MIS Quarterly Executive

Managing the Realization of Business Benefits from IT Investments[1]

Joe Peppard
John Ward
Cranfield University

Elizabeth Daniel
Open University

Executive Summary

With their information technology (IT) investments, most organizations focus on implementing the technology rather than on realizing the expected business benefits. Consequently, benefits are not forthcoming, despite a project's technical success. Drawing on more than 10 years of research studying how organizations can improve the return on their IT investments, we present an approach for identifying, planning, and managing the delivery of benefits.

Our benefits management approach begins with IT professionals and business managers together answering seven questions about a potential IT investment. These questions aim to uncover three important aspects of the investment: the ***ends*** *(the target performance improvements), the* ***ways*** *(the ways the business must work differently), and the* ***means*** *(the enabling IT capabilities). With these answers, the team can build a cause-effect network—called the Benefits Dependency Network (BDN)—which shows how each of the improvements can be achieved by a combination of business changes and new IT capabilities. It also makes clear who needs to become accountable for making the specific changes and delivering the benefits.*

The completed network provides the basis for developing both a robust business case for the investment and a viable change management plan to deliver the benefits. The results are better investment decisions and benefits-driven implementation plans, both of which lead to realizing more benefits from IT investments.

WHY THE BENEFITS OF IT INVESTMENTS AREN'T BEING REALIZED

In many organizations, IT has a poor reputation. There can be many reasons, but a consistent one is that IT is viewed as failing to deliver "value for money." Indeed, a recent survey reported that more than 20% of all U.S. Chief Information Officers (CIOs) consider their existing IT investments to have failed to generate a genuinely good return for their organization. Another 25% were only mildly convinced that they had delivered a good return. If non-IT executives had been surveyed, we suspect that both statistics would have been substantially lower.[2]

Management practices provide some insights into the origins of this inability to deliver business benefits. When considering return-on-investment (ROI) calculations, organizations are so pre-occupied with manipulating the denominator—reducing spend—that they do not focus on the numerator—how IT can generate significant benefits. Equally worrying is the traditional investment appraisal process, which is often seen as a ritual that must be overcome before a project can begin. Many benefits are overstated to get the project through this process.[3]

MISQE is Sponsored by

Indiana University Kelley School of Business

SIM
Delivering Business Value Through IT Leadership

1 Jack Rockart was the accepting Senior Editor for this article.

2 See also comments made by McAfee, A. "Mastering the Three Worlds of Information Technology," *Harvard Business Review*, November 2006, pp. 141-149.

3 Overstating benefits is not a new phenomenon. In the early 1990s, Kit Grindley reported that 83% of IT directors that he surveyed admitted that the cost/benefit analysis supporting proposals to invest in IT were a fiction. He wrote about the "conspiracy of lies." See Grindley, K. *Managing IT at Board Level*, London: Financial Times, 1995. In addition, a survey of the 200 largest U.K. companies reported that 47% openly admitted to overstating the benefits to get approval for IT investments. See Ward, J., Taylor, P., and Bond, B. "Evaluation and Realization of IS/IT

© 2007 University of Minnesota

No wonder few companies engage in post-implementation reviews. They already know that many of the benefits described in the business case are unlikely to be achieved. In addition, if they have not clearly identified the expected benefits, they have no criteria for assessing success. Generally, success is measured by whether or not the new IT system is delivered on time, within budget and meets the technical specifications. Success is not measured on how well the business actually exploits the system and whether it is delivering the expected business benefits.[4] There still seems to be a naive assumption underpinning IT investments that "Once we get it in, the benefits will flow," even though this silver-bullet view has been long shown to be flawed.[5]

One bank we studied, for example, is typical in not realizing benefits from IT. The project team working on a new customer relationship management (CRM) system had based its initial ROI calculations on a range of expected benefits. These included increasing customer retention rates, improving cross-sell opportunities, converting leads into sales, reducing the cost of marketing campaigns, and increasing the average number of products per customer. However, three years later, few of these benefits had actually been realized, even though the project had been delivered on time, to budget and to specification. While the bank was clear on what it wanted to achieve from the investment, it was unclear on how to realize the benefits. Consequently, it failed to identify the many work changes that individuals and groups needed to make to deliver the benefits. Instead, the bank concentrated on deploying the technology as quickly as possible. As a result, its $10 million IT investment delivered no immediate benefits.

So how can management ensure that IT investments are not a waste of money? Based on our work with a wide range of organizations, we have developed an approach and a set of tools for significantly improving the delivery of business benefits from IT investments (see Appendix 1 for an overview of this research). Two core features of the approach are (1) clear identification of expected benefits and (2) a detailed plan, at the outset of the project, for realizing those benefits. This plan is then used to guide project implementation and to review progress and achievement both during the project and following its completion. An important element of the approach is involvement of key stakeholders in developing and executing the plan. These stakeholders are the business managers and users who must accept responsibility for changing how they work to make effective use of the new technical capabilities.[6] Many organizations that have adopted this approach have not only improved the success of their IT projects, but they have also significantly improved the relationship between their business and IT staffs.

FIVE PRINCIPLES FOR REALIZING BENEFITS THROUGH IT

Our analysis has led us to identify five principles that underpin the process of realizing value through IT.

