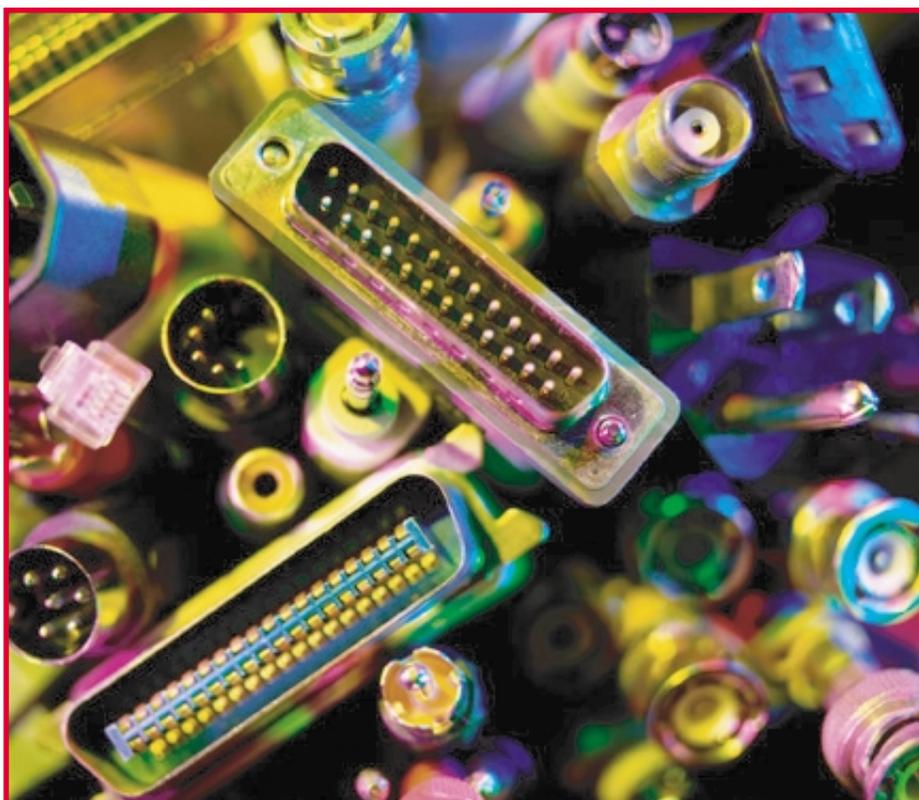# The new business imperative
Using the Internet to boost your bottom line

An e-briefing from the Economist Intelligence Unit

Written in co-operation with
Oracle

Symbols for tables

"n/a" means not available; "-" means not applicable

The Economist Intelligence Unit/ Oracle e-briefing series

The new business imperative: Using the Internet to boost your bottom line is the first in a series of three "e-briefings" that the Economist Intelligence Unit is writing in co-operation with Oracle Corporation. Two further reports, *Building a seamless e-business* and *Building a smart company: Leveraging business intelligence for competitive advantage,* will be published over the next few months.

The Economist Intelligence Unit bears sole responsibility for the content of the report. The Economist Intelligence Unit's editorial team conducted the interviews and online survey and wrote the report. John Edwards was the main author.

Oracle, the report's sponsor, worked together with the Economist Intelligence Unit to determine the line of enquiry. A number of Oracle senior executives took part in interviews that helped to define the main questions the report aimed to answer. Particular thanks go to Jeff Henley, CFO and executive vice-president, Jeremy Burton, senior vice-president for products and services marketing, Gary Roberts, senior vice-president for global information technologies, and Tony Kavanagh, senior director for e-business marketing. Nicole Valencic, senior product marketing manager at Oracle, and Marianne Kirchner, vice-president at Grey Global Group, helped to keep the process moving and the project on focus.

Our deepest gratitude is due to the dozens of executives who shared their insights on e-business during in-depth interviews. Our thanks go as well to the 144 respondents who participated in our online survey—details on their geographical distribution and titles are presented in the figures below.

Respondents' location
%

- Middle East/Africa (9)
- North America (28)
- Asia-Pacific (28)
- Latin America (9)
- Europe (26)

Source: Economist Intelligence Unit survey, July 2001.

Respondents' title
%

Title	%
CEO/COO/Managing director	29
CFO/Treasurer/Comptroller	3
CIO/Technology director	3
Director of marketing	8
Director of sales	1
Director of planning	3
Research manager	3
IT manager	4
Other manager	21
Information specialist/Analyst	8
Journalist/Writer	2
Government official	1
Academic	3
Other	9

Source: Economist Intelligence Unit survey, July 2001.

Contents

Executive summary

The economic downturn in the US and the dotcom collapse have forced executives to concentrate with renewed resolve on the bottom line. "New economy" models of revenue growth have been discredited, and cost-benefit analysis and other traditional business yardsticks have returned with a vengeance. As companies struggle to stay afloat in a tougher environment, cost savings have soared to the top of the corporate agenda.

Not a promising environment, then, for fresh investments in Internet technology? Hardly. As argued in this "e-briefing", written by the Economist Intelligence Unit in co-operation with Oracle, executives have come to see the Internet as a vital tool to drive efficiency in their operations, both within the firm and in relations with customers and suppliers. Even where margins face extreme pressure, a determined push into e-business continues.

It's not about technology

While the dotcom debacle has not destroyed enthusiasm for the Internet, it has certainly inspired its share of caution—even fear. Executives are no longer willing to risk experiments. They want certainty that technology is working to support their business strategy, not the reverse. And they want specific examples of Internet-driven success stories before they decide to apply web technologies to their own operations.

This e-briefing is designed with that need in mind. Based on interviews with dozens of senior executives at major multinational firms across a range of industries, and drawing on a recent online survey of 144 companies, it explains how corporate leaders are using the Internet to cut costs and boost productivity, and how they measure success.

It reaches four main conclusions about how best to make cost savings work:

- Business strategy must come first. Companies need to avoid adopting technology for its own sake, as IT experiments can raise rather than lower costs.

- Squeezing real gains out of the Internet requires a willingness to rethink, then reinvent, entire business processes as they are transferred to the web.

- "Quick wins"—Internet-driven innovations that demonstrate a quantifiable pay-off over a short period—are crucial to maintaining corporate momentum.

- Top management—from the CEO on down—must push the process, delivering an unwavering message of support and removing roadblocks where necessary.

Companies that heed these lessons stand to benefit in several ways. Shifting business processes to the Internet can enable firms to reduce spending significantly on such matters as transaction costs, customer acquisition and expense report processing. It can also deliver less quantifiable operational benefits such

as improved morale and customer and supplier satisfaction. Though more difficult to measure, such benefits work to boost the bottom line indirectly, by improving productivity and burnishing the company's brand.

Expectations need to be kept in check, however. In order to save money, companies will first have to spend money, whether on new IT systems, redundancy payments for excess employees or corporate reorganisation. And here the risk—and the fear—is most pronounced: there's nothing inevitable about the pay-off from Internet investments. That is why executives need to examine the business process, along with the business model that underpins it, before grappling with the technology. Technology is a part of the equation, but the key decisions are strategic—and too weighty to be left to the IT department alone.
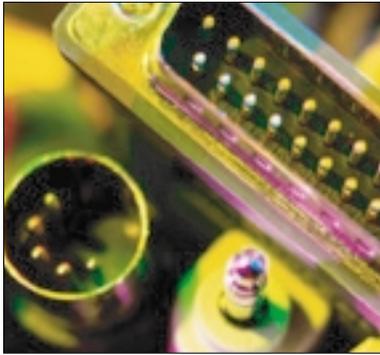
Introduction

Dotcoms aren't the Internet

The wild spending of failed online retailers such as Webvan and boo.com has given the Internet an image of profligacy and waste. But efficiency and thrift are more appropriate associations for mainstream business. Executives in traditional industries are quick to draw a distinction between the discredited dotcoms—with their illusions of boundless growth and cavalier disregard of sound business practice—and the Internet's promise to inject efficiency into established companies. Far from feeling gloomy about the Internet, a growing number of global corporations are taking advantage of the technology's potential to cut operating costs, boost productivity and create new business opportunities.

