



Top management support: Mantra or necessity?

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Abstract

This research provides evidence that top management support is the most important critical success factor for project success and is not simply one of many factors. The finding is justified in the context of the project management literature and the IS factor research on project success. There are implications for practice because it appears that the conventional technical and project management advice has less impact on project success than previously thought. Boards and top managers may have to personally accept that they have more influence on whether a project succeeds or fails.

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1. Introduction

The importance of top management support (TMS) has long been recognised in the IS literature [1–4]. However, practitioners and researchers alike, have focussed their attention on factors they can more directly control [5] and appear to only pay lip-service to TMS [6–8].

Prescriptions for TMS are not well developed [9]. Some impose very demanding requirements for top management resources simply to improve technical quality or user satisfaction [3,10–12], goals of little direct interest to top managers. Other prescriptions for communication, enthusiasm, involvement and participation appear to be little more than exhortation [4,7,11,13]. TMS is generally promoted as being inherently good [14] but there is clear evidence that too much TMS can be dysfunctional and lead to failure [15,16].

Projects can succeed without following the general prescriptions for TMS and others can fail while following all the common prescriptions [17]. As a result, the advice for

top managers lacks credibility. However, few would doubt the need for TMS [18] and TMS is consistently recognised as a critical success factor [5].

The problem is that current prescriptions are practitioner-led and mantra-like in their call for TMS. Top managers have the freedom to provide or withhold their support but current prescriptions are failing to have any significant influence on their behaviour. This paper will therefore make a significant realignment in approach and reconsider the issue of TMS from the perspective of the most relevant stakeholders (boards and top managers). It has conceptualised this problem as two related issues: (1) how important is TMS and (2) what constitutes effective TMS, but for reasons of length will focus on the first and more fundamental of these two issues. If top managers are not convinced of the importance of TMS, there is very little point defining TMS in more detail. The second issue will be addressed in a future paper and this paper will simply summarise the range of behaviours that might constitute TMS.

To manage scope the paper will study TMS in the context of IS projects – an issue demanding board level attention because of the high levels of investment and the strategic consequences of failure [19,20].

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2. Literature review

2.1. Key insights from the project literature

Over-time, an enormous range of methodologies have been developed to address technical issues and specific failure factors [21,22]. Their adoption has increased steadily over many decades but their widespread use has not led to a corresponding reduction in IS project failure rates [20,23]. Some have found these common approaches to be of little practical utility in coping with IS problems [24] and others complain they are untested against objective measures of performance such as profitability [25–27]. It has long been suggested that IS projects fail more because of organisational than technical issues [23,28]. However the majority of IS researchers and practitioners “persist with technological or engineering conceptions of the problem” [29] and organisations are reported to be consistently repeating the same mistakes and wasting billions of dollars every year [15,30].

A significant barrier to progress is the lack of generally accepted definitions of success or failure [31,32]. Few explicitly recognise the fundamental difference between project success (the realisation of business benefits) and project management success (on-time on-budget to specification) [33,34]. The result is that the number of success stories (however defined) is reported to be almost twice the number of failures [35,36]. A project success perspective suggests the opposite situation is more likely to be true [20,37–40].

Project management success has been shown not to strongly relate to project success [41,42]. Project management success is an operational concern generally of little interest to top managers [43,44] unless a project is so over-time and over-budget that it attracts unfavourable press or negates the benefits. In contrast project success focuses on whether the right benefits are being targeted and realised [45]. This directly relates to effective corporate governance at a top management level and a fundamental objective of corporate governance is to target above average performance [46–48].

A related insight is that business participants need to focus on ‘change agency’ and benefits management [49,50]. It takes a relatively long time to realise benefits from an IS investment thus the majority of the benefits of an IS investment are realised after a project team has disbanded [51,52]. This implies project success must be the primary responsibility of business managers rather than project managers. Some evidence suggests that if top management can sustain a vision of what will be achieved (over 1–8 years), they will better be able to tolerate a period of initial decreased performance and realise more benefits [53].

However, these insights are seldom reflected in practice. For decades the number one concern of IS directors has been to meet project deadlines or some other goal [54–59] and top managers have largely not focussed on the realisation of benefits [19,60].

Common practice is better represented by the large body of research trying to identify factors leading to project management success or failure [5,61,62]. The conventional wisdom recognises TMS to be one of many CSFs but the first two insights suggest that this understanding may underestimate its importance. At the very least, the continued high failure rate strongly suggests that the common practice has not captured the essence of the problem.

To re-examine the issue, the Standish Group’s [63] list of failure factors will be adopted to represent the conventional wisdom. They are widely cited and consistent with academic research. However, to recognise the likely deficiencies in common practice, the original list of 10 CSFs will be condensed into a list of more manageable concepts. The intention has been to capture similar themes and more easily recognise how project success or failure might be attributable to organisational than technical issues. They are presented below according to the importance suggested by the Standish weightings (in brackets).

1. Project methodologies (35): clear statement of requirements (15), proper planning (11), smaller project milestones (6)
2. User (25): user involvement (19), ownership (6)
3. TMS (16)
4. High-level planning (13): realistic expectations (10), clear vision and objectives (3)
5. Project staff (11): competent (8), focussed and hard working (3)

It is suggested that future research into IS project failure would do well to differentiate between project success and project management success, to recognise that something must be missing from our understanding and to adopt a similar strategy – summarising existing knowledge rather than have too much detail.

2.2. Top management support

The literature on top management support parallels the project management literature but tends not to be so rich. The literature has been summarised in Table 1 below by scope and by success measure to respond to the issue of multiple definitions of success or failure. Articles have been grouped according to whether they focus on IS in general, IS projects or the IS function [64] and according to whether they emphasise technical/project management success, user satisfaction or the realisation of benefits [32,65]. Details to support this classification are shown in Appendix A.

Table 1 shows that articles in the IS literature that offer advice for top managers focus on IS in general and on IS projects. Quite sensibly, none focus on the IS function because this is a specialist rather than a top management concern. However, many articles adopt criteria for success that are not of direct interest to top managers such as user satisfaction, technical quality and project management success. Much of the advice is technology focussed and not

Table 1
Summary of advice for top managers by scope and success criteria

		Scope of TMS advice		
		IS in general	IS projects	IS function
Criteria for success	Realisation of benefits	Doll and Vonderembse [75], Garrity [1], Henderson [77], Lane [74], O'Toole and O'Toole [73], Rockart [76], Rockart and Crescenzi [2]	Adams [104], Delone [105], McGolpin and Ward [67], Reich and Benbasat [68], Rochleau [106], Rockwell [103]	
	User satisfaction	Bassellier and Pinsonneault [9], Dinter [12], Freeman [102], Jarvenpaa and Ives [6]	Mähring [14], Markus [18], Sharma and Yetton [72]	
	Technical or project management success	Brandon [10], Doll [3], Izzo [11], Lederer and Mendelow [4]	Emery [7], Schmitt and Kozar [13]	

linked to any causal model of how IS delivers value to an organisation ([52,66–72] provide examples of causal models).

