Expand your outlook

Options-based risk management can reduce exposure and increase the success of data warehousing projects.

by Mark Jeffery

Risk happens. It's all around us, like the motorists who guard against it with seat belts, defensive driving and car insurance. In business, it is perceived that big risks go hand in hand with big rewards.

In some companies, designing and implementing projects intended to propel the company forward can prove to be risky. Powerful information technologies such as enterprise data warehousing offer enormous benefits in terms of enhanced business intelligence (BI) and customer relationship management (CRM)—but only if they work. So how do you avoid the pitfalls and reap the rewards? One answer is options-based risk management, as shown in the research I've conducted in collaboration with Michel Benaroch, professor of management information systems at the Whitman School of Management at Syracuse University.

Companies that apply options-based risk management identify the potential barriers to success in a project (the risks) and apply various responses (the options) to minimize those risks or distribute them throughout the life of a project. Options can include embedding exit strategies that will allow management to reassess its approach in the face of new information and transferring risk to outside vendors by outsourcing aspects of the project.

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Managing risk

The 2004 Kellogg study "Best Practices in IT Portfolio Management" analyzed 179 Fortune 1,000 firms. The results show a clear spectrum of maturity in terms of how well organizations manage IT. Not surprisingly, mature organizations achieve better return on investment (ROI), sales growth and more. Those organizations display two key differentiators: They evaluate how well they're performing, and they actively manage risk.

The traditional net present value (NPV) analysis used by corporate decision makers typically involves identifying the possible outcomes of a decision, estimating the profitability of those outcomes and approximating the probability that they will occur. It's an analysis of risk impact, in other words. Risk management goes one step further to define a strategy that minimizes the effects of negative outcomes. Our research has shown that organizations that practice risk management get tangibly higher returns than other companies.

Consider, for example, a data mart consolidation project. (See figure, page 3.) A simple NPV analysis might identify a decision tree of, say, four possible outcomes: mostly negative, partly negative, mostly positive and completely positive. The project could fail by virtue of inadequate

Photography by Tom Maday

hardware or software (mostly negative). It could suffer from lack of management buy-in (partly negative). It could be partially successful simply by virtue of putting all of the enterprise's data in a single repository (mostly positive). Or it could be wildly successful and introduce unanticipated CRM capabilities (completely positive).

In an NPV analysis, each of these outcomes would be assigned a value (a $10 million benefit for the wildly successful case, say, and a $5 million loss in person-hours and equipment for the mostly negative case). By weighting the probabilities of each of these outcomes, management obtains a quantitative assessment of the overall value of the project—and NPV—that it uses to inform its decision.

The problem with this kind of analysis is that it makes an unnecessary and potentially costly assumption—that the situation is static. It commits to a course of action and rises or falls with it, and it assumes no new information will be forthcoming. But the reality is that new information and change are inevitable, which is where options come in.

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Understanding options

In options-based risk management, you examine the risks that could generate negative outcomes and establish options to mitigate them. Not sure about management buy-in in your data mart consolidation? Set up a staged deployment with a planned re-evaluation at six months for a clear demonstration of the benefits and capabilities. Ready to re-architect but worried about cost overruns? Start with a pilot project. You'll uncover problems and get a taste of the possibilities. If the project is a disaster, you simply kill the pilot project, incurring minimal cost.

NPV or ROI analyses always present a range of possible outcomes: the best case, the worst case and the expected case. Options-based risk management trims that range of outcomes to reduce the downside risk and increase the upside. The idea is that if you are on the negative arm of the decision tree after the pilot, for example, you'll stop the program; if you're on the positive arm, you will keep going. The downside risk becomes whatever it costs to kill the pilot project; the upside benefit is the realized profit.

So what are some of these options? The simplest is to do nothing (defer)—postpone the project/investment until more is known. Alternatively, you can run a pilot project to better assess risks and refine strategy (explore). You can divide a project into phases (stage) or expand and contract it as appropriate (alter scale).