"Forget about the dotcoms with their 'new economy' plans," says Richard Radecki, director of e-business for Delphi Automotive Systems, who credits online auctions with saving his company $140m in material costs over the past three years. "We've learned that the Internet's real power lies in helping old-economy companies do things better and more efficiently."

Downturn fails to kill enthusiasm for the Internet

Delphi isn't alone. Delta Air Lines estimates that its Internet initiatives will save a total of $300m a year by 2003. "It's certainly not pocket change," quips Vince Caminiti, Delta's senior vice-president of e-business. While Mr Caminiti dismisses many of the failed dotcoms as "misguided experiments", he's not dismissing the Internet. "Here, if we can think of a way that the Internet can help us, we'll look into it and then use it," he says.

This enthusiasm extends across industries. At CIGNA, an Internet-based human resources self-service application has saved the insurance carrier over $200,000 in printing costs alone. "This is only the beginning," says David Gordon, CIGNA's senior vice-president of e-commerce. "We feel we've just begun to experience the cost-cutting and productivity benefits that the Internet has to offer" (see CIGNA case study, page 2).

"Companies are applying standard business practices to the Internet and discovering it can give them impressive gains," observes Ravi Dhar, a professor of marketing at Yale University's Yale School of Management. While dotcom disaster stories have scared some businesses away, many others continue to explore web technology's potential. "Substantial benefits in areas such as the supply chain, sales and communications are forcing businesses to think about the Internet in a new and positive way," says Mr Dhar.

Case Study

CIGNA: Insurance carrier on an Internet mission

At insurance giant CIGNA, using the Internet to boost the bottom line isn't just a good idea—it's a "companywide" mission

"In this age, failing to take advantage of the Internet would be like, in an earlier time, failing to utilise electric power or motorised transport." So says David Gordon, senior vice-president of e-commerce at CIGNA. The insurer recognised years ago that it would have to embrace Internet technologies or risk losing its competitive edge.

One of the first areas CIGNA targeted for an Internet makeover was its employee benefits enrolment system. An Internet-driven self-service application has helped the company shed costs and provide added employee convenience. CIGNA staffers can use the system to enrol in a health plan, check their benefits status and find answers to a variety of benefits-related questions.

Self-service applications cut processing costs

"This used to be a labour-intensive process, but it's become quite easy online," says Mr Gordon. The technology worked so well that CIGNA soon began offering a similar application to customers of its healthcare and group insurance businesses. As a result, CIGNA customers can now visit a company website to view plan information, check their payment status, find a local doctor and research a variety of topics. The savings are dramatic. "A call to our call centre costs us $2-3, but online it's only about $.50 per enquiry," says Mr Gordon.

What the doctor ordered

CIGNA is also a founder of MedUnite, an Internet exchange that was set up by seven large health insurers to allow doctors to file claims, verify benefits, make referrals and check the status of claims. It will also point out and explain errors in claims and give physicians' offices the opportunity to make corrections and resubmit them.

MedUnite is designed to bring Internet efficiency to a healthcare area that remains largely non-automated. Of the 30bn healthcare business transactions that take place in the US each year, some 60% are handled by phone, fax or paper, increasing the cost and creating a cumbersome administrative infrastructure. "By providing physicians with a standardised approach to real-time Internet-based information management with multiple payors, MedUnite will provide economic benefits and administrative improvements for both physicians and payors," says Mr Gordon.

In another initiative, CIGNA is using the Internet to enter the banking business. The company recently created CIGNA Bank & Trust, which offers banking services via the Internet and call centres. Mr Gordon notes that the venture will take advantage of CIGNA's massive 20m customer base by providing additional services that will boost revenue and build customer loyalty and retention. "We wouldn't have been able to do this without the Internet," he says.

The Internet is also allowing CIGNA to cut training costs while enabling its employees to become more familiar with new technologies. For its 2,000-member IT staff, the company has created the CIGNA Technology Institute. The institute has changed the manner in which the company's technical employees are trained. A year ago most training was delivered through classroom instruction. Today 70% of instruction is provided through the Internet. The result is a better-trained IT workforce and a 50% cut in per-course costs.

CIGNA doesn't look to dotcom companies for inspiration. This is partly because of the web start-ups' dismal track record. "So many have just vaporised over the past few months," says Mr Gordon. Another reason is that while CIGNA is trying to cultivate an entrepreneurial environment, it's primarily looking for initiatives that are likely to produce positive results within a short timeframe. "I don't think we've had any instances where we've looked at a technology and thought, 'Wow, that's a neat technology—let's find a place to put this,' " says Mr Gordon. "We've found that it really starts from the customers' needs and the business practices and goes from there."

Survey: Keeping the faith

Optimism about the productivity gains and cost savings offered by the Internet is reflected in an online survey conducted in July 2001 by the EIU ebusiness forum (www.ebusinessforum.com), an Economist Group website devoted to global e-business intelligence. Of the 144 companies from around the world that responded to the survey, a full 83% said they were currently using the Internet to cut costs (see Figure 1).

Figure 1
Is your company currently using the Internet to cut costs?
% of responses
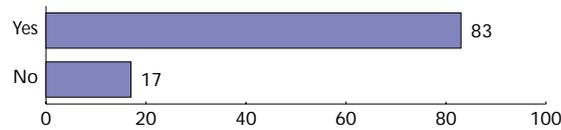
Source: Economist Intelligence Unit survey, July 2001.

Internet-driven savings are a priority for 68% of companies

As this near-unanimity suggests, saving money via the Internet currently ranks high among corporate goals: 16% of respondents called it their firm's "top strategic priority", and another 52% said it was "one of many strategic priorities". Only 2% dismissed cutting costs via the Internet as irrelevant to company strategy (see Figure 2).

Figure 2
Which statement best describes your company's approach to Internet-driven cost savings?
% of responses
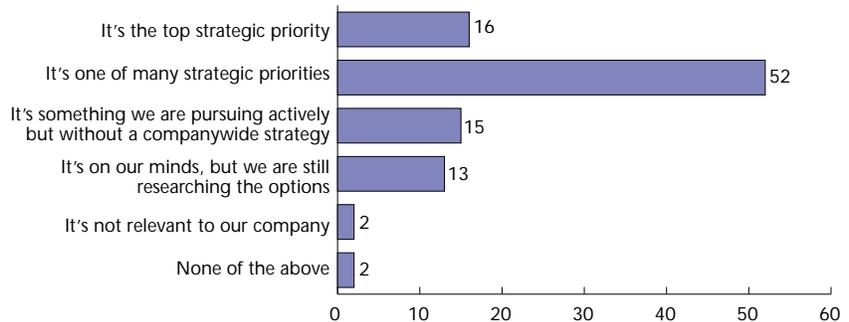
Source: Economist Intelligence Unit survey, July 2001.

Getting it right

No more experiments

This sustained enthusiasm for the Internet goes hand in hand with a heightened awareness of the need to demonstrate, with transparent metrics, that technology investments yield a quantifiable return. Companies that previously followed the dotcoms' lead and put money into online experiments have grown more cautious. Although there are still defenders of a high-wire "launch and learn" strategy—diving into the Internet with the awareness that haste could entail mistakes—the advocates of "watch and wait" are having their day.