Principle #1: IT Has No Inherent Value. Just having technology does not confer any benefit or create value. Unlike many other assets, such as precious gems or real estate, the value of technology is not in its possession. In fact, IT spending only incurs costs. Benefits result from effective use of IT assets.[7]

Principle #2: Benefits Arise When IT Enables People to Do Things Differently. Benefits emerge only when individuals or groups within an organization, or its customers or suppliers, perform their roles in more efficient or effective ways. Generally, these new ways of working require improving how information is used.[8] Technology can enable and shape such new

Benefits: An Empirical Study of Current Practice," *European Journal of Information Systems* (4), 1996, pp. 214-225. For the results of an Australian survey see Lin, C., and Pervan, G. "The Practice of IS/IT Benefits Management in Large Australian Organizations," *Information & Management* (41:1), 2003, pp. 31-44.

4 Nelson notes that *time*, *cost*, and *product* are process-based measures. He recommends also considering the outcome-based measures of *use*, *learning*, and *value* in evaluating IT investments. See Nelson, R. "Project Retrospectives: Evaluating Project Success, Failure, and Everything in Between," *MIS Quarterly Executive* (4:3), September 2005, pp. 361-372.

5 See Markus, M.L. and Benjamin, R.I. "The Magic Bullet Theory of IT-enabled Transformation," *Sloan Management Review* (38:2), 1997, pp. 55-68; and Hughes, A., and Scott Morton, M.S. "The Transforming Power of Complementary Assets," *MIT Sloan Management Review*, Summer 2006, pp. 50-58.

6 For an illustration of an organizational process for realizing the business value of information technology, see Kohli, R., and Devaraj, S. "Realizing the Business Value of Information Technology Investments: An Organizational Process," *MIS Quarterly Executive* (3:1), March 2004, pp. 53-68.

7 Soh and Markus present a useful theoretical model that explains the processes, steps, and ingredients needed to link IT investments to business performance. It highlights the criticality of the "use process". See Soh, C., and Markus, M.L. "How IT Creates Business Value," *Proceedings of the 16th Annual International Conference on Information Systems*, Amsterdam, The Netherlands, 1995, pp 29-41. For empirical evidence, see Devaraj, S., and Kohli, R. "Performance Impacts of Information Technology: Is Actual Usage the Missing Link?," *Management Science* (49:3), 2003, pp. 273-289.

8 See Davenport, T.H., Harris, J.G., Delong, D.W., and Jacobson, A.L. "Data to Knowledge to Results: Building an Analytical Capability," *California Management Review* (43:2), 2001, pp. 117-138; and Marchand, D.A., Kettinger, W., and Rollins, J.D. "Information

 © 2007 University of Minnesota

ways of working through redesign of intra- and inter-organizational processes or by facilitating new work practices.

Principle #3: Only Business Managers and Users Can Release Business Benefits. Benefits result from changes and innovations in ways of working, so only business managers, users, and possibly customers and suppliers, can make these changes. Therefore, IT and project staff cannot be held accountable for realizing the business benefits of IT investments. Business staff must take on this responsibility.[9] Getting business staff to acknowledge this principle is a key way to ensure that they become involved in so-called "IT projects."

Principle #4: All IT Projects Have Outcomes, But Not All Outcomes Are Benefits. This simple, yet profound, principle resonates with the reality that many IT projects produce negative outcomes, sometimes even affecting the very survival of the organization. The challenges for management are to avoid such negative outcomes and to ensure that the positive outcomes deliver explicit business benefits.

Principle #5: Benefits Must Be Actively Managed to Be Obtained. Benefits are not outcomes that automatically occur. Furthermore, the accumulation of benefits lags implementation; there can be a time gap between initial investment and payoff.[10] Therefore, managing for the benefits does not stop when the technical implementation is completed. Benefits management needs to continue until all the expected benefits have either been achieved, or it is clear they will not materialize.

THE BENEFITS MANAGEMENT APPROACH

Any approach to realizing benefits from IT investments must address the five principles just listed. Through our research, we have developed an approach that is simple to use, yet flexible enough to accommodate different investment contexts.

We define "IT benefits management" as *the process of organizing and managing so that the potential benefits from using IT are actually realized*. The term "benefits management" emphasizes the crucial point that benefits arise only from changes made by individual users or groups of users, and these changes must be identified and managed successfully. "*Benefits* realization" and "change *management*" are therefore inextricably linked. This is obviously the case when the project is explicitly an IT-enabled or "techno-change" program.[11] But it is also true in most contemporary IT projects, except perhaps pure infrastructure investments.

Producing a benefits realization plan begins with answering seven questions. The answers are used to develop both a robust business case for the investment and a viable change management plan to deliver the benefits. These questions focus on organizational and business changes, *not* on IT. The knowledge required to address these questions is unlikely to be found in any one individual. It will be distributed across a number of people, who must be brought together to provide the answers.[12]

The seven questions to produce a benefits realization plan are:

1. Why must we improve?
2. What improvements are necessary or possible? (Key stakeholders must agree to these improvements, which become the investment objectives.)
3. What benefits will be realized by each stakeholder if the investment objectives are achieved? How will each benefit be measured?

Orientation: People, Technology and the Bottom Line," *Sloan Management Review*, Summer 2000, pp. 69-80.