The earliest recommendations from Garrity [1] are not widely cited but stand out for the exposition of the key themes to be found in this literature:

1. Devote time to the [IS] program in proportion to its cost and potential.
2. Review plans.
3. Follow up on results.
4. Facilitate “the management problems involved with integrating computer systems with the management process of the business”.

Researchers have explored the first theme to encourage top management to actively identify and focus investment on the most strategic areas for the organisation [2,73–75]. Other researchers have explored the fourth theme and emphasised the need to ensure operational managers take responsibility for delivering the anticipated benefits [76,77]. Sharma and Yetton [72] highlight the need for what they call “management meta-structuration”. They found that as task interdependence increases in a project, institutional context present increased barriers which can only be overcome by mechanisms such as new support structures, new performance control systems, new co-ordination mechanisms and changes to performance goals.

Only Beath [78] seems to have made any significant advance on Garrity's four themes. She has found [top managers as] project champions to sometimes be the most important antecedent to a successful implementation because of their ability in bringing about organisational change. Morton [79] identifies the project championing skills to be mobilizing public opinion, resolving stakeholder conflicts and winning the hearts and minds of the project team.

Little has been done to systematically capture these insights and even today articles are accepted in leading journals that find top management support for change as a lesson learned [80].

2.3. Summary of literature

The literature review suggests the reason why the call for TMS seems to be ignored is that top managers often have no easy way to recognise good advice. A key insight from the project management literature consistent with the demands of corporate governance is that top managers must focus on the realisation of benefits. However the research on TMS does not focus on the realisation of benefits. Some have suggested that benefits and the role of top management has not been emphasised because it would result in a loss of power for technical ‘experts’ [81,82].

The implications are very significant. Boards and top management are dependent on the advice they receive [83]. In one study, a senior board member made the assessment that “with technocrats, the only three things you can be sure of are: nothing would get finished on time, it would always cost vastly more than predicted and it would never do what it was promised to do” [84]. This is an extreme but not unusual view and is significant because it fails to differentiate between project management success and project success. The quote supports the assertion that future advice must be credible.

Generally only lip-service is paid to the need for TMS, yet there are still many successes. It would be inappropriate to suggest major changes in practice unless there is stronger evidence that the current practice is wrong in its emphasis. The highest priority must therefore be an evaluation of whether the effort to challenge the status quo is justified.

This paper proposes to meet this need and evaluate the importance of TMS against the other commonly recognised CSFs. Project success will be emphasised over project management success and defined to be consistent with corporate governance objectives – ‘when [promised] benefits are delivered and above average performance is achieved, taking into account of risk’. Top management support is defined as: devoting time to the [IS] program in proportion to its cost and potential, reviewing plans, following up on results and facilitating the management problems involved with integrating ICT with the management process of the business. These activities will be assumed to be undertaken

by a senior management project sponsor/champion, the CEO and by the other senior managers. The study will not attempt to repeat past factor research studies, but instead use CSFs as a lens to understand the complex organisational phenomena surrounding IS projects.

3. Methodology

The question of how important TMS is for project success will be studied through descriptive case studies. The research has the pragmatic goal of influencing behaviour [85,86], and descriptive case studies are recognised to be an effective means of communicating contributions to practice [87].

TMS deals with organisational phenomena where the boundaries between the phenomena and context are not clearly evident. Hence the case study has a distinct advantage over alternatives such as surveys, archival research, historical analysis and experiments because there is a 'how' or 'why' question being asked about a contemporary set of events over which the investigator has little or no control [88].

The research used a multiple-case study design following a replication logic [88]. Information richness was maximised by choosing both average organisations and exemplary organisations (Patton 1990). The unit of analysis was a single IS project in the context of the benefits delivered to an organisation.

For rigour, five cases in total were conducted with 59 interviews in total [89]. Interviewees always included project sponsors, top managers, members of the project team and stakeholders from multiple levels within the organisation. The elapsed time between the first case study and the last case study was two years and seven months. The guiding principle was to try to complete one case study at a time because adequate time needed to be spent in the field and time needed to be available to reflect and refine the research and interview questions and consider theories in use [90]. It was found that theoretical saturation was reached after the first four cases [91].

Case study organisations were identified through a collaboration partner Standards Australia, the Australian national Standard-setting body. A specific working group (IT-30) was established to focus on IT project governance with representation from 49 industry organisations consisting of 170 IS practitioners, industry representatives and academics. Through a Delphi survey, this group identified seven exemplary organisations three of which were able and willing to participate in the research. Two other organisations were selected on the basis of access to represent more typical organisations. One of these was a pilot case to develop the case study protocol. The other was a test case to validate the importance of top management support (in a project that did not require organisational change). Ease of access is a reasonable selection criterion because TMS has consistently been found to be important and it should not matter which organisations are selected.

Rigour was maintained by having multiple sources of evidence (interviews, project documentation, observation), a standard interview instrument (Appendix B), interview documentation (transcripts, second interviewers, field notes) and the intensive participation of key informants.

In all cases, at least one key informant would have provided feedback to the researcher several times a day while he was on site. In each case there was no fewer than three and there were often more than six active reviewers of both the draft and final versions of the case study report. Typically reviewers would include at least one senior manager, project manager and IS specialist. All the case study organisations were very image conscious and all but one chose to remain anonymous. This anonymity and the extensive periods given for feedback provide some assurance that the cases are credible.

The case analysis will follow the general strategy of developing a chronological case history to describe the key events/decisions and then evaluate how well each CSF explains the outcomes. The analysis will consider each case individually and use a cross case analysis to build a more complete explanation.

This research has guarded itself against biases by subjecting itself to critical review in three main ways. Firstly case study participants reviewed the cases. Secondly the cases were published commercially [17] after being reviewed by approximately 25 people including members of the Standards Australia working group. Thirdly the cases and the explanations as they were iteratively developed were presented for feedback at academic conferences [84,92–95].

4. Results

Case study vignettes of the research are presented below. Full versions of the case histories have been published [17].

The first two cases are of 'typical' organisations. The subsequent three are of organisations identified by the 170 members of the Standards Australia working group as being more successful than most with IS. Apart from the Australian Bureau of Statistics, all the cases have been anonymised, although it can be revealed the other two exemplary organisations were a private sector investment bank and a public sector scientific organisation.

4.1. TechServ – failed, no ownership

Industry profit margins had been declining for many years and the TechServ project had to be undertaken to realise the benefits of a strategic merger. The objective was to integrate the core operational systems to standardise the business processes, to rationalise staff and reduce the cost structure.

The project only managed IT considerations and failed to take into account business process dependencies. The systems were integrated but two critical functions were lost. One prevented TechServ from producing invoices and rev-

enue dropped by 25% for several months until the problem was fixed. The other function was very important for customer satisfaction. The sudden loss of this function affected TechServ's business reputation. TechServ remained on the bottom 5 of its industry for customer service for the next five years.