Sitting passively on the sidelines is not an option, of course. But racing headlong into unknown territory, on the assumption that doing anything on the web is better than doing nothing, was the downfall of many early dotcom players. "The wonderful thing about being a large company is that you don't always have to have first-mover advantage in order to capture a large portion of the market," says Jay Butler, global corporate investment banking technology and operations executive for Bank of America. "Let the market—and some other people—take the bumps and bruises, but be prepared to jump in immediately after the infancy period is over."

"Launch and learn"

is often unwise

Granted, taking risks breeds innovation. Launching and learning leads to experimentation and experimentation leads to finding successful new ways of using Internet technology, argues Peter Fader, associate professor of marketing at the University of Pennsylvania's Wharton School. Calculated risk is an inescapable part of business, says Pete Solvik, chief information officer of Cisco Systems. "If none of your initiatives is failing, you're not taking enough risk," he argues. Companies need to invest at least some money in well-researched and planned, yet higher-risk, ventures, he says. "It's critical if you're going to push the envelope" (see Cisco case study, page 6).

Show me the money

Calculated risk may well be an inevitable part of doing business, but the emphasis now is firmly on the calculation rather than the risk. Any new Internet game plan, however innovative, needs a sound business footing, and executives are under pressure to find a technology that can provide the maximum return for the money invested.

Mr Caminiti of Delta makes regular presentations of promising technologies to the airline's executive board. But management rarely approves an initiative unless the system can provide benefits across the enterprise. "Everything is a priority these days," he says. "We need to take into account what needs to be

Cisco Systems: An Internet strategy for every function

The world's leading manufacturer of network hardware is a big believer in the Internet—even in the face of plunging revenues and sagging share values

Cisco aims to rout the competition by using the Internet to improve operations and generate cost efficiencies whenever and wherever it can, says Pete Solvik, the firm's chief information officer. The Internet is capable of transforming every job, business process and company function, he argues. "The mandate at Cisco is that we have an Internet strategy in every functional area." Mr Solvik estimates that Cisco's various Internet support, e-commerce, supply chain and workforce optimisation initiatives are saving the company $1.3bn annually.

One way Cisco uses the Internet to boost its bottom line is by shifting as many non-value-added activities as possible to the medium. Nearly all of the company's administrative activities are now conducted over the Internet, from employment applications to expense reports. The approach allows expense management– a labour-intensive area that's typically the second- or third-largest administrative cost in a major corporation–to be handled quickly and more efficiently. Cisco's Internet-enabled expense monitoring enables the company to use only a handful of finance professionals to audit all of its worldwide expenditures.

Corporate travel is another area where the Internet helps Cisco to shave costs. In a move designed to boost the use of online travel bookings, the company intentionally makes its employees wait on the phone when they call the corporate travel department. Cisco aims to raise the adoption level of its GetThere reservations system from 36% to 60% in the next six months. Online bookings allow the firm to save about 60% per transaction.

Cisco operates what is possibly the world's most advanced supply-chain model. By participating in a variety of business-to-business marketplaces, including Converge, e2open and USBid, Cisco can trim costs by making spot buys or participating in reverse auctions. The company is also developing a global collaborative supply-chain network, called eHub, that it will use to connect electronically with suppliers. The technology will enable Cisco to obtain partner information on inventory availability, product specifications, purchase orders, shortages and excess stock. Mr Solvik notes that eHub will help keep Cisco's large and complex outsourcing model in check while allowing the company to re-plan continuously based on known changes in supply-and-demand information.

Savings without profits?

On the e-commerce front, the Internet is the company's most powerful sales tool and Cisco.com is one of the world's largest e-commerce sites. "We're now at the point where 92% of our business comes in on the Internet," says Mr Solvik. Cisco also handles more than 80% of the 4m customer requests for information it receives each month via the web, and conducts 87% of its customer business online without staff intervention.

Although Internet-driven earnings and savings can be achieved across an enterprise, Cisco believes in following a decentralised approach. "Our Internet initiatives are funded as self-innovations in each group," says Mr Solvik. "It's our view that if we're going to stay ahead, we need to push every single group to invest aggressively rather than to have a central committee pick only a few top areas," he says. "We want all of our managers to consider the Internet whenever they think strategically."

Yet the Internet can't perform magic, and even Cisco's multiple Internet initiatives couldn't save the company from feeling the brunt of the dotcom collapse and a rapidly slowing economy. This spring Cisco reported a $2.7bn net loss for its fiscal third quarter, including charges of $2.2bn for writing down excess inventory.

> 92% of Cisco's business comes in on the Internet

Mr Solvik says things would have been even worse if Cisco didn't have Internet resources that allowed it to monitor its supply-chain activities. "Without the Internet, we wouldn't have understood the situation as well," he says. "We would have continued buying even longer and we would have fallen into a much deeper hole." Cisco's Internet initiatives also softened the blow by helping keep the company lean, says Mr Solvik. "I don't think you can make the case that we would be in better shape today if we hadn't used the Internet to the extent we did."

done with the capital we've earmarked. We've needed to sharpen our pencils a bit to find the best possible solution."

Cummins Engine, a US engine manufacturer, exemplifies the new thinking. "The slowdown is forcing us to think more clearly and strategically about what we're doing," says Tracy Embree, Cummins' director of e-business strategy. Last year the chief information officer doled out money to fund interesting ideas. Now, with investment money scarce, the company has made each business unit responsible for funding its own e-business projects. Any manager who wants to launch such a project has to apply standard business planning. Does the initiative support the business's strategic goals? How does it match up against the business's sales-growth targets, return-on-investment requirements and cashflow needs?

Internet investments must show a return ...

This analysis has led Cummins to a number of decisions. Some projects have been delayed. For example, Cummins has put off a project to put its human resources services online. The company has refocused others to support its goals more clearly, including short-term cost savings and new revenue creation. Cummins' website for RV owners (the company produces the motors that drive the campers) started as an experiment in community building. Today the site aims to improve efficiency and make money for the company. Current features include the sale of some spare parts, connections to dealers and distributors, and a guide to Cummins-approved "coach care" facilities to fix ailing RVs. A few other projects have been left alone or received increased funding.

Measures are elusive

... but finding metrics is a challenge

Finding a measure to illustrate how Internet initiatives contribute to the bottom line is a tricky business, particularly when other cost-cutting efforts are under way. "It's often difficult to know if a savings is the direct result of something you've done with the Internet or some other change you've applied," explains Eric Johnson, professor of business at Dartmouth College's Tuck School of Business Administration. "You have to look at the situation very carefully and not overestimate the Internet's impact."

It's generally simpler to gauge the effectiveness of cost-cutting initiatives than revenue-enhancing strategies, argues the Wharton School's Mr Fader. "It's easy to measure costs; they're tangible," he says. But meaningful revenue-enhancement statistics are often elusive. "Companies are doing all sorts of things to boost sales, and there's no way to tell what is driving a specific purchase," says Mr Fader.

Yet finding a relevant benchmark is possible. Cisco Systems measures its Internet savings by performing before-and-after comparisons of specific business operations. "We ask, 'how much did it cost to do it the old way versus with

the Internet?'" says Mr Slovik. "You can't just look at the overall P&L. But if you examine individual business processes, such as e-mails versus phone calls, you can usually find the answer."

