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A practical use of key success factors to improve the effectiveness of project management

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In a world where change is becoming increasingly important, tools such as project management, if used properly, can provide a useful way for organisations to manage that change effectively. Whilst there is a clear understanding of the need to achieve the required cost, time and quality objectives, surprisingly little is published on how these objectives can practically be met. Furthermore, many of the major issues and problems concerning project management in practice can detract from the main objectives of the project.

This paper aims to show how, by focusing on number of key success factors, such problems can be overcome or minimised. The problems addressed here are based on observations from an aerospace engineering company. However, they are typical of those seen in a variety of organisations who use project management for managing change. © 1998 Elsevier Science Ltd and IPMA. All rights reserved

Introduction

The process of change can be very disruptive and painful for organisations.¹ More and more companies are beginning to understand the benefits that can be derived from using project management tools and methodologies² to help drive large scale planned change. Nevertheless, there is a need to avoid becoming pre-occupied with project management and seeing it as the end goal. Project management is merely a tool to help the process of change. When used correctly, however, it can offer the opportunity to shift through various distractions to focus on the critical issues.³

As with many tasks, the management of a large project involves the planning, organisation and control of a large number of complex factors, activities and their interrelations.⁴ *Figure 1* illustrates some of them. Managing them simultaneously and giving them all equal attention is virtually impossible. However, by adopting the Pareto rule of separating out the “important few from the trivial many” to focus attention on the key factors, success is more likely.⁵

*The survey was carried out on a number of Teaching Companies involved in change. The Teaching Company Scheme was established in the UK in 1975 to bridge the gap between industry and academia. The overriding goal of all Teaching Companies is to improve company performance. A paper entitled Key Success Factors in the Project Management of Change outlines the survey. It is available from the Teaching Company on 01367 242822.

Use of project management for managing change

Numerous organisations report on the advantages of using project management.^{6,7} It has provided a sound basis for change management over the last decade—for example, in the integration and re-organisation of major businesses and for developing new initiatives between a company, its customers, suppliers and partners. Even so, there are opportunities for making it a more effective tool. Many organisations will admit to having problems or issues that limit their use of project management for managing change.^{8–11} By understanding these issues and working to eliminate or minimise the problems associated with them, it may be possible to improve the effectiveness of project management.

There is evidence in the literature to support the existence of critical or key success factors for project management. For example, Pinto and Slevin's findings¹² concluded that 10 factors were critical to the success of R&D projects. There is, however, little advice on how such key success factors can be used to help alleviate the many problems that occur with project management in practice.

This paper aims to investigate how a number of key success factors, identified in a previous study,* can be applied to ‘problem’ areas in project management.

Identification of key success factors

From the study,¹³ which investigated change projects being undertaken by a variety of organisations, four

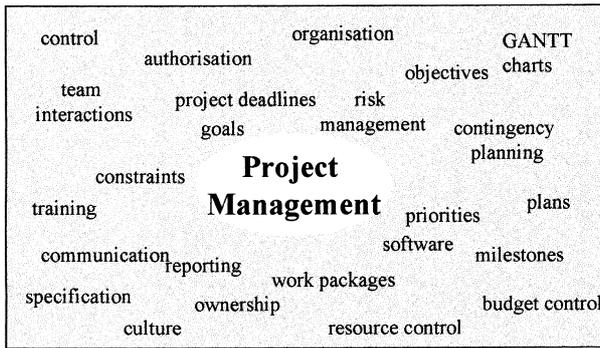


Figure 1 Some factors to consider in project management

factors were identified as critical to the success of these projects:

- Communication throughout the project
- Clear objectives and scope
- Breaking the project into ‘bite sized chunks’
- Using project plans as working documents.

Communication throughout the project

The importance of communication in organisations, in particular its influence on the acceptance of anything new, is well documented.¹⁴ It can occur within an organisation in a number of ways, playing a vital role in influencing not only those immediately involved in the change, but also those across the whole organisation who may be affected.