The main reason the project failed was because political criteria determined the selection of the system. The responsibility for the implementation was delegated to an external project manager and no one within the senior management team acted as a sponsor/champion. The project staff had successfully implemented a much more complex project and they raised many issues. However, neither the project manager nor the senior managers adequately explored the implications and they collectively failed to resolve the issues until after the project failed.

4.2. TechMedia – outstanding project management but disappointing outcomes

Y2K provided an opportunity for TechMedia to upgrade to an ERP system. Technical strategists proposed to implement the current version of an ERP to meet Y2K compliance and then implement the next version as soon as it was available in order to provide the functionality needed for future growth. The expected benefits were conservatively estimated to be \$6 million.

It was claimed to be the fastest implementation of this ERP in the world. However, only \$3 million of anticipated benefits were realised. The failure to meet expectations has undermined the business case to upgrade the ERP and the technical strategy has not been successful.

Issues relating to process and organisational change were not adequately resolved. Management as a whole did not understand that benefits flow from changes to business processes rather than from system implementation alone. Senior managers itemised the specific benefits that would be realised in their functional area but did not follow through and authorise the process changes needed to realise the benefits. Many issues were escalated to the steering committee and above. It was known that one senior manager was causing particular difficulties, but no one with sufficient authority intervened to resolve the issues.

4.3. The ABS – project loses momentum after sponsor moves on

The project management achievements in the Australian Bureau of Statistics (ABS) are among the best in Australia. In anticipation of future organisational stresses, a project management framework (PMF) was implemented to further raise the standard. The objective of the PMF was to formalise project management practices, reduce risk, capture knowledge and increase the reliability of realising project benefits.

The PMF infrastructure was implemented and training delivered. As a result the ABS is one of the few organisa-

tions in Australia that has a widespread understanding of the difference between outputs (produced by project management) and outcomes (that are the benefits of projects). However the project sponsor left before all the expected benefits were realised and the project lost momentum. All major projects now manage risk through PMF but formal adoption of PMF is relatively low in other types of projects and there still tends to be a focus on outputs rather than outcomes.

The PMF is a work in progress. A proposal has been made to further enhance functionality for benefits management (rather than just project management) and to make it more scaleable for different sized projects.

4.4. The agency – against the odds: on-time, on budget, but only partial project success

An ERP was implemented to comply with requirements for accrual accounting standards and also to provide management information. The project had to overcome low morale and political interference.

A very understaffed and junior project team were inspired by a high level of senior management support to bring the project in on-time and on-budget. New functionality allowed for both accrual accounting and additional management reports. However three years after the implementation, the amount of management information is less than what was previously available.

“The jury is still out” on whether the project was a success or not. It met the primary objective of the senior management team but did not meet all the stated objectives in the business case. The over-riding concern of the senior management team had actually been to avoid a failure and the project sponsor had focussed more on the first formal objective, compliance. The second objective, management information, was never emphasised by the senior management team and as a consequence was not realised.

4.5. SkyHigh – project success because of a passion to succeed

A new (ERP) system was implemented to overcome the stresses of very rapid growth and provide high quality information to pass audit requirements and maintain investor confidence.

Many staff changes were needed and almost every business process had to be changed. A detailed project plan was prepared and incentives were linked to the desired outcomes of the project.

SkyHigh has a strong risk management culture. Decisive governance by the project sponsor ensured top managers were rapidly made aware of issues (outside the authority of the project team) and that they were resolved quickly. Top managers had a very clear understanding of what was wanted and a detailed awareness of the business processes provided a common language for risk assessment and decision-making.

The new system was implemented on-time and on-budget, and there is now a high degree of confidence that investors are satisfied with the quality of the published financial and operational information.

5. Discussion

Analysis will follow the tenets of the pragmatic paradigm [85] and deliberately favour the values of the board and top management stakeholder group over others. This is justified because the call for TMS is clearly focussed on this key audience. It is also consistent with calls by leading IS researchers to increase research relevance for key stakeholder audiences [86,96,97].

Five CSFs were proposed to evaluate the degree to which top management support is the most important factor for success. It is to be expected that all factors will be important, and the analysis is to determine (1) the degree to which one CSF might be more important than the others and (2) the interrelationship TMS might have with the other factors.

The cases are summarised by CSF in Table 2 to support the evaluation of which CSF was most important for project success. Table 2 has included a few additional details that were not included in the vignettes because of considerations of length. These additional details can easily be verified in the published case histories [17]. Table 2 presents the cases from left to right in increasing levels of project success. As noted earlier, project success is defined to be when expected benefits are delivered and above average performance is achieved, taking into account of risk. The CSF's are presented in ascending levels of support, with the most important CSF at the top of the table. The numbers against each CSF represent the conventional under-

standing of the relative importance as suggested by Standish [63].

The guiding principles in the analysis will follow from the observation that the TechServ project failed, the SkyHigh project succeeded, and the Agency, TechMedia, and ABS projects succeeded to lesser degrees. The implication is that if TechServ managers did or SkyHigh managers did not address a CSF, it is unlikely to be the most important CSF. If SkyHigh managers addressed a CSF and the Agency, TechMedia, ABS and TechServ managers did not, then it is likely to be very important. Variations on this theme are interpreted to assess the relative importance of a CSF.

5.1. Individual case analysis

Each case could either fully support, partially support or not support the hypothesis that a CSF was the most important. TechServ, the least successful project, did not support project staff and high-level planning as the most successful CSF because they were adequately addressed yet the project failed. For the same reason, TechMedia did not support project methodologies as the most important CSF because an exemplary project management methodology was followed yet the project only partially succeeded. The ABS did not support project staff as the most important CSF in a similar way and suggested TMS is the most important CSF because the project stalled when the project sponsor resigned. The Agency project allowed a similar conclusion to be made because it adequately addressed all the CSFs except top management support. SkyHigh the most successful project addressed every CSF well and could not be used to discriminate which factor was most important.

Table 2
Summary of case histories by critical success factor

CSF	Failure	Partial success			Success
	TechServ	TechMedia	ABS	Agency	SkyHigh
3. Top management support	No sponsor, no CEO involvement no top manager interest	Strong sponsor, CEO not involved enough, some top managers involved but one very passive	Sponsor resigned, CEO passive, top managers passive	V. strong sponsor, CEO not interested, no top manager interest	Strong sponsor, strong CEO involvement, top managers involved
2. User involvement	No user involvement, low ownership	Users very involved, some ownership	Some user involvement, some ownership	Little user involvement, low ownership	Users very involved, high ownership, unreasonable demands
1. Project methodology	Informal methodology, "jam it in and fix it later"	Followed consultant methodology	No information	Tried to follow consultant methodology but agency lacked resources	Detailed consideration of organisation to customise vendor methodology
4. High-level planning	Realistic expectations, clear strategy	Realistic expectations, detailed vision and objectives	Realistic expectations, evolving vision and objectives	Realistic expectations, detailed vision and objectives	Realistic expectations, clear vision and objectives
5. Project staff	Competent staff, motivated to succeed	Best staff picked for project, highly motivated	Competent staff	Junior staff (<i>described as 2nd eleven</i>), highly motivated	V. competent staff, highly motivated

5.2. Cross case analysis

A cross case comparison will allow us to determine whether a CSF is the most important with more confidence. The analysis will follow Yin [88] and interpret each case as a quasi-experiment to generalise against theory. The hypotheses to be tested will be whether one of the five CSFs is the most important for project success.

