitions of requirements at the project planning stage contributed to project failure. Of the respondents who reported failed projects, 10 per cent relayed through open comments that they ran into problems at least partially due to a poor

definition of requirements or specifications or an underestimation of the resources required for the project.

Some comments from respondents included:
• "The specifications were incomplete until late in the project."
• "The project significantly exceeded the cost estimates made at the outset. If actual costs had been known at the outset, an alternative solution would have been pursued."
• "Unrealistic time estimates: underestimated the availability of staff time to the project."

Risk management became more important as the size of the organization increased. Respondents were asked to rank the significance of the factors contributing to project failure. Based on this, the survey results showed that, in general, the larger the organization, the greater the importance attributed to risk management as a factor in project failure. Only organizations of between 1,001 and 5,000 employees disturbed this trend (see Figure 5).

Serious budget and schedule overruns
A serious budget or schedule overrun was defined to be 50 per cent or more over the original estimate. The survey identified patterns in the projects that suffered this fate.

Table IV
The most likely factors that cause a weak business case

Ranking	Factor	Percentage of respondents who identified project plan as a problem
1	Business and operational changes needed to deliver the benefits	48
2	Clearly understood deliverables	46
3	Quantified costs and benefits	44
4	Overall scope of project	37
(tied)	Business and technology risks	

Figure 5
Risk management as a factor contributing to project failure

Key
Average Answer
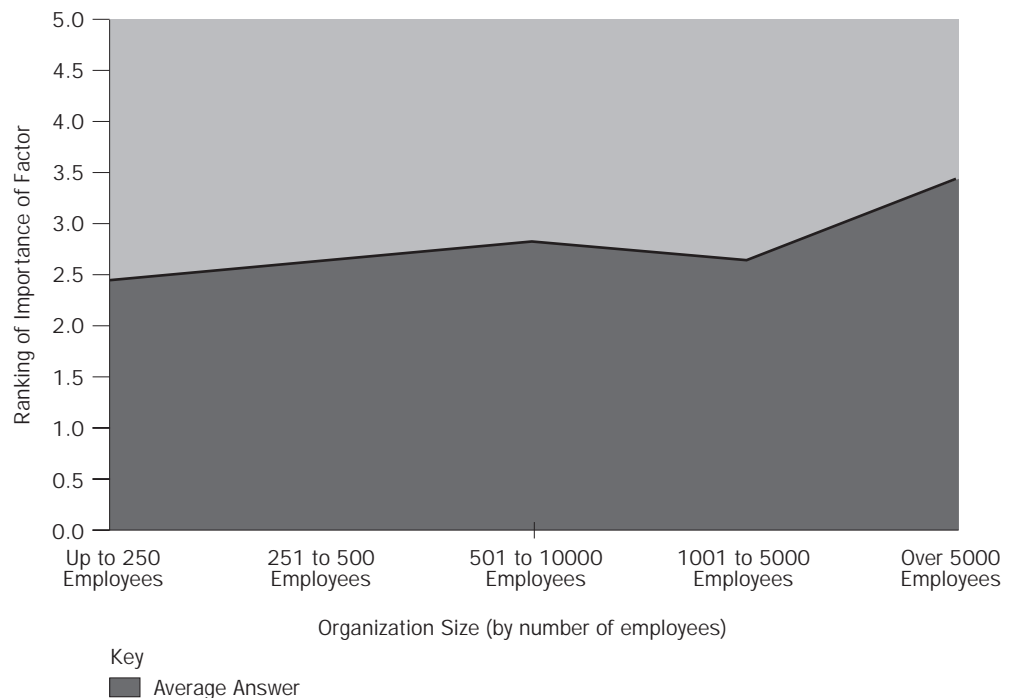
Larger organizations are more in danger of suffering from serious budget overruns (50 per cent or more over the original target). One-third of responding organizations with over 5,000 employees reported serious budget overuns, compared with only 20 per cent in organizations of 1,001 to 5,000 employees (see Figure 6).