Ironically, though, it is also regarded as one of the most neglected parts of corporate operations.^{14, 15} Lack of communication has been cited as the biggest reason for the failure of many change projects to meet their expectations.^{16, 17} Having a better understanding of the benefits and limitations of each of the main methods for communication (see Figure 2) is a first step to achieving more effective communication within an organisation.¹⁶

There are many reasons why communication is necessary for the successful management of a change project. These range from ensuring an increased understanding to eliminating waste and motivating those involved in the change.

Successful communication needs to be focused rather than broad-brush¹⁸ and timing is of crucial importance.¹⁹ Used effectively, it can reduce non-productive effort, avoid duplication and help eliminate mistakes.²⁰ It can help to manage uncertainty,²¹ may lead to problems being identified sooner²² or may generate ideas that lead to better solutions.²² Furthermore, it will encourage team-work, increase motivation and ensure the involvement of all key players.²³ The end result will be a project which is more likely to meet its objectives within the allocated time and resources.

Clear objectives and scope

The importance of having clear objectives—including deliverables—and scope in project management is sometimes overlooked.^{24, 25} For example, some of the

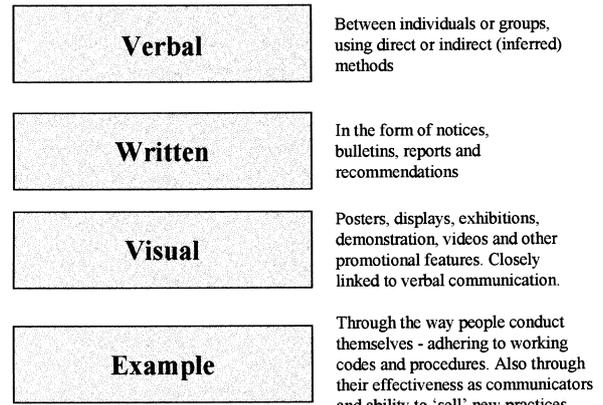


Figure 2 Principal methods for organisational communication (from Oakland, 1989)

early problems in the Rover/Honda collaboration occurred because they had clear objectives but an ill-defined scope.²⁶ “Scope and objectives are the guiding principles that direct the efforts of the project team”²⁷ and “they will determine a project’s success or failure.”²⁸

Although objectives and scope as often regarded as separate entities (because one is concerned with the outcomes of the project and the other is concerned with the limits of the project), there is good reason for grouping them together. Without a well-defined scope, the project objectives can become fuzzy and people may start to lose sight of what they are trying to achieve.²⁹

Definition and agreement of objectives must include a common understanding by all people involved.³⁰ The project will become goal and results-oriented, rather than activity-based.²⁶ Having a few key objectives focuses the team on the target and creates commitment and agreement about the project goals.^{27, 31} The result is that the progress of a project can be monitored effectively. Ultimately, its success will be measured more easily because the objectives are clearly stated at the outset of the project.

If the scope is defined at the start of the project, the project should stay within its intended boundaries and not expand to include more than originally planned.¹⁷ If not, mission creep occurs, i.e. the project boundaries extend beyond the intended limits.³² A well-defined scope means also that there is less likelihood of a vital part of the project being missed.

‘Bite sized chunks’

Breaking large projects down into sub-projects or work packages is regarded as one of the most important tasks in new or development projects.^{33, 34} It ensures greater ownership by all those owning a ‘chunk’ of the project, spreading responsibilities and accountability across a greater number of people. Furthermore, it is easier to manage in a number of ways: delegating responsibilities to the project team, monitoring against the objectives, communicating progress of the project, identifying problems upfront and making modifications to the project (changes may affect only one work package rather than the whole project). However, care must be taken not to have too

many work packages which then make the project unmanageable.

