

0263-7863 (95) 00020-8

# IT projects: a basis for success

**John Wateridge**

*Department of Management Systems, Bournemouth University, Talbot Campus, Fern Barrow, Poole, Dorset BH12 5BB, UK*

**In spite of decades of research, information technology projects continue to fail. The paper investigates the key criteria on which the success of IT projects is judged, and the factors that are important in influencing the success or failure of IT projects. The evidence of research shows that project managers concentrate on achieving timescales and budgets. The conclusion is that, for IT projects to be successful in the future, the criteria for success and associated factors that influence success need to be defined clearly, agreed by all parties at the start of the project, and reviewed as the project progresses. Project managers should be concentrating on success criteria relating to users and sponsors and, consequently, the factors to deliver those success criteria.**

Keywords: success criteria, success factors

Information technology (IT) projects continue to fail. A recent survey<sup>1</sup> points out that twice as many IT projects are considered to be 'less successful' than are considered to be successful. The survey highlighted, amongst other aspects, that there are 'a remarkable number of projects which are not achieving what was expected of them' (see Reference 1, p 1).

DeMarco<sup>2</sup> reported that some 15% of all software development never delivers anything, and overruns of 100–200% are common in software projects. Furthermore, there have been a number of spectacular failures over recent years. Winsburg and Richards<sup>3</sup> point to some spectacular 'software runaways'.

- An \$8M system scheduled for completion in 1987 had revised targets of a budget of \$100M and completion in 1993.
- A billing system for water and gas utilities was cancelled after \$1M had been paid with the claim that the system was far from delivery.

There has also been the notable failure of the TAURUS project for the London Stock Exchange, UK. However, there have been successes in many organisations, for example the computerisation of the UK Pay-As-You-Earn (PAYE) tax-collection system.

There is still major concern over the implementation of IT projects and difficulties are continually being experienced despite the more prevalent use of structured analysis and design methodologies (e.g. SSADM, Yourdon), project-management methodologies (e.g. PRINCE), and automated tools for the development and management of IT projects.

Factors that point the way to success are frequently

subjects of articles and papers (for example proper planning, user involvement, good communication, proper monitoring). However, little research has directly examined the criteria for success and the selection of appropriate success factors which will deliver the chosen success criteria. The requirements for IT project success, in terms of criteria and factors, are outlined in this paper. The paper draws on evidence from previous research and from the author's own research on the success criteria and success factors for IT projects. The second section examines the criteria for success and proposes extensions to the criteria for successful IT projects. The third section examines the factors that influence the success of IT projects and the fourth section concludes the paper.

## Success criteria

In order to improve the success of IT projects, project participants must come to a clear agreement at the start of the project about how success will be judged, and then develop project-management approaches which will deliver those criteria.

Most authors (for example, Duncan<sup>4</sup>, Blaney<sup>5</sup> and Redmill<sup>6</sup>) have, in the past, defined only three established success criteria:

- meeting budget;
- meeting timescales;
- meeting user requirements and specification.

This is limiting in its focus, because it does not take into account other criteria (for example quality and achievement

of purpose). Morris and Hough<sup>7</sup>, in assessing major projects, defined four criteria for success:

- The project delivers its functionality.
- It is delivered to budget, on schedule, and to technical specification.
- It is commercially profitable for the contractor.
- It is terminated reasonably and effectively if it needs to be cancelled.

Their work cites the Thames barrier project (the UK London flood-protection scheme), which took twice as long to build and cost four times the original budget, but provided a profit for most contractors. It was, therefore, considered a success. Morris and Hough<sup>7</sup> thus suggest that projects can fail to meet certain criteria of budget and time, and still be considered a success.

Turner<sup>8</sup> provides a more extensive list for judging success:

- The project achieves its purpose.
- It provides satisfactory benefit to the owner.
- It satisfies the needs of the owners, users, and stakeholders.
- It meets its pre-stated objectives.
- It is produced to specification, within budget and on time.
- It satisfies the needs of the project team.

The extensions by Morris and Hough<sup>7</sup> and Turner<sup>8</sup> to the established criteria show that time and budget are only two of many criteria for judging the success of projects. Within the IT domain there has been little research and testing of project-success criteria.

The author carried out research in 1992/93 to assess the impact of criteria and factors in the success or failure of IT projects. Over 100 projects were examined. There were subsequent interviews, examining the experiences on particular projects. Project managers, sponsors, users, systems analysts and other support staff were asked to give their views on IT project success, the success criteria for the project, and factors that led to success or failure of the project.