5.2.1. Project staff

All projects had relatively competent focussed and hard working staff. The TechServ project failed while the others did not and the outcomes ranged from complete failure to complete success. Both TechServ and the Agency had a successful and a failing project using literally identical teams of staff. It is clear that project staff does not account for the differences in outcomes and cannot be the most important CSF.

5.2.2. High-level planning

The TechServ project had a very clear high-level plan built around strategic imperatives and very realistic expectations (because a harder project had already succeeded) yet the project failed. The TechMedia project had even more detailed high-level plans and although it did not fail outright, it was not overly successful in meeting its promised outcomes.

Only in the case of the ABS project (where the high-level plan evolved as stakeholders better understood the implications) is it possible that the project might have been more successful with a more formalised high-level plan. However, the quality of the high-level plan did not explain why the project lost momentum as well as the loss of the project sponsor.

The evidence therefore does not support high-level planning as the most important CSF.

5.2.3. Project methodology

Both the TechServ and TechMedia projects followed quite detailed project plans. However neither could be considered very successful from a board perspective. The SkyHigh project followed a very detailed project plan and was an outstanding success. The Agency project had a poor project plan, but was relatively successful.

The SkyHigh project plan paid particular attention to anticipating and scheduling business process changes as part of the project. The SkyHigh project managed this upfront by recruiting better-trained staff and by planning the project around making process changes rather than minimising them. Any need to deviate from the project plan was rapidly recognised, escalated and resolved by the steering committee where possible and through other senior managers as necessary.

In contrast the Agency, which also started with under-skilled accounting staff, did not adequately customise the project plan to match the available resources and they

had to make major changes. The initial Agency project plan was a source of conflict between the consultants and the project team rather than a source of comfort. It ended up omitting several major steps usually included for risk management (project sign offs, system testing) and revising the go-live date by several months to include more training than had originally been planned. This was bad from a project management perspective but it did not affect project success (benefits realisation).

The comparison suggests that project methodologies can be used effectively as a risk management tool but contrary to the conventional wisdom, this research does not suggest they are the most important CSF. Methodologies appear to be particularly useful for considering how resources will be managed to implement business process changes. This conclusion supports Dvir and Lechler's [98] finding that it is not the plan itself that is important, but the ability to change the plan to react to issues as they are realised. Complexity makes it almost impossible to anticipate all the issues, but a thorough consideration of the business process appears to reduce the number of major changes in a project.

5.2.4. User involvement and ownership

User involvement and ownership was present in varying degrees in the different projects. The SkyHigh project had high levels of ownership. SkyHigh showed that user involvement adds value by ensuring completeness in the list of requirements. It also showed that users can sometimes resist change and insist on inefficient processes. The implication is that it is more important for the project manager and the project sponsor to lead discussions to determine whether user requirements are critical, nice-to-have or wish-list items.

A comparison with the other cases strengthens this interpretation. The TechServ project had low levels of ownership and no user involvement. The TechServ project probably would have benefited from more user awareness of the issues. The Agency project was unable to solicit much user involvement and suffered in the implementation because the expectations were not well managed. The TechMedia project had mixed levels of ownership but quite extensive user involvement. However user input was relatively ineffective because their suggestions required process and organisational changes that the senior managers did not prioritise or authorise. The ABS project was leading edge and user involvement was unlikely to have contributed anything to the requirements. At most it could have helped anticipate difficulties in adoption, but it would have been difficult for users to anticipate the final product and add value.

In conclusion it would seem that ownership is important for quality user involvement and user involvement is helpful to solicit requirements and as a process to manage expectations. However this research suggests user involvement is helpful only when the project manager and senior managers are transparent in resolving issues and conflicts

between different user priorities. User involvement is therefore unlikely to be the most important CSF.

5.2.5. *Top management support*

A paraphrasing of the earlier definition of top management support (TMS) is ‘when a senior management project sponsor/champion, the CEO and other senior managers devote time to review plans, follow up on results and facilitate management problems’. The definition added that the time spent should be in proportion to the cost and potential of the project. This is interpreted to imply that a project sponsor should spend more time on these activities, and the CEO and the other senior managers should make enough time to be aware of the project status and to intercede as necessary.

Following this understanding of TMS, the results suggest that TMS is important in every case and provides a strong explanation of why the projects succeeded or failed. This can be seen most clearly by comparing the TechServ project which was a complete failure and the SkyHigh project which was a complete success. The TechServ project had no sponsor at any level, no CEO involvement apart from a dictate that a certain system was to be implemented and no top management interest. The SkyHigh project had a strong sponsor, active CEO involvement and because of their effort the active involvement of the other top managers.

The three partially successful projects confirm the primary importance of the project sponsor and the CEO and the secondary importance of the other top managers to actively intercede when necessary. In the ABS project the sponsor left half way through the project and the project stalled even though the CEO and senior management team passively supported the project. The TechMedia project had a strong sponsor and a supportive CEO, but the CEO did not intercede to resolve a conflict between the sponsor and one of his top managers until it was too late. The TechMedia project only delivered benefits in the areas where top managers effectively facilitated process changes to occur and few benefits were realised when top managers did not effectively resolve issues to facilitate the necessary process changes. In like manner, the Agency project was only successful in the functional areas the sponsor was able to influence and a second promised benefit was not realised because of the complete lack of interest from the CEO and the top management team.

There are some subtleties worth highlighting. The TechMedia project identified several major risks for the steering committee, but they remained unresolved for the entire length of the project. The risks eventuated (unsurprisingly) and the planned benefits were compromised as predicted. The sponsor did not have authority to influence several of his peers to act on recommendations requiring process or organisational change and the CEO did not intervene until it was too late. Our definition of TMS included the facilitation of management problems and this example suggests that facilitation requires decisions to be made to mit-

igate or accept business risks that are outside the authority of the project team.

Further to this, our analysis of the SkyHigh project suggests that the main decisions senior managers (including the sponsor) have to make relate to the resolution of unanticipated process changes. It was suggested earlier that issues arise because the complexity of process inter-relationships makes it difficult to anticipate every issue.

The results therefore support the conclusion that TMS is the most important CSF. They suggest that the essence of top management support relates to effective decision-making to manage risk and to authorise business process change. It appears that TMS is most dependent on the ability of the project sponsor to work with other top managers to authorise business process changes and make decisions to mitigate or bear risk. Success also appears to be dependent on the willingness of the CEO to actively intervene when the sponsor lacks the authority or influence to resolve any impasses in decision-making.