Using the project plans as dynamic documents

Project requirements may change drastically throughout the life of a project—“no project ever goes 100% according to plan”.²⁷ This is particularly true for change projects which involve ‘people’ issues. Caparelli¹ talks about the process of change being disruptive, difficult and uncomfortable. Consequently, people need to be involved in the change and aware of what is happening in the project, to be able to accept it readily.

In order to ensure that a project is completed successfully, project plans need to be updated regularly. However, if they are too detailed, every time some aspect of the project changes, the plans will need to be updated to reflect that change—even though the outcomes or objectives may be unaffected. Updating project plans then becomes time-consuming and ineffective. As a result, they are often abandoned and become ‘dust-collectors’.³⁵ Keeping the plans simple, with the right level of detail, can encourage a project to be reviewed regularly and easily. This makes them useful communication tools and effective monitoring devices for the project.

Inter-relationship of the key success factors in project management

None of the key success factors described are responsible, on their own, for ensuring a project’s success—they are all inter-dependent and a require a holistic approach to be taken.³ This, in turn, needs an understanding of the whole system and how all the parts of the system fit together.³⁶ For example, a dynamic project plan serves as a good communication tool and having clear objectives and scope make the process of communicating progress much easier. “Groups of success factors and their interactions are of prime importance in determining a project’s success or failure.”³⁷ Consequently, although it is important to know and recognise individually each of the key success factors driving a project, they should not be considered independently of one another.

Applying the key success factors to problems in project management

Having established the existence of key success factors, the next stage is to look at how they might help companies using project management to do so more effectively. Although the examples used here are from an aerospace engineering company who have been using project management for a number of years, many of the examples described, are common to a number of organisations.^{38–40} Targeting the main problems and issues using the key success factors as a focus could make a significant difference to the effectiveness of project management.

Problem 1: Striving for ‘standardisation’

There are a number of reasons why an organisation (particularly a multi-site organisation) would aim to

standardise: It sets out what the organisation regards as best practice. It can improve inter-site communication, ensuring that everyone is talking the ‘same language’ in project management.⁴¹ It also minimises duplication of effort and waste,⁴² for example, by having common resources, documentation and training.

However, in an effort to create some degree of standardisation across an organisation, project management approaches used can often end up being very prescriptive—based on a series of checklists, guidelines and mandatory reporting forms. Furthermore, in trying to create a common standard across the company, no allowance is made for local or cultural variations which, in a multi-national, multi-cultural company can be substantial. Some sites may have no clear idea of how their performance relates to the ‘standard’. In addition, some may have had a greater exposure and a longer history of project management than others. For those with little experience or skills in project management, having to adopt a corporate standard is a daunting prospect.

Solution—focus on key success factors as a first stage to standardisation. Based on the Pareto rule of concentrating on the few things which deliver the greatest benefits, it may be more useful for those parts of the organisation who are furthest from achieving the ‘standard’ to focus their improvements on the key success factors (see Figure 3).

They should ensure that improvements concentrate on achieving good communication, clear objectives and scope, breaking the project into ‘bite sized chunks’ and using the plans as dynamic documents. Then, as the business becomes more experienced and develops more project management skills, it can work towards achieving the standard or ‘best practice’.

Solution—develop an auditing tool for project management. Traditionally, the measurement of the success of a project is expressed in terms of meeting its objectives within an agreed timescale and budget.⁴³ Although this is the most important measure of a project’s success, there are also benefits to be gained from measuring the effectiveness of project management as a tool for achieving that success.

The development of a simple tool to audit against the standard would fulfil this need.⁴⁴ It would allow a business to measure itself against best practice, against other parts of the organisation and also identify areas for improvement. In addition, ‘pockets’ of good practice in project management across the organisation could be identified, providing an opportunity for corporate learning to take place.