In addition, executives need to recognise that many Internet-driven innovations can help the bottom line indirectly, through less tangible benefits such as improved customer satisfaction or better staff morale. Often the intangibles go hand in hand with tangible savings; online expense reporting, for instance, can reduce overheads while making employees more content and giving management better data on company spending.

Corporate adoption has just begun

It's still

early days

Most companies don't yet have a lot of experience to build on. Oracle, which has engaged in a heavily publicised effort to harness the Internet in all its business processes, estimates that it is only half-way into its own e-business transformation. Tony Kavanagh, Oracle's senior director for e-business marketing, reckons that the remainder of the US corporate world is barely 0.2% into the era of true e-business (see Oracle case study, page 12).

Figure 3
Which statement best describes your company's progress in shifting business processes to the Internet?
% of responses

Statement	%
We've already moved all the processes we can to the Internet	6
We've done about three-quarters of the work	11
We've passed the halfway point	18
We've done at least one-quarter of the work	20
We've finished one-tenth of the job	17
We've just started; only a fraction of the work is done	23
Don't know	6

Source: Economist Intelligence Unit survey, July 2001.

Most executives agree that adoption of the Internet has just begun. Asked in the Economist Intelligence Unit online survey to assess their progress so far, most respondents indicated that their e-business journey is in its early stages. Only 7% thought they had moved all the processes they could to the Internet, and just 11% said they were more than three-quarters of the way down the road. The largest group, 23%, instead agreed with the statement, "We've just started; only a fraction of the work is done" (see Figure 3).

Little wonder, then, that most companies are only beginning to see the first modest results from their efforts to harness the Internet. Respondents' estimates

Figure 4
How much did the Internet save your company in the most recent financial year (as a share of the previous year's operating costs)?
% of responses

Under 5%
5-9%
10-14%
15-19%
20-24%
25-29%
30-34%
35-39%
40-44%
45-49%
50% or more
Other

0   5   10   15   20   25   30   35   40
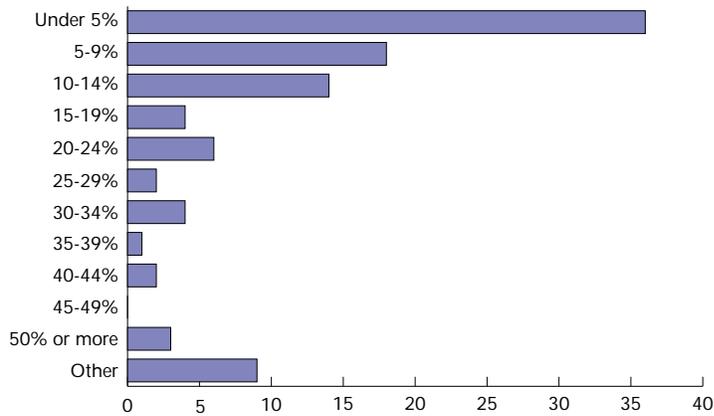
Source: Economist Intelligence Unit survey, July 2001.

Figure 5
How much do you think the Internet will have saved your company in two years' time (as a share of current operating costs)?
% of responses

Under 5%
5-9%
10-14%
15-19%
20-24%
25-29%
30-34%
35-39%
40-44%
45-49%
50% or more
Other

0   5   10   15   20

Source: Economist Intelligence Unit survey, July 2001.

Savings are more of a prospect than a reality
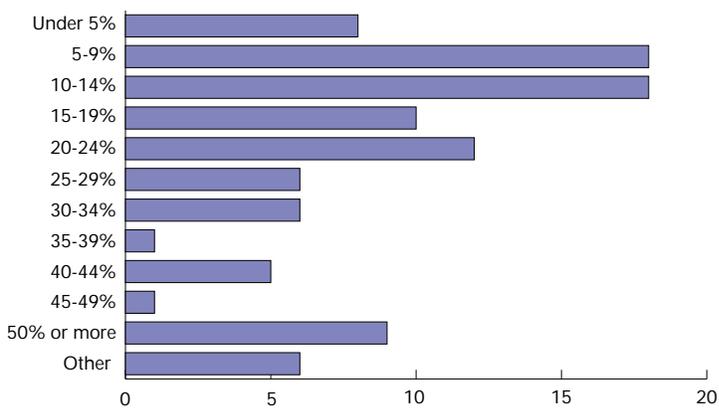
of their companies' savings cluster at the lower end of the spectrum (see Figure 4). More than one-third of all respondents recorded Internet-generated savings of less than 5% for the most recent financial year; about one-third reported still-modest savings of 5-14%. Only one-fifth reported cost savings in the 15-49% range (and a mere 3% claimed savings of 50% or more).

Expectations for the future are considerably more bullish, however (see Figure 5). Asked about the prospects for Internet-driven savings over the coming two years, only 8% thought their savings would amount to less than 5% of current operating costs. Nearly one-tenth of companies thought they'd be able to report cost savings of over 50%, one-third put their potential gains in the 20-49% range, another 28% pegged potential savings of 10-19% and a final 18% estimated their future savings at 5-9% of current operating costs.

Such optimism about the future gains to be reaped from e-business explains why the vast majority of survey respondents expect their corporate information technology budgets to continue rising over the coming two years. Twenty-two per cent predicted that IT spending would rise "substantially", while another 46% expected their budgets to grow "slightly". Another 25% thought spending would remain roughly the same over the next two years, while only 6% of respondents said they expected company IT spending to decline (see Figure 6).

IT spending will continue

Figure 6
Over the next two years, do you expect your company's IT budget to:
% of responses

Rise substantially	22
Rise slightly	46
Stay about the same	25
Fall slightly	3
Fall substantially	3
Don't know	1

0   10   20   30   40   50

Source: Economist Intelligence Unit survey, July 2001.
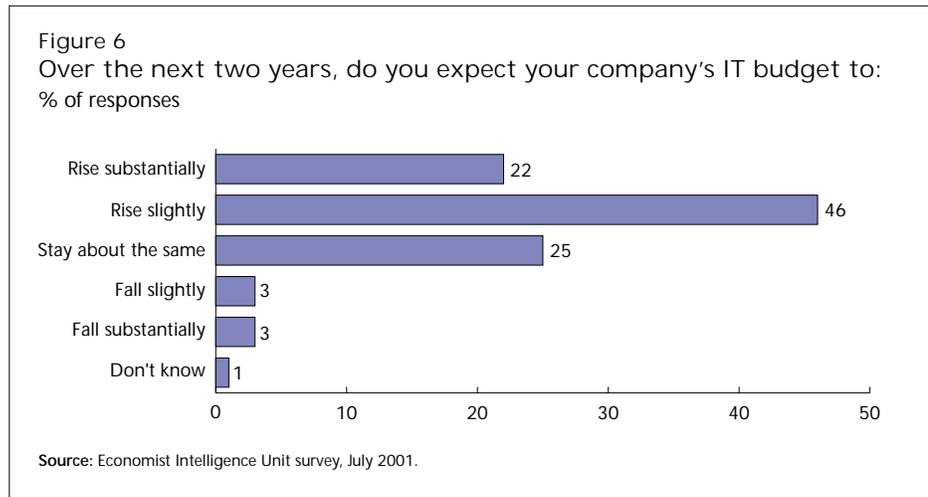
Start with "quick wins"

Small-scale success sustains corporate enthusiasm

Convincing management and shareholders to push ahead with Internet spending isn't easy, however. Because of pressures to document an attractive return on investment, executives aiming to maintain corporate enthusiasm for an e-business transformation need to focus on a quick-win strategy.