6. Conclusion

This research provides evidence that TMS is not simply one of many CSFs needed for project success, but is the most important CSF. It supports an earlier suggestion that TMS is a ‘meta-factor’ that encompasses other CSFs [99]. This is potentially a major finding because it refutes the weightings suggested by Standish (1996) and by implication much of the current wisdom and practice.

The research rejects competent, focussed and hard working project staff as the most important condition for project success. Project staff provided the least explanatory power for success or failure. It is suggested that once a minimum level of competency has been recruited, project success is almost entirely determined by the quality of TMS.

The research does not support user involvement or high-level project planning as the most important success factor. High-level plans appear to be important if they reflect the motivations and beliefs of an executive project sponsor. User involvement appear to be useful in soliciting requirements, but their real value appears to be when top managers use the process of gathering user requirements to manage expectations. It seems to be very important that top managers are transparent in resolving issues and conflicts between different user priorities.

The research rejects project methodologies as the most important factor for project success. This finding challenges the conventional wisdom which considers project methodologies to be the most important (clear statement of requirements, proper planning, smaller project milestones). This finding supports the common senior management attitude that project management is not of direct concern [43,44]. Project methodologies appear to be of value for the detailed consideration of how to implement business process changes, but they are limited because complexity makes it impossible to anticipate all the issues. It seems that it is not the plan itself that is important, but

the ability to change the plan to react to issues as they are realised. This is a project governance rather than a project management issue.

The research has found that when success is defined in terms that are consistent with corporate governance goals and the insights in the project management literature, the advice in the IS and project management literature for top managers is probably misguided. Organisations do not invest in IS projects to simply be on time, meet budgets or satisfy users; they invest in projects to realise business benefits. Previous research has already demonstrated that it is incorrect to assume one leads to the other. Realisation of business benefits often requires significant organisational change and this is more properly the responsibility of a senior management project sponsor/champion supported by the CEO and top management team. Project managers cannot hold primary responsibility for the realisation of benefits because they tend to leave a project after the delivery of an enabling infrastructure and before the benefits are realised.

These findings have informed the development of Australian Standard AS8015 (Corporate Governance of IT) which in turn has been ratified for fast-track adoption by the International Standards Organisation. The findings are also consistent with recent research in this area [100,101] and an entire special issue of the International Journal of Project Management (Volume 24, Issue 8). There are significant implications for board, senior management and project management practice and academia:

1. Boards and top managers may have to accept that they personally have the most influence on whether a project succeeds or fails.
2. Boards, top managers and their advisors may have to accept that the current expert advice has less impact on success than previously believed because a business rather than a project/technical focus is required.
3. Project managers must recognise the limitations of project methodologies and allow projects to focus on project success rather than project management success even though they cannot be accountable for the realisation of outcomes/benefits.
4. The AIS Special Interest Group on IT Project Management working group developing an IT project management curriculum and other owners of project management standards (PMI, APM, PRINCE2) may need to be modified to allow for or incorporate the findings by addressing top managers specifically.

7. Limitations and further research

The findings of this research are necessarily constrained by the methodology. The case study method was chosen with the objective of generalising to theory. The theory was quite comprehensive hence the greatest limitation is the limited types of projects that were tested. The research

only reviewed intra-organisational projects, three of which related to the implementation of an ERP package, one related to a system rationalisation and one related to an in-house development project. This range of cases provides good evidence that TMS is the most important CSF for ERP implementations, but more evidence is needed before we can have the same degree of confidence for other types of projects. It is recommended that further research be conducted with different types of projects to see if TMS will also be found to be the most important CSF. The relationship between project success and organisational change suggests that TMS will be found to be even more important for inter-organisational projects but this will need to be demonstrated. The same expectation cannot be held for infrastructure projects or other system rationalisations. It is recommended that further studies or meta-studies be performed to see if the findings are unique for this particular research or whether TMS is the most important for other system rationalisations, in-house developments, infrastructure and other types of projects.

This research has presented evidence to suggest further study of TMS is justified. The research has also sketched a broad picture of how TMS might be defined, but it has not yet adequately defined what constitutes effective TMS. Future research is required to explore in more detail what is TMS, how much is enough and when TMS might be excessive or inappropriate. The change management and project champion literatures appear to have much to offer this future research because so much of the value of IS revolves around organisational change. It is suggested that as much as possible of the change management and project championing literature be synthesised into future research to avoid reinventing the wheel.

Appendix 1. Prescriptions for TMS

See Tables 3–8.

Appendix 2. The interview instrument

Introduction

We are taking a fresh look at IT project underperformance and we are looking at developing a standard(s) to address the issue. [*It is reported that around 80% of large projects fail*]

This area has been studied for the last 20–30 years without any significant improvement in results (c.f. construction industry). [We suspect this is mainly because people have looked at it from the project level without enlarging the scope to include organisational factors (*outside* the immediate project) that must be addressed to realise the benefits of large investments in IT (*e.g. BPR*).]

We are conducting case studies of IT project – good and bad. It's a sensitive issue but it is important, so [CEO/COO] has agreed that [organisation] should lead the way and participate in the study.

Table 3
TMS Research that emphasises delivery of benefits through IT in general

Author(s)	Prescription(s) for top management
1. Garrity [1]	Top management should spend time reviewing the plans and programs in proportion to the costs and potential . . . and then follow up on the results achieved. They must direct operating management to be actively involved and be accountable for the results achieved. The computer's challenge to top management is that they must direct, manage and lead if profits are to result and their assessment of the potential is the key
2. O'Toole and O'Toole [73]	Policies and objectives to be set at the highest level to align with forward planning for the whole company. "Hard decisions" may have to be made because the most effective use of EDP will require some radical changes in organization, lines of communication and control
3. Rockart and Crescenzi [2]	Top management should direct effort by clarifying the business objectives, the critical success factors and the key decisions that should be supported by information systems. They should also stay actively involved in the process of prototyping and developing the information systems because precise knowledge of what information is required is seldom clear in the early stages and participation produces the further insights needed to develop a successful system
4. Lane [74]	Integrate IT planning into the strategic planning process. Understand how the significance of different types of technology to the success of the organisation and take into account competitive IT capabilities/initiatives when setting IT investment priorities. Have the courage to invest in needed technology changes
5. Doll and Vonderembse [75]	Understand how IT will have strategic impact (vs simple operational benefits)
6. Rockart [76]	Senior managers must assume responsibility for where to direct IT (in the same way they direct staff and finances) and be involved with implementation (which is better understood as transformation) because this often requires significant organisational change (cutting across previously independent divisions, functions, organisational sub-units)
7. Henderson [77]	Senior management, through the planning and monitoring process, must encourage effective long term working relationships between information technology personnel and line managers to realise specific mutual benefits. Commitment to the relationships can be fostered formally by shared goals, incentive systems and contracts but also depended on trust (established through a track record of delivering on commitments), shared knowledge and open communication through personal relationships. It is a challenge to negotiate measures of the financial contribution of IT but it is important to do so and focus on business impacts