9 For more on *who* should be held accountable for IT value realization, see Tiernan, C., and Peppard, J. "Information Technology: Of Value or a Vulture?," *European Management Journal* (22:6), 2004, pp. 609-623. Kohli and Devaraj (2004) also highlight that IT payoffs are the responsibility of the entire organization.

10 Hitt and colleagues have demonstrated this time gap for enterprise systems. See Hitt, L.M., Wu, D.J., and Zhou, X. "Investing in Enterprise Resource Planning: Business Impact and Productivity Measures," *Journal of Management Information Systems* (19:1), 2002, pp. 71-98. See also Brynjolfsson, E., and Hitt, L. "Paradox Lost: Firm-Level Evidence on the Returns to IS Spending," *Management Science* (42:4), 1996, pp. 541-558. Managing through the lifecycle of an investment beyond any formal end of "the project" is also emphasized by Kohli and Devaraj (2004) in their organizational process model of IT value realization. Goh and Hauffman have proposed the beginnings of a theory that addresses latency. See Goh, K.H., and Kauffman, R.J. "Towards a Theory of Value Latency for IT Investments," paper presented at the *38th Hawaii International Conference on Systems Science*, January 2005.

11 IT-enabled change has been referred to as *technochange*. See Markus, M.L. "Technochange Management: Using IT to Drive Organizational Change," *Journal of Information Technology* (19:1), 2004, pp. 4-20.

12 In a study of ERP implementation projects, Newell and colleagues noted that "[a] project team, set up to design and implement a large-scope IT system, is essentially tasked with integrating distributed knowledge." See Newell, S., Tansley, C., and Huang, J. "Social Capital and Knowledge Integration in an ERP Project Team: The Importance of Bridging AND Bonding," *British Journal of Management* (15), 2004, pp. S43-S57.

© 2007 University of Minnesota

4. Who owns each benefit and will be accountable for its delivery? (The benefit owner will be responsible for the value assigned to the benefit in the business case.)
5. What changes are needed to achieve each benefit? (The key to realizing benefits is identifying explicit links between each benefit and required changes.)
6. Who will be responsible for ensuring that each change is successfully made?
7. How and when can the identified changes be made? (To answer this question, the organization must assess each stakeholder group's ability and capacity to make the identified changes.)

The benefits management approach includes a set of linked tools and frameworks[13] that help organizations use their collective knowledge to develop answers to these questions and produce the benefits realization plan. Once this assessment is complete, and the feasibility of achieving the target benefits thoroughly tested, then the business case for funding can be put forward. The likelihood of the benefits actually being realized increases because the business case is supported by a comprehensive benefits-delivery plan.

Identifying the Different Types of Investments

Our research has found that organizations can increase the likelihood of realizing benefits from IT investments by separating out the different causes of benefits before developing the implementation plan. Approaches to implementation will differ depending on the nature of the change or intervention involved. We use the term "intervention" to make it clear that the way business is currently conducted and how people work will have to change if the benefits are to be achieved.[14]

We have identified two distinct types of intervention: *problem-based* and *innovation-based*.[15] Both are likely to be present in large-scale IT projects, but the issues that need to be managed in each differ, and the impact of changes on employees and other stakeholders also differs.

The differences between the two can be seen by considering the *ends, ways,* and *means* of the project at hand. We define *ends* as the target improvements, *ways* as how the business needs to change, and *means* as the enabling IT capabilities. We view problem-based interventions as *ends*-driven because the goal is the target improvements. We view innovation-based intervention as *ways and means*-driven because the goal is to discover better *ways* of working by utilizing IT (the *means*). The intervention type needs to be determined when the objectives, or expected performance improvement targets, are set.

Problem-based Interventions. In this *ends*-driven implementation, the improvement targets form the basis of the business case and ROI calculations. When the investment is problem-driven, setting targets is appropriate. The organization can usually identify and quantify the benefits of removing known problems through new IT *means* and new *ways* of executing business processes and activities. The main challenge is agreeing on the best combination of *ways* and *means* for accomplishing the improvements. One example of an *ends*-driven implementation is a global financial system built by a major accounting firm. The goal was to remove the delays in closing the firm's year-end accounts and in producing consolidated billing for its global clients.

Thus, in problem-based interventions an organization invests in IT primarily to improve performance to:

- Overcome an existing disadvantage against competitors.
- Prevent performance from deteriorating in the future to a level that would put the organization at a competitive disadvantage.
- Achieve stated business targets.
- Remove constraints that are preventing opportunities from being taken.

Examples of problem-based interventions include integrating customer data to provide a single point-of-contact for customer inquiries, implementing ERP to remove reconciliation problems between production and finance, providing employee self-service applications via a portal to reduce administration and purchasing costs, and providing laptops to a mobile sales force to increase the accuracy of quotations to customers.