Problem 2: Perceived return from project management is poor

In some organisations, project management has a reputation for using considerable time and resource to manage. The perceived benefits from investing in the management of this system are minimal—i.e. the benefits have not yet been fully recognised within the organisation. There are two aspects to this problem—one is concerned with the need to educate people across the whole organisation on the potential benefits

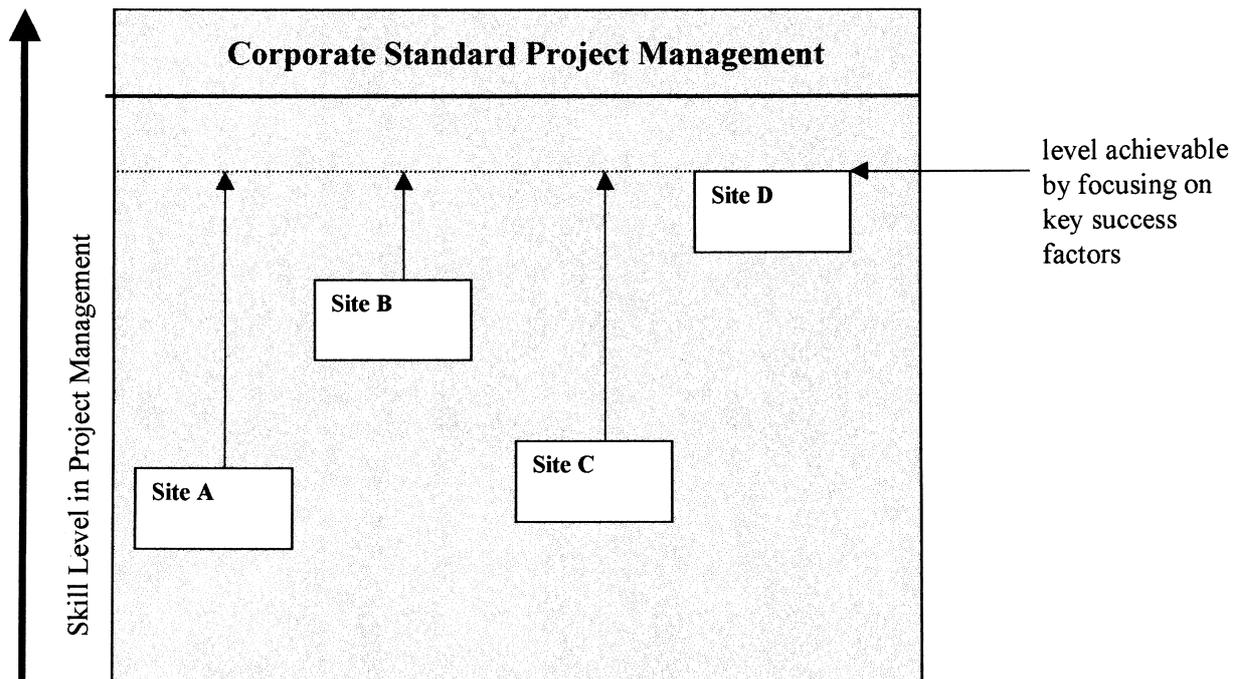


Figure 3 Working towards a corporate standard

of effective project management.⁴⁵ The second is that the actual benefits are not made visible.

Solution: increase awareness of both perceived and actual benefits. One way in which this can be improved is by increasing awareness of the benefits of good project management. This can be carried out through more effective communication:^{45,46}

- communication of the potential benefits of project management, for example, through awareness campaigns, so that people's perception changes of what can be achieved.
- communication by example, to improve visibility of the actual benefits. This could be done by publicising parts of the organisation in which project management has been successful, looking at the reasons behind their successes or by translating the benefits into measures that everyone in the organisation can understand. For example, Hewlett Packard convert project benefits into cash flow because it is a measure that everyone in the company is familiar with.⁴⁷
- showing results quickly from the projects. This is believed to be one of the best motivators for change.⁴⁸ If people can see that using a structured project management methodology to manage change delivers significant benefits, then they will be more inclined to use that methodology.
- focusing on the important issues in project management rather than taking a blanket approach to communication. This ensures that people are not 'overloaded' with information on project management. The benefits become diluted if every aspect of project management is reported rather than those which make most difference.