Even with a serious schedule overrun, project managers can hope to keep the budget from serious overrun. There is a correlation between schedule and budget overrun. However, this correlation is much stronger in cases with budget overruns, than in cases with schedule overruns. A serious (greater than 50 per cent) budget overrun meant a serious (greater than 50 percent) schedule overrun as well in 91 per cent of cases. But the reverse is not usually true; most of those projects with serious schedule overruns did not have a serious budget overrun as well (see Figures 7 and 8).

Figure 6
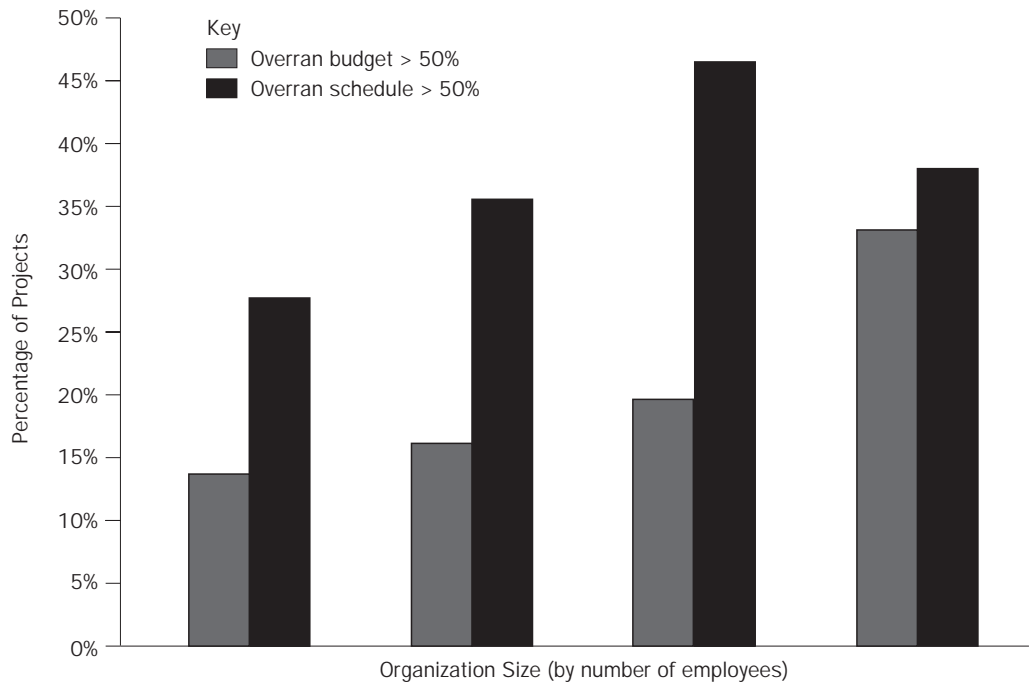Serious budget and schedule overrun by organization size

Figure 7
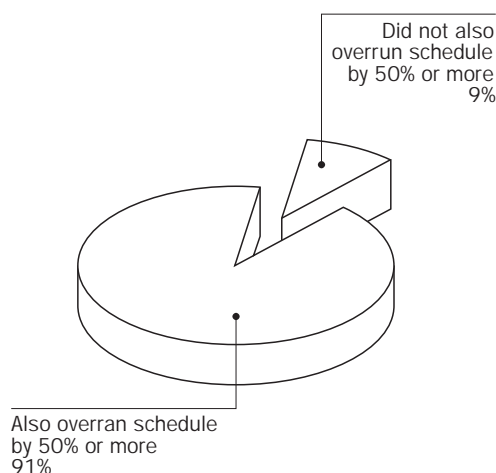Projects overrunning budget by 50 per cent or more

