



TOOLS AND RESOURCES FOR FINANCIAL EXECUTIVES

A Step Ahead

Economist Erik Brynjolfsson leads the charge toward a greater appreciation of IT.

[A CFO Interview](#), CFO IT

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For the past 15 years, Erik Brynjolfsson, the George and Sandi Schussel Professor of Management at the Massachusetts Institute of Technology's Sloan School of Management, has been studying the economic impact of corporate IT investment and, more recently, the strategic drivers behind E-business. As a longtime believer in the power of IT to improve business productivity, he has at times been something of a lone voice in the wilderness; only recently has economic data seemed to confirm his optimistic view. Co-director of the Center for eBusiness@MIT, co-editor of the Ecommerce Research Forum, and co-editor of *Strategies For e-Business Success* (Jossey-Bass, 2001), he recently sat down with *CFO IT* editor Scott Leibs to discuss IT's contribution to the bottom line.

Does the debate still rage as to whether the massive investments that companies have made in IT have resulted in greater productivity?

For much of the 1990s, people were still very skeptical about IT's overall impact on the U.S. economy, but my sense is that most economists, from Alan Greenspan on through the academic and business economists, would agree that a big part of the productivity resurgence that the United States has experienced since the mid '90s can be linked quite directly to investments in information technology. I presented a series of analyses that showed that computers were contributing quite significantly to productivity growth, and I feel a little bit vindicated. There's still [some] debate about its overall impact, and there will always be a debate — there should be — about specific projects and technologies.

To what degree can one quantify the benefits?

I think that there are myriad ways. One of the special characteristics of information technology is that it's what economists call a general-purpose technology that can be used in so many different ways. Much of the benefit depends on the co-invention of new uses by users themselves. So when somebody installs an ERP system to reduce inventories, there's a first order of benefit there, but often the bigger benefit comes when the managers who work with it learn more about how to interface with their suppliers and their customers and understand their product line better and make decisions that build off that. You can go through lots of industries and see changes in, say, retailing with efficient consumer response and vendor-managed inventory, and in banking through a whole host of services, but each of them is different, not just by industry but even at the level of individual firms.

Does much of the productivity gain come from reducing head count?

A lot of the easiest-to-measure parts do, although those reductions often don't happen until there's some kind of pressure on the organization. (**Editor's note:** Benchmark the cost-management performance of your company, or thousands of public companies, with the [CFO PeerMetrix interactive scorecards](#).) Time after time you see companies install systems but not actually make the cuts that are possible until they're under some kind of external pressure, and then they find that they can operate with fewer people. But I would caution managers, including CFOs, to not fall into the trap of overemphasizing easy-to-measure benefits such as staff cuts and cost reductions. In our analysis, we found that the companies that emphasize more customer-facing applications — things like improved customer service and responsiveness, handling greater product variety and faster timeliness, those kinds of benefits — ultimately lead to significantly greater shareholder return on average than the ones that are focused purely on cost-cutting and management control. The difficulty of course is that many of the customer-facing uses are not as easy to quantify, and that can be very frustrating for numbers-oriented people.

So frustrating that companies often don't try.

Well, the other danger is making investments in these systems without having any goals at all, just buying them on blind faith, and I certainly don't advocate that, either. What works best is fairly hard, which is to try to document some of the intangible benefits and understand those, as well as the tangible cost savings.

In our studies, we found that up to 90 percent of the benefits are in intangibles. We're still at the early stages of coming up with a systematic program for allowing companies to track these intangibles more accurately, but it's an agenda that I think bears a lot more attention in the coming years.

If evidence supports the view that at the macro level IT investments do boost productivity, does that take some of the pressure off as far as applying ROI analysis to specific projects?

I'm a big believer in applying ROI to projects. One of the things that was disappointing in my research when I went out to talk to companies was how few companies really tried to carefully do ROI analysis. Even rarer were companies that did post audits and went back to see whether or not the promised benefits actually materialized and how they compared with costs.

The overall rise in productivity in the U.S. economy is an aggregate phenomenon that masks a tremendous amount of individual variation. We looked at firm-level data from 800 large firms over a 10-year period. It was clear that there was a positive correlation between information technology and overall productivity performance. But what also was clear was that there were hundreds of firms that had disappointing performance, despite spending heavily on IT. IT is only one factor. It's an important factor and it's one that on

average is clearly [associated] with greater performance, but the individual management of the technology and the investments in the complementary organization changes are at least as important if not more so.