Problem 3: Project management is regarded as a 'corporate reporting' tool

In many organisations, the project management methodology is regarded as a corporate reporting tool rather than a useful system that the various parts of the organisation can use to help themselves. Often there is little or no feedback from headquarters and no information is supplied on the progress of projects at other sites.

Solution: improve information flows throughout the organisation. Two-way information flows need to be improved, through a better sharing of information between the sites and from headquarters to site⁴⁶ (see Figure 4). Whilst there is a need to retain confidentiality of some information at a strategic level, much of it could be declassified and disseminated to a wider audience. Many organisations have taken the view that making strategic information available to everyone in the organisation produces a more motivated and better informed work-force.

Companies, such as the UK Post Office, produce corporate information (including details of planned and existing change) in a format that can be easily understood company-wide. They actively encourage feedback of this information.⁴⁹ A knock on effect of this increased awareness is an improvement in corporate learning, through the sharing of information and good practices.

Problem 4: Inadequate formal completion of change projects

Initially with change projects, there is usually a high level of commitment, shown through resourcing for

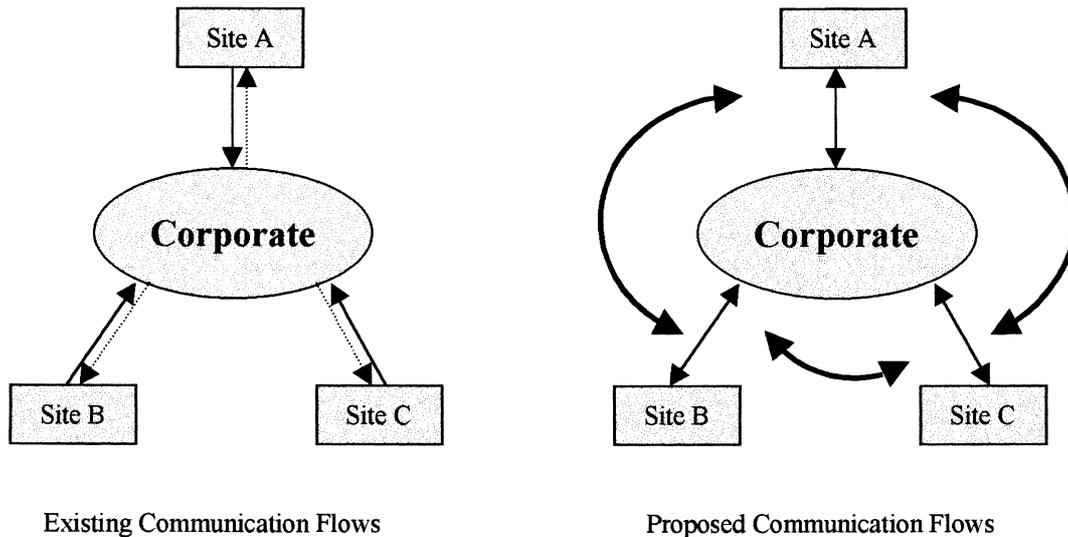


Figure 4 Communication flows

the project. However, this high initial level of commitment to the project can disappear as the project progresses. Inadequate planning or poor resourcing mean that it can end up behind schedule and with unforeseen slippage of milestones.⁵⁰ As a result, many of the important elements of the project are implemented either badly or not at all. One of the biggest problems is that the importance of the final stages of a project are not communicated to people involved in the project, including those involved in making decisions.

Figure 5 summarises the four main stages in a change project and the level of effort required at each stage to ensure successful change.⁵¹ Although the overlap between each stages varies from project to project, it illustrates the importance of the latter stages in the overall project.

The sustainment stage of the project includes having a formal 'completion' for the project. If this is not carried out, then much of the effort put into the other stages in the project may be wasted.