Figure 8
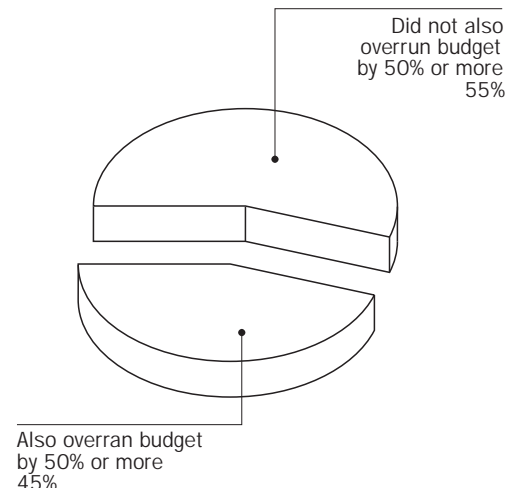Projects overrunning schedule by 50 per cent or more

Figure 9
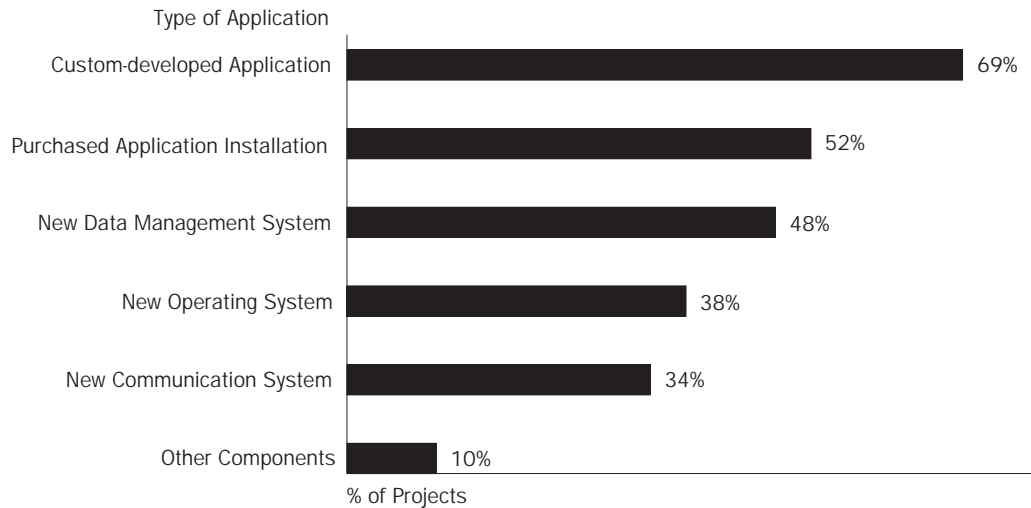Types of project overrunning budget and schedule

Table V
Factors that contributed to serious budget and schedule overruns

Ranking for total sample	Ranking	Area of project management
1	1	Project management – execution
4	2	The project team
2	3	Risk management
5	4	Project accountabilities

Table VI
Project manager failings that can contribute to serious budget overrun

Ranking for total sample	Ranking	Factor
1	1	Risks were not addressed in several areas
9	2	The project manager did not have the required skills or expertise
5	3	Project progress was not monitored and corrective action was not initiated
7	4	The experience, authority and stature of the project manager were inconsistent with the nature, scope and risks of the project

Custom-developed applications were associated with serious budget and schedule overruns. Of those respondents who went 50 per cent and over on their original budget and schedule, 69 per cent of the projects involved custom-developed applications (see Figure 9).

Project management (execution) was rated as the most important area contributing to project failure in cases with both serious budget and schedule overruns (see Table V).

Where projects were seriously overrun, the skills of the project manager and the monitoring of progress against plan were highlighted as major factors. Risk management remains the highest ranked factor contributing to project failure, but the lack of required skills or expertise on the part of the project manager and inadequate monitoring against progress and initiation of corrective action were ranked second and third (see Table VI).

Note
1 A serious budget or schedule overrun was defined as one that exceeds the original target by 50 per cent or more.

Reference
Standish Group (1995), *Chaos (Application Project Failure and Success)*, The Standish Group International, January. URL http://www.standishgroup.com/chaos.html