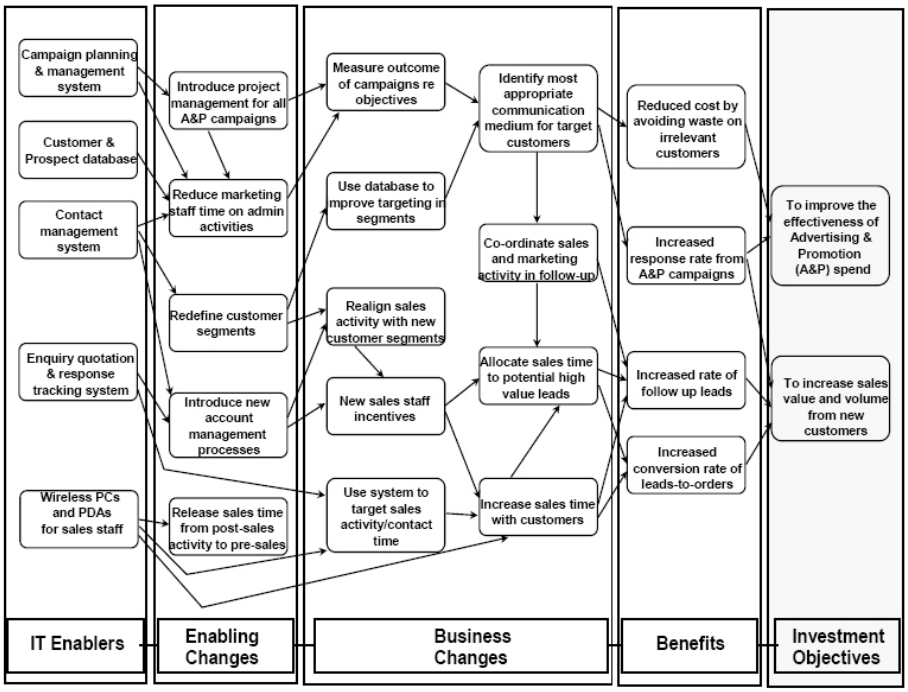
13 More details about the complete process, tools, and techniques can be found in Ward, J., and Daniel, E. *Benefits Management: Delivering Value from IS and IT Investments*, John Wiley & Sons, Chichester, 2005.

14 The purpose of an intervention is to specify and act upon the change that delivers a particular outcome. For further information see Ward, J., and Elvin, R. "A New Framework for Managing IT-enabled Business Change," *Information Systems Journal* (9), 1999, pp. 197-221; and Checkland, P., and Scholes, J. *Soft Systems Methodology in Action*, John Wiley & Sons, Chichester, 1990.

15 For more details of this research, see Peppard J., and Ward, J. "Unlocking Sustained Business Value from IT investments," *California Management Review* (48:1), 2005, pp. 52-70.

© 2007 University of Minnesota

Figure 1: A Partial Benefits Dependency Network (BDN) for the New CRM System at a European Paper Manufacturer



Innovation-based Interventions. In these interventions, an organization has difficulty specifying the *ends* because it is uncertain that the new IT capabilities and the business changes can be implemented successfully. Consequently, the benefits the changes will actually deliver are not clear. The business value realized from innovation-based investments therefore depends on the organization's ability to identify, create, and successfully implement advantageous new *ways* of conducting business and new IT *means*. The uncertainty implies that the objectives and scope may well change during implementation, as the organization learns more about what can and cannot be achieved, and how. A potential issue with IT-enabled innovations is that the organization pays too much attention to what the technology can do, rather than to the changes the organization needs to make to exploit the technology.

In an innovation-based intervention, an organization invests in IT to exploit a business opportunity, to create potential competitive opportunities, or to build new organizational capabilities by:

- Doing something new using IT,
- Doing something in a new way using IT,
- Using new IT to do something the organization could not do before.

In all these situations, the innovation depends on the combination of the technology, the organization's technical expertise, and the organization's ability to make effective use of the new capabilities. Examples include creating an on-line sales channel to reach new customers, introducing vendor-managed inventory for key suppliers, allowing customers to undertake self-billing, deploying a data warehouse and analytics to automate operational decision making, and giving employees mobile technologies to work on-line from anywhere.

THE BENEFITS DEPENDENCY NETWORK

A core tool for addressing the seven questions and constructing a benefits realization plan is a Benefits Dependency Network (BDN). The BDN provides the framework for explicitly linking the overall investment objectives and required benefits (the *ends*) with the business changes (the *ways*) necessary to deliver those benefits and the essential IT capabilities (the *means*) that enable these changes.

As an example, part of a BDN for a CRM application at a large European paper manufacturer is shown in Figure 1. The company sells its high-quality papers and paper-based packaging materials via distributors to printers, large corporations, and packaging

© 2007 University of Minnesota

manufacturers. To increase sales, the company relies on advertising and promoting (A&P), especially targeted marketing campaigns, in which samples and marketing collateral are mailed to customers. These mailings are then followed up by either a visit from a salesperson or a telephone call from the sales office. On average, the company carries out some 50 such campaigns a year to its 6,000 end customers. The total cost is about 20 million euros ($15 million).

Two objectives for the company's CRM investment were agreed on: (1) to improve the effectiveness of A&P expenditures (defined as the ratio of generated sales revenue/A&P costs) and (2) to increase sales volume and value, particularly from new customers. The company expected a number of benefits from achieving both, including:

1. Lower costs, by avoiding wasted mailings and product samples sent to 'irrelevant' customers,
2. Higher response rates from the targeted marketing campaigns,
3. Increased follow-up of leads generated by the campaigns, and
4. Increased conversion rates of leads to sales.

The BDN was constructed during a series of workshops with the central IT staff and the sales and marketing managers from the 15 countries in which the company operates. To develop the BDN, the team worked backwards—from right-to-left—from the agreed investment objectives and benefits identified by the sales and marketing managers, through the required changes to how staff work, to the required new IT that would enable these new ways of working.