The results of the research study undertaken show that there does not appear to be agreement between the role players in IT projects on the criteria for success. There is broad agreement that the project needs to meet user requirements and functionality and that it be on time and to budget. Table 1 shows the three criteria most frequently mentioned by users and project managers in the author's own survey. However, on projects that are perceived as having failed, project managers appear to have concentrated on meeting timescales and budgets, whereas meeting quality targets and commercial success are seen as important criteria on successful projects. On the other hand, users are more concerned with ensuring that they are happy at the end of the project.

There are, of course, projects for which timescales are extremely important (e.g. the implementation of a payroll system at the start of the financial year), but the emphasis of project managers on timescales and budgets as major criteria is leading to a number of project failures. The conclusion must inevitably be drawn, as the results of the survey show, that the fixation, on the part of project managers particularly, on satisfying time and budget

Table 1 Three major criteria for success (frequency of mention)

Users	%	Project managers	%
<i>All projects:</i>			
Meets user requirements	96	Meets user requirements	82
Happy users	71	Meets budget	72
Meets budget	67	Meets timescales	69
<i>Successful projects:</i>			
Meets user requirements	96	Meets user requirements	86
Happy users	71	Commercial success	71
Meets budget	71	Meets quality	67
<i>Failed projects:</i>			
Meets user requirements	100	Meets budget	83
Achieves purpose	100	Meets timescales	78
Happy users	67	Meets user requirements	78

[The numbers indicate the percentage of the total number of projects.]

constraints, at the expense of other criteria (by cutting corners in the management and development of the project), is leading to failure of IT projects.

There is an argument that the criteria for project success need to be agreed by all parties before the start of the project and constantly reviewed as the project progresses. The success criteria may change. This can be difficult as many of the criteria are subjective. Project managers have different perceptions of the criteria from those of users, and even users themselves differ in their perceptions. It is important to extend the criteria further, in particular by adding 'meeting quality constraints' to the list proposed by Turner<sup>8</sup>. The definition of 'good quality' varies for the various roles in the project. To ignore quality and mask its importance by suggesting that it is part of customer requirements is to simplify the matter. A project manager may define quality as 'maintainability', 'capacity for expansion', or 'efficiency'; various users may define quality in various ways, for example as 'usability' or 'responsiveness to systems requests' (after all, users have their performance objectives, for example response times). A user will soon complain when a seemingly trivial enhancement to a system takes months to complete and implement! Whatever the definition of quality is, all parties must agree on the quality constraints, however difficult that may be, and understand other views on the definition of quality in order to work towards the production of a quality product.

Having examined the previous research and the author's own research on the criteria for success, there appear to be differences of opinion on the criteria for success. More importantly, there is the need to choose appropriate success factors to deliver the success criteria stated at the outset of the project. The factors employed by organisations to influence the success of IT projects and meet the stated criteria need to be examined.

## Success factors

Many researchers and authors have identified the factors that they feel are important for project success. Baker *et al.*<sup>9</sup>, in a survey, concerned themselves with the perceived success of projects, and particularly with the factors that affected that perceived success or failure. They identified ten factors that they felt contributed to project success.

The critical success factors put forward by Slevin and

Pinto<sup>10</sup> identified an alternative ten critical success factors and four supplementary factors.

Exact comparison of these two sets of research is difficult. However, of the ten factors mentioned by both sets of research, five by Slevin and Pinto<sup>10</sup> equate to only four by Baker *et al.*<sup>9</sup>. (see Table 2).

These results point to the fact that there is some agreement on the factors that influence project success, mainly in the more strategic aspects of projects (the activities completed before the execution of the development work). However, there remain a number of differences. An inhouse survey carried out at Philips NV in the late 1970s, documented by Geddes<sup>11</sup>, shows that 'clearly defined objectives' (equating to Slevin and Pinto's<sup>10</sup> 'project mission') were identified as the single most important key to success. Conversely, 'poorly defined objectives' were identified as the greatest perceived cause of failure on IT projects.

From the research shown, the setting of clear objectives for a project is an important aspect of developing a successful software product. However, simply setting clear objectives at the outset of the project does not ensure a successful project. Other factors (for example, user involvement, project planning, management structure, team quality) play a significant role. Furthermore, previous research mainly examines the views of industry project managers and not the sponsors or users of projects. The conclusion of this research, although valid, is limited by this. The author's own research takes this one step further by evaluating the perceptions of the different role players in IT projects.