"The Internet can be used in so many useful ways that it's important to begin with the one that will offer the most benefits," says Dartmouth's Mr Johnson. Finding small-scale, relatively inexpensive projects that yield a measurable pay-off, preferably over a period of months rather than years, can help build momentum for bigger and bolder initiatives. "You need to be sure to do your testing and to start in a limited fashion," suggests Andy Traicoff, director of e-business for Goodyear Tire and Rubber's North American tyre unit.

Cummins is pursuing just such projects in an effort to sustain management enthusiasm. One initiative aims to put wireless sensors in the big engines that help haul ore out of mines. Cummins has agreements with mining companies to ensure that these engines rarely break down—if an engine has downtime that exceeds a certain percentage of total operating time, Cummins has to pay a fee to its customer. The sensors alert the company when the engines require maintenance. Cutting the amount of downtime has a dual benefit—it is a cheap way to make customers happier as well as to avoid paying fees.

Cummins' e-business strategy group hopes to use such successes to prod others in the company to come up with new ways to use the Internet. Ms Embree reasons that if the company continues to make careful e-business investments, it will be in a better position to move quickly when the economy improves: "Even

though we're in a downturn, now is the time to get our strategies and plans to the level that when times are better, we can move down the road more quickly."

Understand the principles

In deciding where to apply Internet technologies, companies need to grasp the mechanisms by which web operations can deliver efficiency. The most obvious—and that seized eagerly by the dotcoms—was to treat the Internet as a global storefront, where products could be put on display for millions at the cost of only a website. The dotcoms' demise underscored the fallacies of this approach. Without an efficient back end and an understanding of the challenges of marketing, logistics and fulfilment, online retailers spent more to acquire customers than they could ever recoup in revenues.

Internet cost savings hinge on a few key principles:

- **Automation.** The Internet can drive efficiency by transforming time-consuming manual or paper-based data processing into a digital format.

The Internet promotes standardisation

- **Transparency.** The Internet can make information available to a mass audience simultaneously, whether through a consumer website or a corporate intranet.

- **Self-service.** The Internet can put most customer service and transaction processing in the hands of end-users, rather than costly administrative personnel.

- **Simplicity.** The Internet thrives on standardisation, which can help streamline procedures that are based more on corporate tradition than business logic.

As this last point suggests, companies shouldn't cling to their existing ways of doing things as they embrace the Internet. Striving to replicate offline processes in an online system can be a recipe for costly chaos. A salesforce that relies on customised discounts cannot coexist with the clarity of online pricing, for instance, so companies may find that they need to simplify drastically before automating. "The more simple the product is, the easier it is to get the customer to adopt it, the easier it is to standardise it and the easier it is for us to get it online and roll it out," says Mr Butler of Bank of America.

It's not about technology

Systems integration is a challenge

Technology issues abound in the digital world. Compatibility of new systems with old ones is a key concern, and companies may face a choice between integrating a new technology with the old and starting from scratch. Burlington Northern Santa Fe, for example, opted to follow the evolutionary path. "We have worked over the past ten years to build proper foundational systems in support of our business and find that we are now able to provide value to our customers using enabling technology such as the Internet," says Kathleen Regan, the company's vice-president for e-business development. The opposite is true at Bank of America, where disparate technologies, a result of previous IT initiatives and corporate mergers, make Internet integration a dicey proposition.

Oracle: Practise what you preach

Old-fashioned economies have helped Oracle improve its bottom line, but so has Internet-enabled cost-cutting

Any discussion of Internet-driven cost savings would be incomplete without a look at Oracle. Not only does the software giant specialise in e-business applications designed to help companies make the most of the Internet; it also boasts of having saved $1bn in just one year by putting its own products to use internally. Has Oracle set the standard for Internet-driven efficiencies? Or has it artfully tailored its results to support its marketing efforts? Oracle's sponsorship of this report makes the task of providing a credible answer both easier (the Economist Intelligence Unit had excellent access to Oracle executives) and more difficult (our conclusions may be suspected of bias). Here is our attempt at a balanced assessment.

Oracle improved its margins ...

Oracle executives say the evidence is clear– just look at the company's margins. "A big proof point", says Oracle's CFO, Jeff Henley, is that "we never made more than 20-21% in the history of Oracle until two years ago. Then we went to 30% and now we're at 35%, so there must be something going on."

Even the sceptics concede that the company has undergone a major transformation. They quibble, however, about the reasons behind that sharp improvement in margins. Some Wall Street analysts argue that Oracle has saved money not so much by shifting business processes to the Internet but rather through old-fashioned cost-cutting measures. "A lot of the cost savings were changes in employee behaviour, and software doesn't do that," says John Puricelli, an analyst with A.G. Edwards & Sons, quoted by *InternetWeek*. A clutch of disgruntled shareholders even filed suit against the company earlier this year, alleging that Oracle's savings were the result of head-count reductions rather than Internet efficiencies. (Employment has dropped from nearly 44,000 to just over 41,000 since 1998.)

... but progress slowed as revenues weakened

Other critics cite buoyant revenues as crucial to Oracle's savings equation. "They relied on revenue momentum as much as cost savings," says Christopher Shilakes, a Merrill Lynch analyst quoted in the same *InternetWeek* account. The company's $1bn calculation derives not from a direct comparison of operating expenses: at $7.05bn in 2000 and $6.95bn in 1999, these remained more or less constant over time. It arises instead from the relation between costs and revenues. By applying the 21% margin from 1999 to revenues from 2000 ($10.1bn against $8.8bn in 1999), the company arrives at a hypothetical standard to compare with actual costs. Hence the savings of $1bn– or $930m, to be exact.

As Oracle's results for 2001 suggest, driving similar "savings" when revenue growth is less buoyant is substantially more difficult. Although the company pushed its margins slightly higher in fiscal year 2001, in extremely difficult economic conditions, it fell short of its goal to chalk up another $1bn in savings.

Count your blessings

Recognising the scepticism that has dogged its claims, Oracle has sought outside verification of its savings and documentation of its methods. Harvard Business School authored a largely descriptive case study of Oracle's cost-cutting efforts last year, and a leading management consulting company recently undertook an ambitious department-by-department review of the company's progress during 1999-2001.

These studies provide impressive evidence of a company in the midst of dramatic changes inspired by the Internet– although as Oracle's senior executives freely concede, many of the efforts at transformation derive as much from old-fashioned sound business practices as they do from any Internet-driven innovation. Many of these changes, the studies show, are helping Oracle to operate more efficiently at lower cost.

Perhaps the most striking example is information technology. As the consultancy

study documents, Oracle's global spending on IT dropped from $439m in 1999 to $339m in 2000, and again to $270m in 2001. Worldwide IT employment plunged from 1,600 to 900. Yet efficiency improved significantly at the same time: the average wait time for a call to the IT help desk, for instance, dropped from two to three minutes in 1999 to less than ten seconds in 2000.

Three times lucky

Whatever the precise scale of Oracle's Internet-related savings, they occurred in a period of sweeping change. The company undertook simultaneously to transform every aspect of its operations– spanning the "buy side", the "sell side" and "the inside", in Oracle terminology– in accordance with three key principles: standardisation, centralisation and web-enabled automation. Driven with near-fanatical zeal by the CEO, Larry Ellison, this trinity has shaken up virtually every job function in the company.

A single global standard for each business process

- **Standardisation.** The Oracle ideal is a single global standard for all business processes, from reporting expenses to setting prices, from drafting contracts to organising marketing events. Perhaps the most striking example is the corporate website. The company had 63 different sites worldwide in 1998; now it operates just one, oracle.com (though with multilingual content).