This right-to-left approach is appropriate for most IT investments and is an important feature of the BDN. It ensures that investments are driven by *business demand*, shown on the right-hand side of the network, rather than *IT supply* on the left, which has traditionally driven many projects. This right-to-left working also ensures that investments in IT are only made when they will provide explicit business benefits. However, as will be discussed later, innovation-based investments often require some evaluation of the technology before the objectives and benefits can be clearly stated.

Changes identified in the BDN can be categorized into two types: business changes and enabling changes. *Business changes* are permanent changes to working practices, processes, or relationships. Normally, these changes cannot be made until the new IT capabilities are available for use and other necessary enabling changes have been made. In the case of the European paper manufacturer, "allocating more sales time to contact potential high-value customer leads" required the new IT system and other enablers to be in place.

In contrast, *enabling changes* are typically "one-off" changes that are pre-requisites for making the business changes or bringing the new system into effective operation. Enabling changes involve such tasks as defining and agreeing on new working practices, redesigning processes, agreeing on changes to job roles and responsibilities, establishing new performance management systems, and training in new business skills. The enabling changes needed at the paper company included such tasks as training staff on how to use the new system, redefining customer segments, and agreeing to a new sales account management process, to ensure that rewards would reflect the increased attention to new or high-value customers.

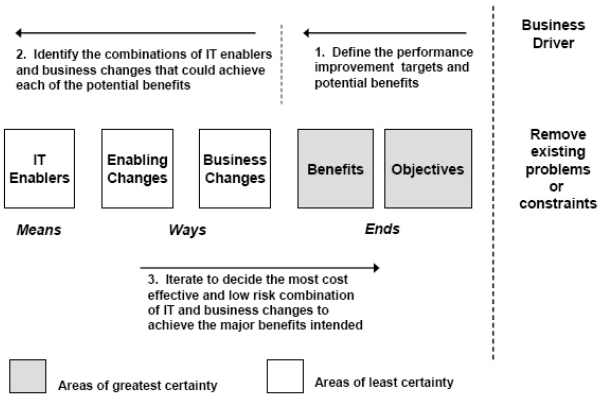
Once the initial BDN has been constructed, measures for each benefit, responsibilities for achieving all the benefits and implementing all the changes, and timeframes must be established. In a major U.K. bank, managers must personally sign the business case for each benefit, to show their commitment to realizing each one. These benefits are then included in their future targets.

Organizations also need interim metrics, to assess progress across the range of changes. These interim measures can also be linked to staff compensation. A global pharmaceutical company, for example, developed a BDN to implement a shared service center across 13 European countries. Reaping the savings, though, depended on standardizing many administrative applications *and* introducing common IT service processes across all the units. To ensure success, the six-month performance objectives for all managers included their portion of the change activities identified in the BDN, including rationalizing existing applications and services and transferring them to the new center.

For the paper manufacturer, the resulting BDN highlighted how individuals and groups had to change the way they worked, individually and collectively. Managers from across the organization were involved in building the BDN, which helped them see interdependencies among required changes and realize how they had to work together to bring about those changes. The result was more realistic planning on how they would actually realize the benefits.

 © 2007 University of Minnesota

Figure 2: Developing a Benefits Dependency Network for a Problem-based Intervention



Building a BDN has also helped a number of organizations avoid unnecessary IT expenditures. They discovered they could achieve the benefits by merely changing current working practices or by using existing systems more effectively. For example, to optimize its use of resources, a U.K. health trust consisting of five hospitals considered implementing a new system to schedule and coordinate bed allocations across its five sites. In the process of developing the BDN, though, the health trust discovered that although all five used the same IT system, their processes and practices differed significantly. By simply making those practices consistent, the trust reached its goal of increasing capacity by 15%, without incurring the IT costs. The trust spent the £300,000 ($600,000) on new medical equipment instead, which reduced patient wait times.

Some organizations have also used the BDN to scope individual work packages on large-scale projects. By identifying all the necessary changes to deliver a particular set of benefits, one insurance company created sub-projects, which were then implemented on a phased basis. Each sub-project concentrated on achieving particular "benefit streams," providing focus for this complex project. This approach contrasts with the typical approach of creating phases based on technical components rather than business benefits.

When an organization finds it cannot complete a BDN, this may indicate that the expected benefits are not achievable. Alternatively, such incompleteness may signal the need to undertake a pilot project, to identify required changes and assess the feasibility of benefits. If a network ultimately cannot be constructed, then the investment should not be made because the analysis indicates that the benefits will not be obtained.

Benefits Dependency Networks for Problem-based and Innovation-based Interventions

Our research found that the process for constructing a BDN depends on whether the intervention is problem-based or innovation-based. And, to complicate matters, large IT investments, such as rolling out an ERP system globally, will probably include both types.