The author's own research examined the factors that users, sponsors, project managers, systems analysts and other support staff felt were important in influencing project success or failure. This research points to the fact there is a vast difference between the perceptions of users and the perceptions of project managers on the factors that contribute to successful IT projects. Users feel that the majority of projects fail because there is a 'lack of adequate user involvement' and 'problems in communication'. In addition, users felt that 'poorly defined objectives' and 'poor planning' were the most likely issues that could cause IT projects to fail. Project managers, however, identified that 'weak leadership', 'poorly defined objectives' and 'poor planning' were the major factors in project failure. Furthermore, there was a significant variation between the perceptions of users and project managers on the 'monitoring' of a project. The users felt that, when the going got tough, monitoring the project was the first factor that was forgotten, whereas project managers did not perceive 'poor monitoring' as a major factor in failure.

The survey by the Management Consultancies Association<sup>1</sup> clearly showed the following:

**Table 2 Common critical success factors**

Slevin and Pinto	Baker <i>et al.</i>
Project mission	Goal commitment to project team
Project schedule/plans	Adequate planning and control techniques
Monitoring and feedback personnel	Adequate project team capability
Top-management support	Adequate funding to completion

Success is most often based on a team working to agreed objectives under a strict plan and management regime.

Failure is attributed to poor, muddled or conflicting objectives, failure of team leadership and poor planning and management. (p 55)

The evidence of this survey is very much in line with the author's own research. However, many project managers appear to be taking no notice of the users of IT projects in the determination of factors for success. The lack of emphasis on user-related factors (user involvement and communication) points clearly to IT projects being perceived as having failed by the user, even if they are considered a success by the project manager.

## Conclusions

There does not appear to be a consensus of opinion among researchers and authors on the criteria for judging project success and the factors that influence that success. What is evident is that, at the project outset, the criteria for success, and the factors that need to be employed to achieve that success, need to be defined and agreed by all parties (for example sponsors, users, project managers).

Project managers are concentrating on success criteria which may not be appropriate for the project. Project managers need to look more to the users' perceptions of success and failure and the quality of the product (however quality may be defined). After all, the users are very often the owners of the system, and the project, as Turner<sup>8</sup> points out, should 'provide satisfactory benefit to the owner and satisfy the needs of the owner'.

Project managers are putting far too much emphasis on the time and budget aspects for judging project success at the expense of other criteria, leading to a number of project failures. The author's research indicates that projects perceived to have failed have time and budget as the main criteria for judging success. On the other hand, successful projects do not appear as time- and budget-critical.

In addition to paying more consideration to the users' criteria as measures of success, project managers should be concentrating on factors (such as user involvement and communication) that achieve those criteria. They may need to concentrate less on factors such as planning that achieve their own perception of success.

## Acknowledgements

The author would like to thank Dr Richard Rolfe for his help in preparing this paper.

## References

- 1 'Chief Executives' views on project management performance' Management Consultancies Association (Jan 1993)
- 2 De Marco, T *Controlling Software Projects* Yourdon Press (1982)
- 3 Winsburg, P and Richards, D 'Why do software projects fail' *InfoDB* 1991/92 6(3) 13-21
- 4 Duncan, W 'Get out from under' *Computerworld* 9 Mar 1987 89-93
- 5 Blaney, J 'Managing software development projects' *Proc Project Management Institute Seminar/Symposium* Atlanta, GA, USA (Oct 1989) 410-417

- 6 Redmill, F J 'Considering quality in the management of software-based development projects' *Information & Software Technology* 1990 **32** (1) 18–22
- 7 Morris, P W G and Hough, G H *The Anatomy of Major Projects, A Study of the Reality of Project Management* John Wiley, UK (1987)
- 8 Turner, J R *The Handbook of Project-Based Management* McGraw–Hill (1993)
- 9 Baker, B N, Murphy, D C and Fisher, D 'Factors affecting project success' in Cleland, D I and King, W R (eds) *Project Management Handbook* Van Nostrand (1983)
- 10 Slevin, D P and Pinto, J K 'The project implementation profile: new tool for project managers' *Project Management J* 1986 **17** (4) 57–70
- 11 Geddes, M 'Project leadership and the involvement of users in IT projects' *Int J Project Management* 1990 **8** (4) 214–216

*John Wateridge is a senior lecturer at Bournemouth University, UK. He has been lecturing on information systems, systems analysis and IT project management for over eight years. He is registered for a PhD, researching into the success and failure of IT projects. Before joining Bournemouth University, he worked for ten years in industry as a computer programmer, systems analyst and project manager.*