Solution: communicate the importance of the final stages in a project. Communicating the importance of the final stages in a project may be achieved in a number of ways, including through example.^{7,46} This may involve learning from parts of the organisation or other businesses who have a reputation for completing projects successfully, and where the changes have become institutionalised.⁵²

Problem 5: Project overload syndrome

In many organisations project overload syndrome can occur, caused by having too many large change projects running at any one time. This results in resource conflicts (particularly if the resource pool for change projects is already limited), delays in the completion of the project and a general weariness of change across the organisation.

This problem has been recognised in some organisations and the resulting action has been to reduce the number of change projects being undertaken at one time. However, many of these projects, such as

Business Process Re-engineering, tend to be very large and the number of sub-projects associated with each of these projects is high. Consequently, the resource requirements for even one large project can become unmanageable, and many of the sub-projects end up under-resourced with the same problems as before.

Solution: define the 'bite sized chunks' at the outset of the project. The long term solution to this is either to limit the number of projects further or to increase the resource pool, so that the project tasks can be carried out properly.⁵³ The problem can also be reduced by having a greater awareness of the true resource requirements for each project. Breaking the large pro-

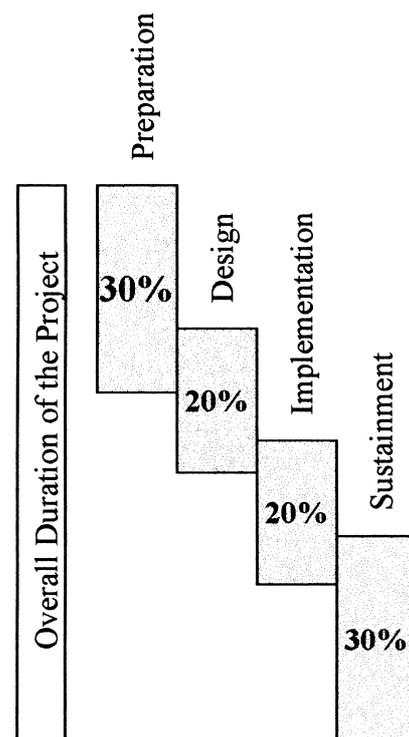


Figure 5 Main stages in a project

jects down into 'bite sized chunks' at the outset may allow a better estimate to be made of the time and the resource requirement to manage the projects effectively and can help identify in advance any potential resource conflicts.

Problem 6: Cultural and individual issues

The counter-productive effects of individualism within organisations has long been recognised. This is largely caused by individual sites within a multi-site organisation wishing to retain their own identity and do things 'their way' rather than conform to an imposed standard.⁵⁴ Also, people within the sites (sometimes at a very senior level) are often unwilling to conform to an imposed standard. This is usually a direct conflict with the corporate need for process integration and standardisation.

Solution: build on individualism through effective communication. Rather than trying to impose a corporate culture, there are a number of ways in which individualism can be managed and its effects harnessed.⁵⁵ This can be done through the encouragement of employee participation, redefining group boundaries and leveraging the strengths of the national and corporate culture.⁵⁴ These build on, rather than break the individualism within the organisation, with one common factor—they all require effective communication to work.

Problem 7: Motivation

People often do not see project management as something to help them but rather something which is mandatory, serving little useful purpose.⁵⁶ Previous history of problems, a weariness of change and lack of commitment have all contributed to a general lack of motivation to be a part of the change.

Proposed solution: build confidence through better communication. One of the biggest ways to motivate people and make them more confident of what can be achieved, is through more effective communication.^{15,57} This may be done by adopting a focused communication strategy and using a variety of methods to communicate.⁷ As people become better informed and more aware of what is happening in their organisation, they will become more involved and committed to what is happening, and as a consequence become better motivated.

One of the most successful ways of communication for motivating people is to lead by example.⁷ If those in senior positions within the organisation use project management practices and methodologies inherently, then these practices and ways of working will become more readily accepted across the organisation as people begin to accept that behaviour as the norm.