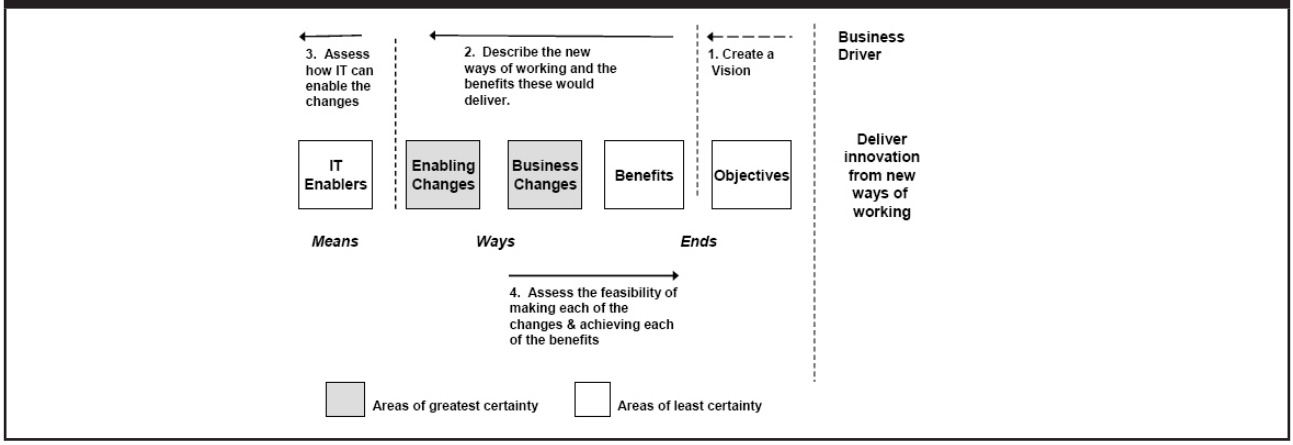
Developing a BDN for a Problem-based Intervention. The primary purpose for constructing a BDN for a problem-based investment is to identify the most cost-effective and lowest-risk combination of IT and business changes to achieve the defined improvements—that is, to achieve the desired *ends*.

To define and agree the best mix of changes, an organization must first define the improvement targets, as precisely as possible, shown in Step 1 in Figure 2. (The shading in the boxes in this step indicates that these *ends* are the areas of the greatest certainty, which is why they are the starting point.) These problems or constraints, which need to be removed, form the objectives for the investment. The organization then needs to define the benefits, who will own each benefit, and how each benefit will be measured.

The organization can then analyze current processes and ways of working to identify possible combinations of business changes and IT functionality that could deliver these benefits, as shown in Step 2 in Figure 2. It's best to emphasize use of existing systems or off-the-shelf software to avoid new IT development or extensive customization. The preference should be to change business processes and procedures, and even people's roles and responsibilities, wherever possible, to reduce technology costs and risks. After some iteration (Step 3), the objectives and benefits are then finalized for the preferred option and a full business

© 2007 University of Minnesota

Figure 3: Developing a Benefits Dependency Network for a Ways-based Innovation Intervention



case is developed by quantifying the expected levels of improvement and their financial values.

At the European paper company, this careful analysis revealed the following causes of ineffective targeted marketing campaigns:

1. Marketing staff had difficulty selecting relevant customers because the database was poorly structured.
2. Responses were inconsistently followed up, and the database was not always updated with the responses received.
3. Coordination of campaigns across lines of business was poor, so customers could be either inundated with mailings or neglected for long periods of time.
4. Campaigns did not consider the expected level of wasted mailings, and this waste was not measured.
5. Most campaigns ran later than planned, so sales management could not synchronize and optimize sales activities across campaigns.

As a result, relations between the sales and marketing staff were often tense. Each blamed the other for the low sales-to-expenditure ratio.

The company addressed the campaign planning problem by implementing a project management approach and a common process for all campaigns, supported by simple software. The schedules and progress of all campaigns became visible to everyone.

The company realized it could save about 40% of its direct costs of A&P. In the first year, it saved 3 million euros ($2.2 million) by changing how sales and marketing staff worked and by extending existing systems, while achieving the same level of responses as previously.

Developing a BDN for an Innovation-based Intervention. The main purposes in building a BDN for an innovation-based investment are (1) to understand how a combination of technology and organizational changes might allow the organization to pursue an opportunity to gain a competitive advantage, and (2) to identify what the organization needs to do to gain that advantage. Developing the network for innovation-based implementation is inevitably iterative because the benefits are difficult to define up front. They depend on the nature of the changes the organization is willing to make (the *ways*) and its ability to develop and deploy new technology (the *means*).

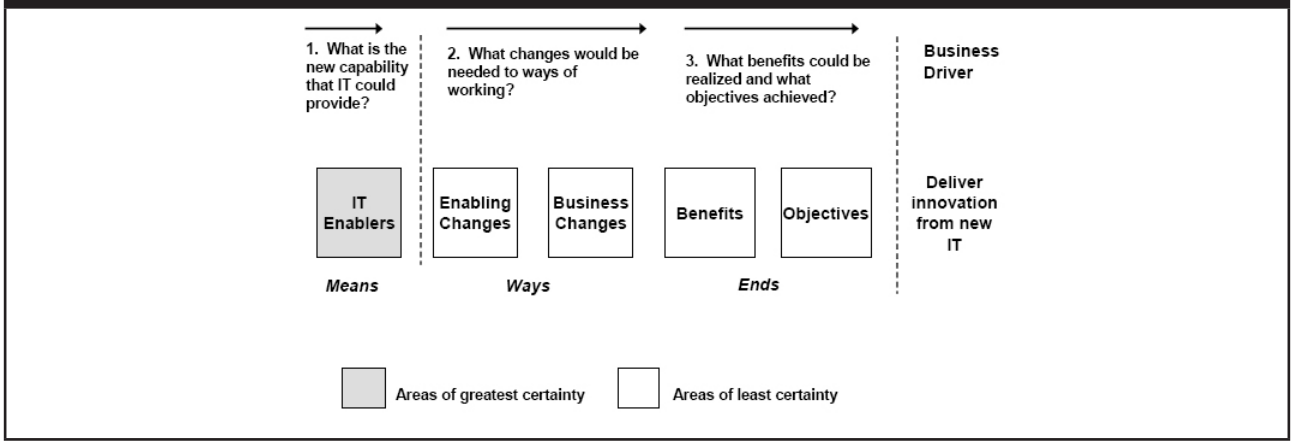
Two types of innovation-based interventions exist. Both aim to create competitive advantage. The first is *ways*-driven. The second is *means*-driven.