Table 4
TMS Research that emphasises technical quality through IT in general

Author(s)	Prescription(s) for top management
1. Brandon [10]	Establish controls, perform long range planning, post installation audits, plan for equipment
2. Doll [3]	Have written development plans, mutually agreed development priorities, executive steering committees, system planing objectives (based on expected pay-off potential and probability of success), long-term funding commitments and project development policies (eg. operations sign off and user documentation)
3. Izzo [11]	Personally participate in IT management by guiding and shape business and technology roles
4. Lederer and Mendelow [4]	Communicate regularly with IT management (objectives, business environment, changing priorities)

Table 5
TMS Research that emphasises user satisfaction through IT in general

Author(s)	Prescription(s) for top management
1. Dinter [12]	Establish long range objectives for IT and stay informed (review all plans and programs, follow up on results, insist project schedules are met and takes corrective action as necessary, insist on cost-benefit analysis, makes sure operating management participates actively and assumes major responsibility for results, insist on high technical skills, emphasise company commitment)
2. Freeman [102]	Take an active personal interest to understand the potential, demonstrate excitement and show commitment by recruiting the best staff and staying involved with initiatives. Educate management, keep users involved, and have mechanisms to prioritise investments.
3. Jarvenpaa and Ives [6]	Be involved and participate to influence the progressive use of IT
4. Bassellier and Pinsonneault [9]	Top management support through their attitude, involvement (personal belief of the importance of IT), participation (in IT planning, managing the IT function and operations), relationship with the CIO and provision of financial resources

I think it is important to say, that *this is completely anonymous*. Your name will not be quoted, this is not a witch-hunt and there is no interest in finding blame. We want to develop a Standard to overcome IT under-performance and to do that we have to get into the details of actual projects, find out how they developed,

note the things we already do well and understand what things we need to do better. Are you happy this objective?

Sign ethics approval in front of interviewee and give interviewee a copy to give them the opportunity to ask further questions or opt out of the study.

Table 6

TMS Research that emphasises delivery of benefits through IT projects

Author(s)	Prescription(s) for top management
1. Rockwell [103]	Begin at the top with the CEO
2. Adams [104]	Reward people to get the best proposals, assess benefits against costs and risks, check the accuracy of estimates, monitor against project plans, get the requisite talent, use new information and get results
3. Delone [105]	CEO knowledge of computers and active ongoing involvement is the key to success. Effectiveness does not improve with time, the key is for the CEO to remain actively involved with which systems should be computerised and how they should be computerised in a continuing ongoing process
4. Reich and Benbasat [68]	The project champion must maintain continuity and support. Competitive advantage takes no less than three years in the market and must have high levels of adoption. IT implementation success and initial adoption are necessary but not sufficient conditions for competitive advantage
5. McGolpin and Ward [67]	Be involved with implementation as well as planning. Allocate responsibility for benefit delivery and initiate strategic information systems in the context of need for business change
6. Rochleau [106]	Be “hands on” with decision-making, communication and evaluation. Establish benchmarks and targets for change. Employ a disciplined process in decision-making, risk management and ROI. Line managers should be made to take control of the funding and direction of projects

Table 7

TMS Research that emphasises user satisfaction through IT projects

Author(s)	Prescription(s) for top management
1. Markus [18]	Resolve any conflicts between the new distribution of power implied by a new system and the existing power structure. An information system can alter power bases, patterns of communication, influence and decision-making affecting prestige and status
2. Mähring [14]	Direct intervention of top management should however be reserved for extraordinary situations because it does not translate well into regular organizational practice. Projects are subject to significant mutual influence and co-dependency in the control relationship suggesting a need to place considerable emphasis on communication, relationship-building and influence
3. Sharma and Yetton [72]	Support should focus on (re)shaping the institutional context, e.g. workflow patterns, procedures, routines, reward systems, control and coordination mechanisms. Top management support is most appropriate where highly interdependent tasks are affected

Table 8

TMS Research that emphasises technical quality through IT projects

Author(s)	Prescription(s) for top management
1. Schmitt and Kozar [13]	Be active decision makers (aware of the problem to be solved), and use project controls, participate in the planning and organisation and do not defer naively to the experts
2. Emery [7]	Be the first initiator, keep close tabs on progress, step in to remove organizational barriers, display enthusiasm and publicly declare commitment. Ensure rapid decision-making and accountability for results

Context of questions

Some comment about researchers current understanding of the project being studied (hinting at why it might have been initiated and the other organisational issues at the time).

Key question

How did the project develop and what were some of the key decisions that had to be made? (determining requirements, resourcing, timelines, project management)

Probe questions

Can you tell us how the ___ project got initiated and what were the benefits expected?

Who were the key players? (e.g. sponsor, initiator, PM, key supporters, key users, unconvinced/opposers, supplier, consultants)

What was achieved/delivered? (in terms of the original benefits desired, scope and budget)

What activities were undertaken in the post-project phase (change requests, ongoing development, training, business process reengineering, any unforeseen activities)?

Project review

+ve:

What would you say you did quite well

–ve:

What were the main difficulties you had to overcome?

What areas would you say underperformed?

Why do you think this happened?

Project risk management practices

If you were to do this again, what would you do differently?

Are there any other significant issues we have not covered?

Is there anyone else in the organisation who might have a more detailed knowledge on areas you were not close to, or who might have a different perspective of the project?