Summary

There are a number of approaches, methods and activities which organisations can adopt to improve their effectiveness in project management. All of the suggestions made here relate in some way to key success factors identified as drivers for successful project

management on the basis that focusing on the 'important few' will deliver greater benefit. However, it is recommended that a holistic approach to project management is taken, looking overall at project management and the main problems and issues associated with its use. Then, applying the Pareto principle of using the key success factors to provide solutions to these problems will help ensure more effective project management.

References

1. Caparelli, D., Leading the company through the chokepoints of change. *Information Strategy: the Executive's Journal*, 1991, 12(3), 36–44.
2. Pinto, J. and Kharbanda, D. P., How to fail in project management (without really trying). *Business Horizons*, 1996, 39(4), 45–53.
3. King, I., The road to continuous improvement: BPR and project management. *IIE Solutions*, Oct. 1996.
4. Lock, D., *Project Management*, 6th Edition. Gower, 1996.
5. Morris, C., *Quantitative Approaches in Business Studies*. Pitman Publishing, 4th Edition, 1996.
6. Peattie, K., The teaching company scheme: effecting organizational change through academic/practitioner collaboration. *Journal of Management Development*, 1993, 12(4), 59–72.
7. Oakland, J., *Total Quality Management*. Butterworth Heinemann, 1989.
8. Newman, M. and Saberwal, R., Determinants of commitment to information systems development: a longitudinal investigation. *MIS Quarterly*, 1996, 20(1), 23–24.
9. Clarke, J., Corporate Change. *Accountancy Ireland*, 1997, 29(2), 10–14.
10. Kahn, W. A., Facilitating and undermining organizational change: a case study. *Journal of Applied Behavioural Science*, 1993, 29(1), 32–55.
11. Burke, D., *Project Management, Planning and Control*, 2nd Edition, 1994.
12. Pinto, J. K. and Slevin, D. P., Critical success factors in R&D projects. *Research Technology Management*, 1989, 32(1), 31–33.
13. Clarke, A., The key success factors in project management. *Proceedings of a Teaching Company Seminar*, London, December 1995.
14. Dieckmann, M., Making new technology investments pay off. *Managing Office Technology*, 1996, 41(7), 11–14.
15. Toney, F. and Powers, R., Best practices of project management groups in large functional organizations. *Project Management Journal*, 1997, 33.
16. Pardu, W., Managing change in a project environment. *CMA Magazine*, May 1996, 6.
17. Orr, A. J. and McKenzie, P., Programme and project management in BT. *British Telecommunications Engineering*, Jan. 1992, 10.
18. Feiner, A. and Howard, K. A., An overview of quality and project management processes at AT&T. *AT&T Technical Journal*, May/June 1992.
19. Meredith, J. and Mantel, S. J., *Project Management: A Managerial Approach*, Wiley and Sons, 1995.
20. Beavers, D., Communication breakdown. *Supply Management*, 1997, 2(12), 34–35.
21. Lanfer, A., Kusek, J. and Cohenca-Zall, D., Taking the sting out of project surprises. *Optimum*, 1997, 27(3), 1–7.
22. Dahle, S., Something to talk about. *CIO*, 1997, 10(18), 30–33.
23. Gannon, A., Project management: an approach to accomplishing things. *Records Management Quarterly*, July 1994, 28(3).
24. Neal, R. A., The soft systems approach. *International Journal of Project Management*, 1995, 13(1), 5–9.
25. Reiss, G., *Project Management Demystified: Today's Tools and Techniques*, Chapman and Hall, 1994.
26. Schill, R. L., Bertodo, R. G. and McArthur, D. N., Achieving success in technology alliances: the Rover–Honda strategic collaboration. *R&D Management*, 1993, 24(3), 261–277.
27. Randolph, W. A. and Posner, B. Z., *Effective Project Planning and Management*, Prentice Hall International, 1994.
28. Ward, J. A., Project pitfalls. *Information Systems Management*, 1995, 12(1), 74–76.
29. LaPlante, A., Scope grope. *Computerworld*, 1995, 29(12), 81–84.