Ways-driven innovation. These investments exist when an identifiable opportunity is spotted. The BDN is developed to assess whether or not the organization can make the necessary changes to gain advantage from that opportunity. With these interventions, an organization should begin by creating a "vision" that describes the nature of the advantage, as shown in Step 1 in Figure 3. This vision encompasses a set of initial objectives that 'paints a picture' of the future situation, as if the advantage had already been gained.

Step 2 involves identifying the potential business benefits and the types of business changes needed to achieve those benefits. Being an innovation investment, many of the changes will be new processes, new competencies, and redefined responsibilities needed to work in the new ways. The best technology *means*

 © 2007 University of Minnesota

Figure 4: Developing a Benefits Dependency Network for a Means-based IT innovation Intervention



to enable each business change is then assessed. So, like a problem-based implementation, the process for building a BDN for a *ways*-driven investment is right-to-left.

As an example, a telecom equipment supplier realized that to offset the decreasing margins on its hardware and software, it needed to increase revenues from its service operations. But it could do so only by providing high levels of support to its customers. From discussions with its largest customers, the supplier learned that the potential revenues could be several times higher than it had anticipated *if* it could service other suppliers' equipment, as well as its own—in one contract. But the supplier could not afford the risk of creating a large force of service engineers.

Its solution was to work a new *way*: it created a national service network of several hundred independent qualified engineers. Such a network would allow it to guarantee 24x7 coverage on almost all equipment types—and ask a premium price. Developing this new type of networked service required the supplier to think less internally and to use IT to create new relationships and ways of working with both its customers and other suppliers. The core of the network is a new service management system (a new *means*) that links the supplier and its customers directly to the independent engineers. The quality of service the network delivers has also given the supplier the opportunity to increase the sales of its own products.

Means-based innovation. These investments exist when a new technology appears to offer opportunities to create an advantage. Radio-frequency identification (RFID) and business process management software are two examples. Such investments need to focus on the types of potential business opportunities, of course, but they must also balance this business view with an understanding of the capabilities of the new technology and the business changes required to exploit the capabilities.

Therefore, unlike all the other types of IT investments, the process for analyzing *means*-based innovation investments progresses from left-to-right. It begins with an assessment of the technology, as shown in Step 1 in Figure 4. Innovations based on new technology are inherently risky. So this technology evaluation should include a pilot study. It should not only evaluate technical feasibility (Step 1) but also confirm the magnitude of the expected benefits and the organizational changes required to deliver those benefits (Step 2). From there, the organization can agree on the overall objectives of the project—Step 3.

At the European paper company, the increase in sales through better conversion of leads required completely new systems and new ways of working for the sales staff. In particular, the sales staff would now be *directed* to the customers to visit, based on the responses received in the targeted marketing campaigns. The incentive portion of their pay would depend on the success of these visits. The company also needed to ensure that this new approach did not jeopardize its relationships with existing customers, so it used its telesales channel to maintain contact with them to compensate for the less-frequent personal visits from the sales staff.

Once the paper company identified how it would shuffle its resources to address customer contacts more efficiently and more effectively, it needed to determine whether or not the improved campaign targeting would actually deliver more sales per campaign. To find out, the company conducted a four-month pilot and compared the results to the same campaign run

© 2007 University of Minnesota

traditionally in a different country. After allowing for the effects of the extra effort and enthusiasm by the staff in the pilot, it was clear that the pilot's sales were at least 20% higher than the control group's sales. One year after implementation, campaign-based sales increased by 15%—16 million euros ($12 million)—and in year two, they increased by a further 12 million euros ($9 million).

THE BENEFITS OF BENEFITS MANAGEMENT

The benefits management approach described here has now been used by well over one hundred organizations across the world. In addition to its use by large organizations, it has been used successfully in many smaller firms. One example is a family-owned publishing firm that used it to explore the benefits and implications of developing an e-commerce offering to distributors and major retailers. Its conclusion was that it needed to change both marketing and customer account management strategies before launching new on-line services.

The approach has also been used widely in the public sector, including healthcare, defense, police, and taxation. Commonly, the approach is used to increase the involvement of managers and professionals in large IT projects, to ensure that investments are driven by the needs of the agency and its external stakeholders—rather than be driven by the technology. In fact, the State of Queensland, Australia, has adopted this benefits management approach as the basis for the "best practice framework" for all its IT investments. And one European government is introducing it to improve the management of its IT investments.