DETERMINE RISK AND STRATEGIZE WITH OPTIONS-BASED RISK MANAGEMENT

Option	Action	Risks addressed
Defer	Wait for more information	• Customer acceptance • Vendor adoption • Legislative barriers
Explore (pilot)	Determine process, risks and rewards with pilot project	• IT resources/capabilities • Maturity of technology • Adequate IT infrastructure • Organizational adoption
Stage (stop/resume)	Divide into phases, pursue as appropriate	• Compatible infrastructure • Managerial support, organizational adoption • User adoption/support
Alter scale	Expand or contract scope based on new information	• Project size/complexity • Maturity of technology • New/changing standards
Abandon (switch use)	Shut down project, reallocate resources	• User adoption • Adequate IT infrastructure
Outsource	Transfer risks to third party (e.g., cost overruns, failure); action may carry cancellation penalty	• Limited IT skills and experience • Cost escalation
Lease	Abandon resources midstream if expected payoff is too low; action may carry cancellation penalty	• Limited IT infrastructure • Large up-front capital outlay • Customer demand/usage
Strategic growth	Open up future investment opportunities that were not previously available and enable agile response to market change	• Changing market • Competitor actions • Regulatory threats

Adapted from M. Benaroch, Journal of MIS, (19:2), Fall 2002

And if the project really isn't working, you can shut it down entirely (abandon).

Which brings us to a pair of more sophisticated options: outsourcing and leasing, both of which transfer the risk to third-party vendors. Don't have the IT chops to re-architect your data marts to a data warehouse? Outsource to a company that does. Not ready to invest in all the hardware you'll need? Try leasing it for a year to be sure it works for you. If you shut down the project, you're not left with resources that have no intrinsic value to your organization.

All of the preceding are options designed to manage downside risk, but there is also an upside option: strategic growth. Perhaps the pilot project re-architecting suddenly presents you with the resources to perform supply chain management or to apply analytic CRM to customer retention or wallet share. Options-based risk management brings you strategic growth opportunities because it allows you the freedom to discover them.

The right balance

We know intuitively that we should put flexibility into a project to manage risk; the questions are how much flexibility and what kind. It costs money to put options into a project. Adding flexibility often delays the profit that might be realized from having the full capabilities from the project. Managing risk is a matter of finding the right balance.

In the data mart project, for example, you could consolidate all at once, re-architect only a portion in a pilot project or do a staged re-architecture. The staged option is the most cautious, but analysis reveals that the second option—the pilot project—best balances risk with reward, especially because it offers a number of strategic growth possibilities in the event of a positive outcome.

Options are not just abstract concepts. They represent real value and real benefits. With options-based risk management, companies can identify the risk factors in a project and design specific options into the project to manage those risks. They can reduce risks and increase the upside. That's what real options can do for an organization. T

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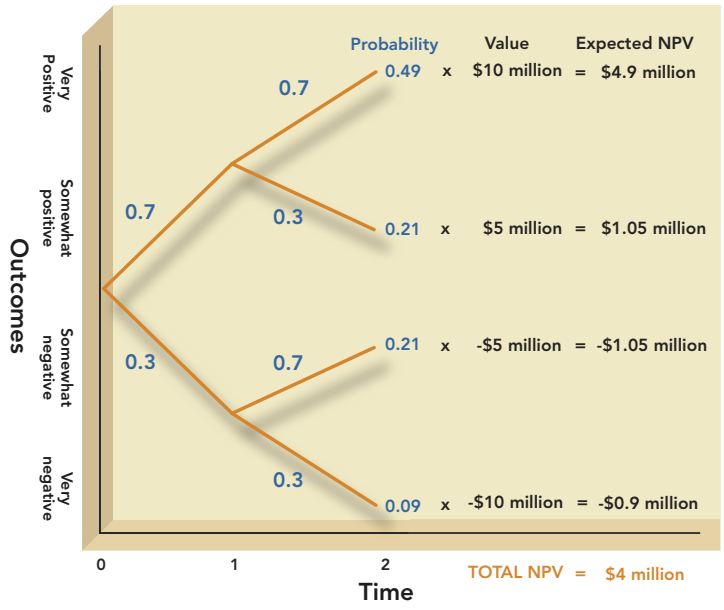
Net present value (NPV) decision tree, no options



In a typical net present value (NPV) decision tree, the possible outcomes of a project are assigned weighting factors to determine the probability that a given outcome will actually occur. By multiplying the probability by the outcome's value, we can determine the weighted, or expected, NPV of the project. Real options increase NPV by removing or mitigating the lower (negative) limbs of the decision tree.