  Underpinning this shift is the assumption that many business operations are generic– or at least generic enough to function smoothly on a single worldwide software platform. This uniformity has challenged many of the company's traditional practices. Oracle previously allowed its country offices considerable autonomy: country managers ran their operations virtually as independent companies. That autonomy is now gone. Similarly, Oracle salespeople enjoyed leeway in the past to sweeten big deals by offering customised discounts. Now, with standard global pricing options posted on the web, all sales booked through a single online system and simple, straightforward contracts used globally to reduce legal expenses, that bargaining freedom is likewise gone.

  Oracle's product range underwent standardisation and simplification as well. The company's multiple (and often customised) offerings were reduced to 300 standard product bundles. Uniform packaging was adopted. Rather than manufacture goods and store the inventory in distribution centres, Oracle opted to store its inventory at the component level and deliver products direct to the customer. Electronic instructions replaced printed manuals, helping to cut the weight of the average product pack from 8 kg to 1 kg. Such streamlining reduced costs substantially: the average product cost fell from $70 in 1999 to $40 in 2001; the average shipping cost dropped from $18 to $8; and the number of warehouses operated worldwide was reduced from 26 to 20.

- **Centralisation.** Eliminating duplicated effort goes hand in hand with standardisation, so Oracle also moved to centralise as many functions as possible, including IT and software support. For IT, this shift was a dramatic cost saver, though sceptics would argue that it was precisely Oracle's self-indulgent "creative chaos" that had allowed costs to get out of hand in the first place.

  The company was a "software sandbox" four years ago, concedes Gary Roberts, senior vice-president for global information technologies: there were no shared practices, no shared vision and no common software platform. Each country organisation had its own independent IT function. With emphatic support from the CEO, all these independent operations were reined in, enabling a massive hardware reduction. In "messaging", for

Online expense reports made a big impression

instance, the number of e-mail servers was cut from 97 to two, and the number of global databases was slashed from 120 to four.

· **Web-enabled automation.** Self-service is the watchword here. Where it can, Oracle has used the web to automate and then delegate to the employee, or to the customer, what were previously manual processes. The shift from paper-based to employee-driven online expense reporting, launched in April 1997, was one of Oracle's first steps in its e-transformation, and it seems to be the change that so far has made the biggest impression on staff. Metrics highlighted by the consulting company suggest why this is the case. Each accounts-payable employee processed 200 expense reports per day in 1999; by 2000, that figure had risen to 360. The expense report backlog was three weeks in 1999– just two days in 2000. Average turnaround time for an expense report was 15 weeks in 1999, but only five days in 2000. The cost of processing each expense report, $25 in 1999, fell to just $3 in 2000.

Oracle has put in place similar self-service operations for corporate travel, staff benefits and staff recruitment. Besides enhanced productivity and lower costs, it has helped to boost employee satisfaction.

The web store handles low-value transactions

Shifting customers to Oracle's web store, and existing clients to online support, drives similar cost benefits– though here the integration of online channels with telephone sales and support is considered crucial. Currently some 86% of transactions go through Oracle's web store, according to Mr Burton, but these account for only 6% of the company's revenues. Before small-ticket sales migrated to the online store, they were hugely expensive because of the fixed cost associated with each transaction. But with the efficiency offered by online ordering they are less of a burden, enabling Oracle to reach into a market it wouldn't traditionally have entered. "It allows us to be more efficient on a unit basis," says Tony Kavanagh, senior director of e-business marketing. "Rather than just servicing the major accounts that are going to be the big-dollar items, we can actually offer a similar level of service further down the marketplace."

The generic and the unique

The questions about Oracle's claimed savings go beyond their sheer quantity, given that cheaper Internet-based operations may well involve a step down in quality. Is web support always as satisfactory as a hands-on visit by a "real person"? Does an online seminar costing $1.62 per participant really pack the same punch as a face-to-face promotional meeting held in a hotel, at $325 per person? Does a trip to the web store yield the same benefit as the old "press the flesh, scratch the back" attentions of a direct salesforce? Can a single global website encompass the diversity of national cultures and spending patterns?

But while it's possible to question the precise magnitude of savings driven by the transformation, or to argue that Oracle stood to benefit so grandly precisely because decentralisation and a past focus on growth had ignored exploding costs, there is little doubt that an Internet-based transformation has taken place.

What then are the lessons for companies in other industries? Does Oracle's approach offer a template for other companies striving to reap efficiencies from the Internet, as the company's marketing suggests? Or is there too much that is specific to Oracle in the transformation for the company to be a best-practice model?

One of a kind

The consultancy study identifies a number of company-specific factors that helped drive Oracle's transformation. The company's employees were web savvy; its

manufacturing process was fairly simple; and, most important, the company was willing and able to tailor its business processes to its own software– something that other companies may find unfeasible or undesirable. Indeed, the consulting company that authored the study suggests that a more realistic approach for most companies is to simplify business processes and then choose the software that offers the best fit.

Still, even if it's not a universally applicable model, Oracle's experience offers a number of lessons on how to make an e-business transformation succeed:

- **Concentrate on what's unique about your company.** There's a large dose of self-interest in Oracle's message of using off-the-shelf software to handle functions like expense reporting, financial management and even direct-marketing campaign planning. That said, companies are probably well served to sort out what's generic in their operation from what makes them truly unique in the marketplace, and devote resources to the latter. "I don't know a single company that differentiates itself with an accounts payable or expense report or human resources," quips Mr Burton.

- **Deliver a consistent message from the top down.** Oracle executives credit the "Larry effect"– forceful leadership from Larry Ellison– with keeping the company focused and driven. "When you're talking about a transformation, you need a Larry," argues Mr Kavanagh. "If you decide to go with the big bang approach, you need that level of dictatorship." The notion of a dictatorial leader doesn't sit well with everyone, particularly executives accustomed to management by consensus, and the business omniscience attributed to Mr Ellison strikes some as a cult of personality. Still, the more broadly relevant point is the need for consistent, strong support from top management to keep employees motivated, as well as clear communication to ease employee concerns about job redefinitions and possible lay-offs.

- **Look for the quick win, and don't be afraid to use force to push change.** Even with what top Oracle executives acknowledge is dictatorial leadership, quick wins– the "low-hanging fruit" extolled in consultancy jargon– are vital to build corporate momentum behind any e-transformation. "You've got to figure out in this roadmap a way to get quick wins," says Mr Henley. "You can't afford to spend a zillion dollars and wait for five years for something to happen. Break these projects down into little projects that you can deliver results with pretty quick."

  Expense reporting is an excellent place to start, as introducing a self-service system offers employees a ready vision of the web's potential while delivering easily quantifiable cost savings. Yet however important maintaining staff enthusiasm is to the process, executives shouldn't hesitate to force compliance– if necessary by eliminating paper-based or telephone alternatives to web functions. "Tell, don't sell"– the method that Oracle found it had to use to shift staff over to a web-based corporate travel system– is at times the best approach.

- **Concentrate on strategy first, then technology.** The first step isn't the technology. Defining a business strategy comes first, then a consideration of how to "digitise" the company around it. Setting an ambitious financial target will mobilise your staff, says Mr Henley, and then you can divide the task into manageable pieces. You may not set out to save $1bn, but if you want to unleash truly rapid change, says Mr Henley, "you've got to drive the organisation to a big number."