References

- [1] Garrity JT. Top management and computer profits. *Harvard Bus Rev* 1963;41(4). p. 6–12, 172–4.
- [2] Rockart JF, Crescenzi AD. Engaging top management in information technology. *Sloan Manage Rev* 1984(Summer 1984):3–16.
- [3] Doll WJ. Avenues for top management involvement in successful MIS development. *MIS Quart* 1985;9(1):17–35.
- [4] Lederer AL, Mendelow AL. Information systems planning: top management takes control. *Bus Horizons* 1988(June):73–8.
- [5] Schmidt R et al. Identifying software project risks: an international Delphi study. *J Manage Inform Syst* 2001;17(4):5–36.
- [6] Jarvenpaa SL, Ives B. Executive involvement and participation in the management of information technology. *MIS Quart* 1991:205–27.
- [7] Emery JC, editor. Comments – the management difference: a tale of two IS projects. *MIS Quart* 1990;14(1):xi–xii.
- [8] Huff SL, Maher PM, Munro MC. Information technology and the board of directors: is there an IT attention deficit? *MIS Quart Exec* 2006;5(2):55–68.
- [9] Bassellier G, Pinsonneault A. Assessing top management support for information technologies: an new conceptualisation and measure. In: *European conference on information systems*; 1998.
- [10] Brandon DH. *Management planning for data processing*. Princeton, New Jersey: Brandon Systems Press; 1970. p.206–8.
- [11] Izzo J. A view of tomorrow's system architecture. *Embattled fortress*. San Francisco: Jossey-Bass; 1987 [chapter 6].
- [12] Dinter H. Criteria for the organizational effectiveness of data processing. *Data Manage* 1971;9(8):33–4.
- [13] Schmitt JW, Kozar KA. Management's role in information system development failures: a case study. *MIS Quart* 1978:7–16.
- [14] Mähring M. IT project governance: a process-oriented study of organizational control and executive involvement. *Stockholm: Stockholm School of Economics*; 2002.
- [15] Collins T, Bicknell D. *Crash: ten easy ways to avoid a computer disaster*. London: Simon and Schuster; 1997.
- [16] Keil M. Pulling the plug: software project management and the problem of project escalation. *MIS Quart* 1995;19(4):421.
- [17] Standards Australia. HB280 how boards and senior management have governed ICT projects to succeed (or fail). Young R, editor. Sydney: Standards Australia; 2006.
- [18] Markus LM. Implementation politics: top management support and user involvement. *Syst Object Solut* 1981;1:203–15.
- [19] KPMG. *Global IT project management survey: how committed are you?* KPMG; 2005.
- [20] Clegg C et al. Information technology: a study of performance and the role of human and organizational factors. *Ergonomics* 1997;40(9):851–71.
- [21] Boehm BW. Software risk management: principles and practices. *IEEE Softw* 1991:32–41.
- [22] Lyytinen K. Different perspectives on information systems: problems and solutions. *ACM Comput Surv* 1987;19(1):5–46.
- [23] Sauer C. Deciding the future for IS failures not the choice you might think. In: Galliers B, Currie W, editors. *Rethinking management information systems*. New York: Oxford University Press; 1999.
- [24] Kraemer KL, King JL. Computing and public organizations. *Public Admin Rev* 1986;46(6):488–96.
- [25] Checkland P. *Systems thinking, systems practice*. Chichester: John Wiley & Sons; 1981.
- [26] Bussen WS, Myers MD. Executive information system failure: a New Zealand case study. *J Inform Technol* 1997;12(2):145–53.
- [27] Strassmann PA. *The politics of information management*. New Canaan, CT: Information Economics Press; 1995.
- [28] Lucas HC. *Why information systems fail*. New York: Columbia University Press; 1975.
- [29] Currie W, Galliers B, editors. *Rethinking management information systems*. New York: Oxford University Press; 1999.
- [30] Young R. Estimating the value of IT project governance. In: *Inaugural international research workshop on information technology project management (IRWITPM), a special interest group of the international conference for information systems*, Milwaukee, WI: Association of Information Systems; 2006.
- [31] Sauer C. Why information systems fail: a case study approach. In: Avison DE, Fitzgerald G, editors. *Information systems series*. Henley on Thames: Alfred Waller Ltd.; 1993.
- [32] Seddon PB et al. Dimensions of information systems success. *Commun Assoc Inform Syst* 1999;2(20):1–61.
- [33] de Wit A. Measurement of project success. *Int J Project Manage* 1985;6(3):164–70.
- [34] Baccarini D. The logical framework for defining project success. *Project Manage J* 1999;30(4):25–32.
- [35] Rocheleau B. Prescriptions for public-sector information management: a review, analysis and critique. *Am Rev Public Admin* 2000;30(4):414–35.
- [36] Falconer DJ, Hodgett RA. The relationship between participation in information systems planning and development and the achievement of performance criteria in Australian commercial organisations that plan strategically for information systems. In: *Tenth Australasian conference on information systems*, Wellington, New Zealand; 1999.
- [37] Willcocks L, Margetts H. Risk assessment and information systems. *Eur J Inform Syst* 1994;3(2):127–38.
- [38] Standish. Latest Standish group CHAOS report shows project success rates have improved by 50%. West Yarmouth, MA: The Standish Group; 2003.
- [39] Standish. CHAOS. 1999. West Yarmouth, MA: The Standish Group.
- [40] Young R. What is the ROI for IT project governance? establishing a benchmark. In: *2006 IT governance international conference*. Auckland, New Zealand; 2006.
- [41] Markus LM, Keil M. If we build it they will come: designing information systems that people want to use. *Sloan Manage Rev* 1994;35(4):11–25.
- [42] Markus ML et al. Learning from adopters' experience with ERP: problems encountered and success achieved. *J Inform Technol* 2000;15:245–65.
- [43] Thomas J et al. Selling project management to senior executives: the case for avoiding crisis sales. *Project Manage J* 2002;33(2):19–28.
- [44] Crawford L. Senior management perceptions of project management competence. *Int J Project Manage* 2005;23(1):7–16.
- [45] Hinton CM, Kaye GR. The hidden investments in information technology: the role of organisational context and system dependency. *Int J Inform Manage* 1996;16(6):413–27.
- [46] Hilmer FG. *Strictly boardroom: improving governance to enhance company performance*. Melbourne: The Business Library; 1993.
- [47] Hewson J. Get boards back to basics. *AFR* 2003:82.
- [48] BRW. The myth of governance. *BRW* 2003:30–6.
- [49] Markus LM. Change agency – the next IS frontier. *MIS Quart* 1996:385–407.
- [50] Ward J, Taylor P, Bond P. Evaluation and realisation of IS/IT benefits: an empirical study of current practice. *Eur J Inform Syst* 1996;4:214–25.
- [51] Cooke-Davies T. The real success factors on projects. *Int J Project Manage* 2002;20:185–90.
- [52] Yardley D. *Successful IT project delivery: learning the lessons of project failure*. London: Addison-Wesley; 2002.
- [53] Brynjolfsson E, Hitt LM. Beyond the productivity paradox: computers are the catalyst for bigger changes. *Commun ACM* 1998;41(8):49–55.
- [54] Grindley K. *Managing IT at board level: the hidden agenda exposed*. 2nd ed. London: Pitman; 1995.
- [55] Dickson GW et al. Key information systems issues for the 1980s. *MIS Quart* 1984;8(3):135–59.