Our research and the experiences of those organizations using the benefits management approach have found that its use leads to the following:

Clearer Planning. Developing a BDN results in a clear statement of the benefits expected from an investment and the activities and IT capabilities required to achieve those benefits. This clarity allows more accurate planning for implementation, as well as for the future performance of the organization when the benefits come on-stream.

Improved Relationships Between IT and Business Staff. The benefits management approach encourages a range of staff to work together because no single individual or group has all the knowledge necessary to identify all the benefits, changes, and IT enablers. A completed BDN also shows how different groups need to work together to achieve the desired benefits, which helps build mutual respect among groups. As one manager in a telecom equipment manufacturer observed, "Benefits management was the one thing that did the most to improve the relationship between our IT staff and their colleagues in the business."

Wiser Investments. Benefits management has been used to not only increase the value of investments but also avoid spending money on projects that would not have delivered the desired benefits. For example, a top-five global pharmaceutical company used the approach to rationalize and optimize its IT investments following its formation from the merger of two large firms. By developing a BDN for all the major projects underway in both firms, management could identify duplicate projects, ensure effective joint working on common projects, and prioritize essential projects to ensure that the expected benefits of the merger were achieved as early as possible.

Likewise, a chemical company developed BDNs to review and prioritize all requested IT investments in its two-year strategic plan. The review revealed that nearly 50% of these projects were unlikely to deliver any worthwhile benefits. The company therefore concentrated its investments on those that would produce a significant return from its $20 million IT development budget.

Increasing the Benefits Realized. Finally, and perhaps most importantly, both our research and the experience of many organizations show that this benefits management approach greatly increases the likelihood of the benefits expected from IT investments being realized, which, after all, is the sole reason for the investments in the first place.

ABOUT THE AUTHORS

Joe Peppard

Joe Peppard (j.peppard@cranfield.ac.uk) holds the Chair in Information Systems at Cranfield School of Management where he is Director of the Information Systems Research Centre and leads the school's IT Leadership Programme, an executive education program for chief information officers (CIOs). His research and teaching focus on information systems strategy and management, and he has published widely in these areas. His most recent books include *Strategic Planning for Information Systems* (John Wiley) and *Customer Relationship Management: Perspectives from the Marketplace* (Butterworth-Heinemann).

 © 2007 University of Minnesota

He is European Editor of the *Journal of Information Technology* and an Editorial Board Member of the *European Management Journal*.

John Ward

John Ward (j.m.ward@cranfield.ac.uk) is Professor of Strategic Information Systems at Cranfield School of Management at Cranfield University in Bedford, U.K. He has published many papers in leading journals, including *California Management Review* and is co-author of the books, *Strategic Planning for Information Systems* and *Benefits Management: Delivering Value from IS & IT Investments*. Prior to joining Cranfield, he worked in industry for 15 years, the last three as systems development manager at Kodak Limited. He is a consultant to major international and public sector organizations. He has a degree in Natural Sciences from Cambridge, is a Fellow of the Chartered Institute of Management Accountants, and is a past-president of the U.K. Academy for Information Systems.

Elizabeth Daniel

Elizabeth Daniel (e.m.daniel@open.ac.uk) is Professor of Information Management at the Open University Business School in Milton Keynes, U.K. She has published more than 30 papers in journals in the IS field and is co-author of *Benefits Management: Delivering Value from IS & IT Investments* with John Ward. Prior to joining the Open University, she was at Cranfield School of Management for six years. Before joining academia, she worked in industry, most recently as a management consultant. She has a degree and a Ph.D. in Physics from Manchester University and an M.B.A. from London Business School.

APPENDIX 1: ABOUT THE RESEARCH

This paper is based on three related research projects conducted at the Information Systems Research Centre at Cranfield School of Management. The first was a longitudinal study that explored how organizations could realize business benefits and value from their investments in IT. The researchers worked with 20 large organizations in both public and private sectors in the U.K. The key findings of the study can be found in Ward, J., and Peppard, J. *Strategic Planning for Information Systems*, 3rd Edition, John Wiley and Sons, 2002, and in Ward, J., and Daniel, E. *Benefits Management: Delivering Value from IS and IT Investments*, John Wiley and Sons, 2006.

The second project was a study of customer relationship management (CRM) projects in a variety of organizations and business sectors. Case studies were undertaken in 15 companies. The findings of this study have been published in Knox, S., Maklan, S., Payne, A., Peppard, J., and Ryals, L. *Customer Relationship Management: Perspectives from the Marketplace*, Butterworth-Heinemann, Oxford, 2003, and Maklan, S., Knox, S., and Peppard, J. "The Missing Link of CRM Profitability: Building Marketing Capabilities," *California Management Review*, under review.

The third project studied the particular change and organizational issues associated with the successful deployment of enterprise systems. The project included five in-depth case studies of different types of enterprise-wide systems. The findings are published in Ward, J., Hemingway, C., and Daniel, E. "A Framework for Addressing the Organizational Issues of Enterprise Systems Implementation," *Journal of Strategic Information Systems*, 2005, and in Peppard, J., and Ward, J. "Unlocking Sustained Business Value from IT Investments," *California Management Review,* 2006.

© 2007 University of Minnesota

Copyright of MIS Quarterly Executive is the property of MIS Quarterly Executive and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.