"Tell, don't sell" is often a necessary method
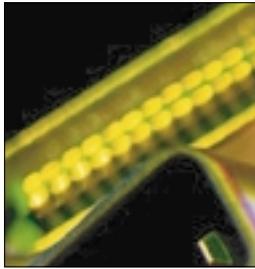
But technology issues should not be allowed to overshadow the business ones. Executives must be wary of being bullied into adopting a particular service by customers or business partners—or indeed by their own IT staff. Bill Gaughan, vice-president of e-business and information technology for Bayer's polymers and chemicals division, says he will only add new features to the company's private online business exchange if he can determine that they will in some way contribute to the bottom line. Take vendor suggestions with a grain of salt, he cautions. "Many vendors warned that we would soon be out of business if we didn't grab their technology," says Mr Gaughan. "A lot of these companies have since gone under, so watching and waiting on them was a big help."

Support from the top

A partnership between the CEO and the CIO is crucial

More important, companies need to ensure that investment decisions reflect fruitful co-operation between the business side and the technology side, between the CEO and the CIO. Particularly after the dotcom disasters, the head of IT must understand and embrace the company's business logic. IT people tend to excel at explaining how technology works but are less adept at describing how the technology will affect the business, notes Gary Roberts, Oracle's senior vice-president for global information technologies. Yet it is only where the IT chief grasps the key business challenges that firms can avoid "just implementing technology for the sake of implementing it", says Mr Roberts. "You're not in business so that you can try out every new gizmo and whiz-bang that comes out."

A corollary is that technology should be adopted in a way that meets identifiable customer demand. "We're striving to be innovative," says Bank of America's Mr Butler. "But unlike many of those failed dotcoms, we realise that success lies in making real-world services better and more convenient. If the customer doesn't want it, we don't offer it."

Precisely because such key issues are strategic rather than technological, consistent, decisive support from the CEO and the rest of top management is crucial to the success of any Internet undertaking. This is particularly the case when using the Internet to save costs prompts a corporate reorganisation, shifting power from national offices to headquarters, for instance, or when it redefines the way employees do their jobs, by offering some staff the prospect of more specialised work and inspiring fear of redundancies among the rest. Maintaining a drive for change despite such upheaval depends heavily on management's ability to communicate throughout the organisation a coherent vision of the future.

Something for everyone: Sales and customer service

Putting CRM first

The Economist Intelligence Unit's online survey indicates that companies now see the richest rewards in investing in Internet-driven customer relationship management and knowledge management. Asked to identify the functional areas in which the Internet had so far generated the greatest cost savings, 27% of respondents to the survey picked sales, marketing, service and CRM, and another 28% selected business information and knowledge management (see Figures 7, 8 and 9). These are the same two areas in which companies expect to achieve the biggest savings in the future: 32% selected sales and CRM as the key areas for future efficiency gains, and 26% chose business intelligence. Other priority areas include supply chain and procurement (selected by 19%) and information technology (11%).

The experience of dozens of Internet pioneers suggests that the promise is real—despite some very real perils—across a wide range of corporate functions and processes.

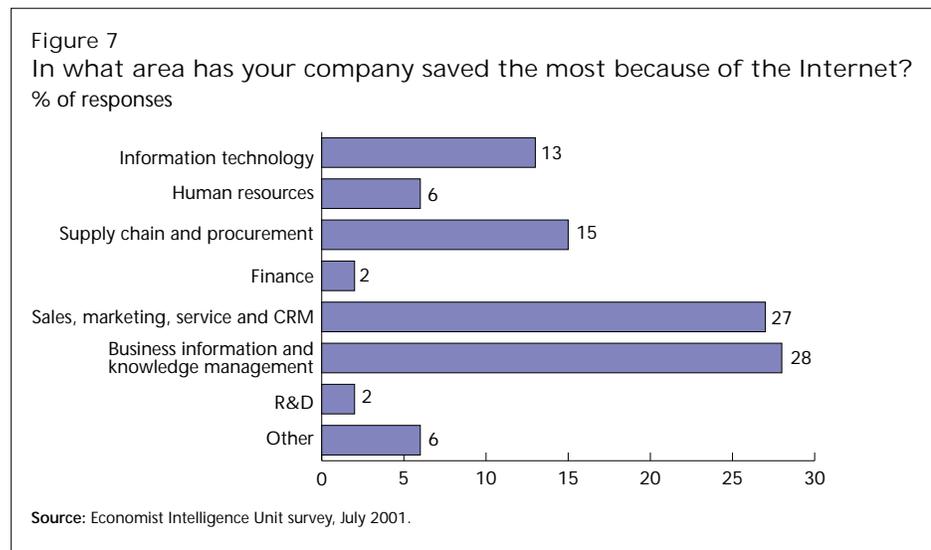## Reducing transaction costs

Airlines and banks are online pioneers

In terms of online sales, the Internet doesn't work magic—but it does open up a new, and potentially far less expensive, channel to customers. Wharton's Mr Fader compares the Internet with the advent of direct marketing. "All of a sudden, there's a new way to get an idea or a product in front of people, and that can only be good," he says.

Of course, gaining exposure for a product or brand is no guarantee of cost savings. But for companies that put the Internet to use as a cheaper sales channel, where customers themselves do the work of seeking information or placing orders that would ordinarily go through more expensive physical outlets or call centres, it can reduce transaction costs. And the abundant customer data that can be collected in the process help make marketing more precisely targeted, and thereby more cost efficient.

Airlines were among the first businesses to use the Internet successfully as a sales and marketing tool. Delta, for example, expects to sell 500,000 tickets this year through its Delta.com website. "In 2000, 12.5% of our total bookings were made online," says Mr Caminiti. "Of these, over half were sold on Delta.com and the other half were sold through web travel sites, such as Expedia.com." Mr Caminiti estimates that online bookings saved Delta about $25m in 2000, thanks to reduced printing and mailing costs, lessened demand on its call centre and reduced travel agent commissions.

Delta is now expanding its e-marketing horizons. The company recently began selling tickets through Orbitz (www.orbitz.com), a web-based travel reservations

Figure 7
In what area has your company saved the most because of the Internet?
% of responses

Area	%
Information technology	13
Human resources	6
Supply chain and procurement	15
Finance	2
Sales, marketing, service and CRM	27
Business information and knowledge management	28
R&D	2
Other	6

Source: Economist Intelligence Unit survey, July 2001.

service that it co-founded with four competing airlines: American, Continental, Northwest and United. "The more opportunities we have to sell tickets online, the more customers we can reach and the more money we will save," says Mr Caminiti. Delta's presence on multiple websites saves the company money even when people book flights via the phone, he notes. "In many cases, they've already figured out all of the particulars online and are just using the call centre to book the flight," he says. "The result is shortened call times and faster, more efficient, call-centre operation."

From physical to virtual presence
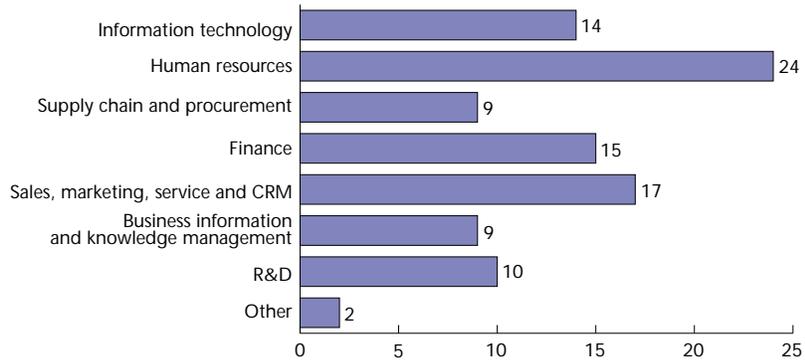
Efficient information-sharing is the main principle

Banking is another area where web-based automation offers both self-service convenience for customers and lower costs for providers. Meridien Research, a company that provides financial industry market research information, forecasts that the number of active Internet banking users worldwide will grow from 23m today to 32m by 2003. Bank of America moved to e-banking almost as soon as the technology became available, launching online banking services over a decade ago and web-based services in 1997. Bank of America now has more than 3m online banking customers, representing over 20% of its checking account customer base. "It took us over ten years to reach 2m online banking customers and only nine months to add 1m more," says Mr Butler.