Sounds like a role for the CFO. What kinds of organizations make the most of their technology investments?

Several things seem to explain a big part of the difference in performance between the successful users of IT and the less successful users, but those organizational issues don't get the same attention as the technical investments. There's a culture that is common in the more successful users — you can call it an Internet culture or a technology-oriented culture — that involves more open communication and sharing of information and individual responsibility for tasks. There's more lateral communication. There's more sharing of information vertically as well, but it's often more in a coaching way as opposed to a command-and-control approach.

Do corporate-culture issues intersect with ROI analyses in any way?

The most successful companies involve business-unit managers, and in some cases even customers and suppliers as they try to understand more broadly how IT can benefit the organization. As one example, look at Wal-Mart's use of information systems to coordinate with suppliers. It might be hard to point to an individual worker who is dramatically more effective. You can find some, but the vast majority of benefits come from shifting decision-making responsibility, ownership of inventory, and whole flows of materials and information, even across firm boundaries.

Let me be a little bit more concrete. One person might look at bar-code scanners and think of them as labor-saving devices. If you were to tout that up, you might come up with one kind of an ROI, but you would really miss the boat, because most of the benefits from those systems come from the way they allow you to track inventory and share that information with suppliers and change the way you do business, not from having the checkout person be able to check people out faster.

Yet given the current emphasis on immediate and "guaranteed" return, a CIO who argues, "We'll have historic data that we can share with suppliers," might encounter a CFO who says, "Well, who knows how that will play out?" and insists that ROI remain focused on labor-savings.

I see that happen all the time. Both parties end up sometimes gaming the system a little bit. You've got CIOs who knowingly inflate the labor-savings because they feel that this is still a good project because it has other intangible benefits that aren't so easy to convey quantitatively, and CFOs who set the bar too high because they expect some padding. Of course that's a very destructive kind of a culture to develop — where the parties aren't being open and honest with each other.

Do you think CFOs are too dubious of the ultimate value of IT?

I think it's appropriate for CFOs to look at each new investment with a degree of skepticism, but they also have to have the guts to pull the trigger and make those investments when it looks like there is an opportunity to get some real advantage and provide better customer service. While that's risky, to some extent there are even bigger risks from not doing it, and you can mitigate the risks by having a portfolio attitude. CFOs are quite familiar with the concept of portfolio management — that you make investments of different kinds with hopefully offsetting risks. Some may pan out beyond your hopes and others may be complete failures, but if you don't invest at all, then you're guaranteed not to be able to keep up.

Companies seem to whipsaw between viewing IT as a source of major differentiation — "strategic advantage" — and begrudgingly viewing it as a cost of doing business. Is there a middle way?

They should think of it not as a cost of doing business or as an isolated investment to make or not make, but rather as a catalyst or an enabler, as a tool that makes you think about how you can do things differently. That is the formula for success. Some of those new ways of doing business might involve the same levels of technology spending as you have now, or less.

Some of your work at the Center for eBusiness is focused on how companies can use the Internet to supply customers with information not just about their own products and services, but their competitors' as well. That sounds like a marketing person's worst nightmare.

The gain in trust can more than offset any loss of confidence in the products and ultimately lead to more sales. And we're finding that such a platform, which does require a lot of very sophisticated Internet tools, would allow you to identify new product opportunities. When customers are describing the kind of car they want, for example, the manufacturer may discover gaps in their product line and say, "Hey, if we could have had a product in this space, which maybe we don't have — maybe nobody has right now — we would be able to deliver more customer value and actually make more sales." Once you have a platform that interacts with customers, you can also use it to change other parts of your business, like product design.

Despite those opportunities, I can understand why a company might hesitate to provide detailed — and presumably accurate — competitive comparisons on their Web sites.

Companies have to consider that, "Maybe we don't have the best product in all of these categories. What are we going to do about that?" I think the only response in the long run is, "Well, we'd better make the best product. We'd better find a way to deliver value," because one thing that's very clear is that the Internet is making it harder and harder for companies to hide from their customers; information is flowing more and more freely. That's good news if you have superior products. Historically, ignorance and geography have provided a layer of insulation from the marketplace, but we're seeing an accelerated Darwinism. It's going to put more and more of a premium on delivering customer value and less and less of a premium on trying to obfuscate or get short-term competitive advantage that isn't grounded in the quality of the products and services of the firm.