- [56] Hartog C, Herbert M. 1985 Opinion survey of MIS managers: key issues. *MIS Quart* 1986;10(4):351–61.
- [57] Brancheau JC, Janz BD, Wetherbe JC. Key issues in information systems management: 1994–95 SIM Delphi results. *MIS Quart* 1996;20(2):225–42.
- [58] Luftman J, McLean ER. Key issues for IT executives. *MIS Quart* 2004;3(2):89–104.
- [59] Luftman J, Kempaiah R, Nash E. Key issues for IT executives 2005. *MIS Quart* 2006;5(2):81–99.
- [60] DellaVecchia T, Scantlebury S, Stevenson JG. Three CIO advisory board responses to managing the realization of business benefits from IT investments. *MIS Quart Exec* 2007;6(1).
- [61] Keil M et al. A framework for identifying software project risks. *Commun ACM* 1998;41(11):76–83.
- [62] Nelson RR. IT project management: infamous failures, classic mistakes, and best practices. *MIS Quart Exec* 2007;6(2):67–78.
- [63] Standish. Unfinished voyages: a follow-up to the CHAOS report. 1996 [cited 11 April 2005]; Available from: http://www1.standish-group.com/sample_research/unfinished_voyages_1.php.
- [64] Delone WH, McLean ER. The Delone and McLean model of information systems success: a ten-year update. *J Manage Inform Syst* 2003;19(4):9–30.
- [65] Seddon PB, Graesser V, Willcocks L. Measuring organizational is effectiveness: an overview and update of senior management perspectives. *Database Adv Inform Syst* 2002;33(2):11–28.
- [66] Akkermans H, van Helden K. Vicious and virtuous cycles in ERP implementation: a case study of interrelations between critical success factors. *Eur J Inform Syst* 2002;11(1):35–46.
- [67] McGolpin P, Ward J. Factors influencing the success of strategic information systems. In: Mingers J, Stowell F, editors. *Information systems: an emerging discipline?* London: McGraw-Hill; 1997. p. 287–327.
- [68] Reich BH, Benbasat I. An empirical investigation of factors influencing the success of customer-oriented strategic systems. *Inform Syst Res* 1990;1(3):325–47.
- [69] Soh C, Markus ML. How IT creates business value: a process theory synthesis. In: *The sixteenth international conference on information systems*, Amsterdam, The Netherlands; 1995.
- [70] Grover V, Kettinger WJ. Business process change: a reflective view of theory practice and implications. In: Zmud RW, editor. *Framing the domains of IT management: projecting the future through the past*. Cincinnati Ohio: Pinnaflex Educational Resources; 2000. p. 147–172, 433–5.
- [71] Markus LM. Toward an integrated theory of IT related risk control. In: *IFIP TC8 WG8.2 international working conference on the social and organizational perspective on research and practice in information technology*, Aalborg, Denmark: Kluwer; 2000.
- [72] Sharma R, Yetton P. The contingent effects of management support and task interdependence on successful information systems implementation. *MIS Quart* 2003;27(4):533–55.
- [73] O'Toole RJW, O'Toole EF. Top executive involvement in the EDP function. *Manage Controls* (Peat Marwick Mitchell & Co) 1966:125–7.
- [74] Lane RL. The key to managing information technology. *Bankers Mag* 1985:20–7.
- [75] Doll WJ, Vonderembse MA. Forging a partnership to achieve competitive advantage: the CIM challenge. *MIS Quart* 1987;11(2):205–20.
- [76] Rockart JF. The line takes the leadership – IS management in a wired society. *Sloan Manage Rev* 1988;29(4):57–64.
- [77] Henderson JC. Plugging into strategic partnerships: the critical IS connection. *Sloan Manage Rev* 1990;31(3):7–18.
- [78] Beath CM. Supporting the information technology champion. *MIS Quart* 1991;15(3):355–72.
- [79] Morton GHA. Become a project champion. *Int J Project Manage* 1983;1(4):197–203.
- [80] Ranganathan C, Watson-Manheim MB, Keeler J. Bringing professionals on board: lessons on executing IT-enabled organizational transformation. *MIS Quart Exec* 2004;3(3):151–60.
- [81] Thomsett R. *Third wave project management*. Englewood Cliffs: Prentice-Hall; 1989.
- [82] Smyrk JR. Why most IT Projects are really IT without the project. In: *Third world project management conference*, Gold Coast, Australia; 2002.
- [83] Hampel R. *Committee on corporate governance*. London: Gee Publishing; 1998.
- [84] Young RC, Jordan E. Lifting the game: board views on e-commerce risk. In: *IFIP TG8.6 the adoption and diffusion of IT in an environment of critical change*, Sydney: Pearson Publishing Service; 2002.
- [85] Tashakkori A, Teddlie C, editors. *Handbook of mixed methods in social and behavioural research*. Thousand Oaks: Sage; 2003.
- [86] Goles T, Hirschheim R. The paradigm is dead, the paradigm is dead long live the paradigm: the legacy of Burrell and Morgan. *Omega* 2000;28(3):249–68.
- [87] Benbasat I, Zmud RW. Empirical research in information systems: the practice of relevance. *MIS Quart* 1999;23(1):3–16.
- [88] Yin RK. Case study research: design and methods. In: Bickman L, editor. *Applied social research methods series*, 3rd ed., vol. 5. Newbury Park: Sage; 2003.
- [89] Perry C. Processes of a case study methodology for postgraduate research in marketing. *Eur J Market* 1998;32(9/10):785–802.
- [90] Klein HK, Myers MD. A set of principles for conducting and evaluating interpretive field studies in information systems. *MIS Quart* 1999;23(1):67–94.
- [91] Eisenhardt KM. Building theories from case studies research. *Acad Manage Rev* 1989;14:532–50.
- [92] Young RC, Jordan E. *IT governance and risk management: an integrated multi-stakeholder framework*. Bangkok, Thailand: Asia Pacific Decision Sciences Institute; 2002.
- [93] Young RC. *The role of the board, senior management and IT governance in IT success and failure*. Adelaide: PACIS doctoral consortium; 2003.
- [94] Young RC, Jordan E. *Passion and IT governance: two case studies reveal why and how senior management should support IS projects*. Adelaide: PACIS; 2003.
- [95] Young RC, Jordan E. Top management support – mantra or necessity? In: *eProceedings of the second inaugural international research workshop on information technology project management (IRWITPM)*, Montreal, Canada; 2007.
- [96] Davenport TH, Markus ML. Rigor vs. relevance revisited: response to Benbasat and Zmud. *MIS Quart* 1999;23(1):19–23.
- [97] Lee AS. Rigour and relevance in MIS research: beyond the approach of positivism alone. *MIS Quart* 1999;23(1):29–34.
- [98] Dvir D, Lechler T. Plans are nothing, changing plans is everything: the impact of changes on project success. *Res Policy* 2004;33:1–15.
- [99] Poon P. Critical success factors revisited: success and failure cases of information systems for senior executives. *Decis Support Syst* 2001;30(4):393.
- [100] Peppard J, Ward J, Daniel E. Managing the realization of business benefits from IT investments. *MIS Quart Exec* 2007;6(1).
- [101] Kohli R, Devaraj S. Realizing the business value of information technology investments: an organisational process. *MIS Quart Exec* 2004;3(1):53–68.
- [102] Freeman GAJ. The role top management must play in MIS planning and implementation. In: *Founders conference of the society for management information systems*. Minneapolis: Society for Management Information Systems; 1969.
- [103] Rockwell WP. MIS: a view from the top. *Duns Rev* 1968;92(4):20–2.
- [104] Adams W. New role for top management in computer applications. *Financ Exec* 1972:4–56.
- [105] Delone WH. Determinants of success for computer usage in small business. *MIS Quart* 1988;12(1):51–61.
- [106] Rochleau B. Prescriptions for public-sector information management: a review, analysis and critique. *Am Rev Public Adm* 2000;30(4):414–35.