of these projects by the highly experienced managers brought in to rescue them give significant clues about critical factors that can make the difference between success and failure. The table here shows the top six problems these troubled projects managers believe had sent these projects off the rails prior to their taking over.

The six key risks noted here were highlighted as critical factors causing major problems in troubled projects. Three of these risks featured highly among those typically anticipated at the start of projects, while the remaining three occurred frequently as unexpected problems in projects. Control of these six key risks was considered by respondents to be crucial for successful management of risk in their projects.

The appearance of client expectations in all three problem sets is particularly significant. Customer satisfaction is related not only to what has been delivered and how well the process went, but also to what was expected in the first place. Indeed, the degree of disconfirmation of expectations (the difference between outcomes and expectations) strongly correlates with the level of customer satisfaction, as noted by Szymanski and Henard [8] in their recent meta-analysis of customer satisfaction studies. So if expectations are high to start with, and the outcomes are not quite as high as those expectations, then customers will ultimately be dissatisfied, even if final functionality and performance is a good match with requirements. As Szymanski and Henard comment, "negative ramifications ... can result when firms over-promise and underdeliver." Customer satisfaction is obviously extremely important for vendor firms since it has a major impact on their reputation and can significantly influence future business, particularly since new clients are likely to ask for reference sites when assessing vendor bids [6].

While the factors identified by these troubled project managers are shown as separate factors, the process of identifying and coding each factor separately actually obscures the view of the project managers that, in fact, these factors were highly interrelated. Poor schedule and budget management was described as a key factor in causing problems in these projects, and in five of the 10 projects this was attributed to an original underestimation or underbidding on the part of the pre-sales team. The following comment by one project manager is typical: "They significantly underbid. The estimate was wrong [because] the complex-ity of requirements was not fully understood."

This respondent went on to explain how the situation was compounded by serious deficiencies in the estimation of the vendor staff skills required to complete the project: "It was grossly undersized ... The original plan called for just one guy with skills and knowledge of that package. We ended up by having about six or seven people, brought in from overseas."

The failure of the vendor staff to fully understand the client requirements at the pre-sales stage also contributed to both the underestimation of schedule/budget and of required skills: "We tried to put a package solution in where a new development—a roll-your-own solution—would have been more appropriate .... You couldn't take any standard package off the shelf and try to fit it to [these requirements]."

This led to difficulties in controlling change requests from the client, since, from the client's perspective these were not change requests but legitimate requirements of the project:

"The requirements were not so much changing but being reinterpreted at times. ... So you could say there may not have been additional requirements, but clarification of how the requirements should be dealt with."

The compounding interrelationship of problems described here was characteristic of troubled project problems. Most often, the requirements had not been fully understood at the pre-sales stage. As the complexity of the requirements became clearer, typically performance against schedule deteriorated, setting up a spiral of declining team morale, which caused further performance deficiencies. Often underlying all of this was the failure of the pre-sales team and the original manager to set and control client expectations at a reasonable level.

CONCLUSION

This research has highlighted certain critical risk factors that both vendors and clients should be aware of when entering into an outsourced agreement for an information system, and has suggested key strategies for addressing these risks. In particular, schedule and budget risks can become intractable problems, particularly if they arise from underbidding by vendors or by clients selecting a vendor partner on price alone. Both parties should consider pre-partnering arrangements to fully

Risk factor	No. of projects in which problem occurred (out of 10 troubled projects)
Schedule and budget management	8
Vendor staffing	8
Vendor understanding of requirements	4
Client expectations	4
Vendor team morale	4
Change management	4

Problems responsible for derailing troubled projects.