30. Bentley, D. and Rafferty, G., Project management: keys to success. *Civil Engineering*, April 1992.
31. Richardson, T., Project management pitfalls. *Business Communications Review*, 1995, **25**(8), 49.
32. Lexington: Hello world, *Economist*, Nov. 1996, **341**(7992), 30.
33. Lewis, R., Take the 'big' out of big projects: break them into manageable chunks. *InfoWorld*, 1996, **18**(20), 24.
34. Bates, W. S., Strong leadership crucial. *Computing Canada*, Oct. 1994, **20**(22).
35. Gilbreath, R. D., *Winning at Project Management: What Works, What Fails and Why*, John Wiley and Sons, 1986.
36. Keane, J.F., A holistic view of project management. *Systems Management 3X/400*, 1996, **24**(6), 58-61.
37. Belassi, W. and Tukel, O. I., A new framework for determining critical success/failure factors in projects. *International Journal of Project Management*, 1996, **14**(3), 141-151.
38. The Roots of Bad Management, *Civil Engineering*, Jan. 1997, **67**(1), 12-14.
39. Conroy, G., Managing information and systems risks. *Chartered Accounts Journal of New Zealand*, 1996, **75**(5), 6-9.
40. Phan, D., Vogel, D. and Nunamaker, J., The search for perfect project management. *Computerworld*, 1988, **22**(39), 95-100.
41. Tangible Benefits Drive the Move to Standardization, *PEM: Plant Engineering and Maintenance*, April 1994, **17**(2), 2.
42. Avery, S., Standardizing on controls melts 'Iceberg' costs at Kodak. *Purchasing*, 1996, **120**(3), 44-46.
43. Arora, M. L., Project management: one step beyond. *Civil Engineering*, 1995, **65**(10), 66-68.
44. Applegate, D. B., Bergman, L. G. and Didis, S. K., Measuring success. *Internal Auditor*, 1997, **54**(2), 62-67.
45. Cox, J. P., Waking a sleeping giant—the planning for success of a large project process at a large urban teaching hospital. *IEEE Transactions on Professional Communication*, 1993, **36**(1), 20-23.
46. Aitkin, A., Vision only works if communicated. *People Management*, 1995, **1**(25), 28-29.
47. Ingoldsby, T., Time waits for no man(ufacturer). *Systems*, 1991, 4-20.
48. Dauphinais, W., When bad things happen to good projects. *Across the Board*, Nov/Dec. 1995, 46-50.
49. Jackson, S., Re-engineering the Post Office. *New Technology Work and Employment*, 1995, **10**(2), 142-146.
50. Rakos, J., The multiproject problem. *Computing Canada*, 1992, **18**(13), 22.
51. Society of British Aerospace (SBAC) Report entitled *Best practice business process re-engineering*. DTI Publication, Oct. 1995.
52. Powers, V. J., Benchmarking study illustrates how best in class achieve alignment, communicate change. *Communication World*, Dec. 1996/Jan. 1997, **14**(1), 30-33.
53. Garner, R., Captain of Crunch. *Computerworld*, 1997, **31**(40), 81-82.
54. Baba, M. L., Falkenburg, D. R. and Hill, D. H., Technology management and American culture: implications for business process redesign. *Research-Technology Management*, 1996, **39**(6), 44-54.
55. Pinto, J. K., The power of project management. *Industry Week*, 1997, **246**(15), 138-140.
56. Wojciak, P. J., Don't force change—facilitate it!. *Materiel Management Quarterly*, 1997, **19**(1), 26-30.
57. Larkin, T. J. and Larkin, S., Reaching and changing frontline employees. *Harvard Business Review*, 1996, **74**(3).

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