Bank of America retail customers can access nearly all the bank's products and services through www.bankofamerica.com, including checking and savings accounts, CDs, IRAs, mortgages, credit and debit cards, and lines of credit. They can open new accounts, check account balances, view transaction histories and transfer funds between accounts day or night. Online access to Bank of America Investment Services offers online trading as well as a broad spectrum of investment products, including stocks, bonds and mutual funds. In addition to its 3m consumer and small-business online customers, Bank of America has more than 1,650 commercial and corporate clients doing business on the Internet. Using Bank of America Direct, a web-based transaction and information network, these companies have online access to advanced treasury
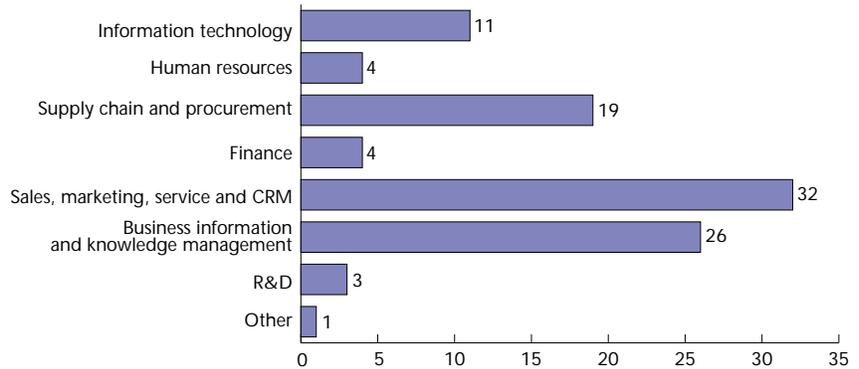
Figure 8
In what area have Internet-driven savings proved hardest to achieve?
% of responses

Category	%
Information technology	14
Human resources	24
Supply chain and procurement	9
Finance	15
Sales, marketing, service and CRM	17
Business information and knowledge management	9
R&D	10
Other	2

Source: Economist Intelligence Unit survey, July 2001.

Figure 9
In what area does your company stand to save most in the future thanks to the Internet?
% of responses

Category	%
Information technology	11
Human resources	4
Supply chain and procurement	19
Finance	4
Sales, marketing, service and CRM	32
Business information and knowledge management	26
R&D	3
Other	1

Source: Economist Intelligence Unit survey, July 2001.

Keeping customers informed builds new sales

management tools as well as digital images of checks and remittance documents.

Bank of America's goal is to bring e-banking to every customer's desktop. Besides providing increased customer convenience, the strategy allows the company to hire fewer tellers and operate a smaller number of branches. The branches themselves can also be smaller, since e-banking means fewer walk-in customers.

Information without mediation

These operations all hinge on sharing information efficiently, often without any direct involvement by company staff. This approach has direct financial benefits: self-service delivery of information and support over the web save on personnel costs. But there are indirect gains as well. Giving customers—both in-dividuals and businesses—the information they need to use a product or service more effectively can help a company boost satisfaction levels and, ultimately, the bottom line. "Informed customers are satisfied customers, satisfied customers are happy customers, and happy customers are likely to continue their

relationship with your firm," says Eric Johnson, professor of business at Dartmouth College's Tuck School of Business Administration.

FedEx has a long and successful history of using the Internet in its package delivery operations; it was the first transport company to offer package tracking in 1994. In 1996 the firm launched its InterNetShip service, which within 18 months had 75,000 customers. "Keeping customers informed is key to business growth," says Laurie Tucker, FedEx's senior vice-president of global product marketing. The online tracking service has had a direct, positive impact on FedEx's bottom line. "A call to our call centre requesting tracking information costs us $2.14, but an online query only costs $.10," says Ms Tucker. Given FedEx's huge traffic, that difference has a vast impact: the FedEx website receives more than 1m tracking requests each day, as opposed to 600,000 calls to its call centre.

In using the Internet to make its own operations more efficient, FedEx also gains by helping its customers increase their customers' satisfaction. "For the vast majority of e-operations", Ms Tucker notes, "ultimate customer satisfaction still relies on fulfilling the timely distribution of goods and materials."

Building sales from service

Using the web creatively to provide customers with information can generate new sales opportunities as well. That was the aim behind the launch of Outage Optimizer by GE Power, a General Electric subsidiary. The Internet-based service allows owners of GE gas and steam turbines to view how various performance improvement packages can increase their products' output and efficiency. (In this case, "outage" doesn't signify power outages—such as California's rolling blackouts—but outage in terms of power generated.)

Outage Optimizer is designed to place GE's maintenance planning and service solutions at customers' fingertips. "It's an example of how e-commerce and the Internet can be used to provide a service to customers and, in turn, create new sales opportunities," says Craig Haba, GE's manager of e-business finance. Since its June 2000 launch, Outage Optimizer has produced more than $500m in orders and attracted over 2,500 users at 600 customer sites.
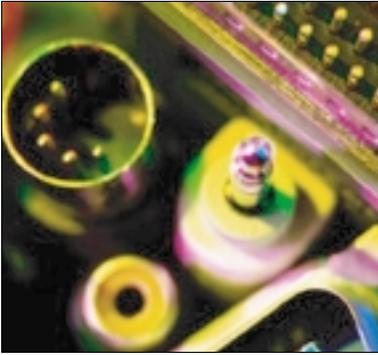
Something for everyone: Supply chain management

Real-time inventory control

The same principles of transparent information, broad access and automation that drive efficiencies on the sales side benefit the supply side as well. The most obvious use is in inventory management, which imposes huge costs on many businesses, particularly manufacturers, retailers and distributors. The Internet can help these businesses by integrating inventory management and by making item status information instantly available within the enterprise and to customers and business partners worldwide.

Praxair Surface Technologies, a Praxair subsidiary that repairs and restores aircraft components to factory specifications, placed its customer order data on the web last January. "We built web pages that query our back-office Oracle databases, retrieve the information and display it as an HTML table," says Jamie Miller, Praxair Surface Technologies' e-commerce project manager. The system, which cost less than $150,000 to develop, allows up to 8,000 users and 1,300 companies to check for parts availability and retrieve current order status. The system is designed to reduce the number of phone, fax and e-mail enquiries the company handles. Based on productivity savings alone, Mr Miller estimates that the technology will pay for itself within three years.

Burlington Northern Santa Fe, which operates one of the largest rail networks in North America, uses an Internet-based inventory system to help its customers better provision and manage their rail stock needs. "We manage assets—railcars—for a number of our customers," says Ms Regan. The Internet allows the company to respond nimbly to customer needs. "The Internet provides extended connectivity internally and externally, which in turn provides our customers with access to information that would have been difficult to provide without the Internet, due to the cost of establishing the required networks," she says.

Web-based inventory management makes companies more nimble

Streamlining procurement

By providing fast and efficient electronic trading mechanisms, online marketplaces allow members to automate and streamline procurement and many other supply-chain activities. As with the dotcoms on the retail side, however, the early euphoria associated with public B2B exchanges has faded, and the number of marketplaces in operation is falling fast.

That said, public exchanges are still producing benefits for many industry players. Delta's involvement in Cordiem (www.cordiem.com), an aviation industry exchange, is projected to save the company $10m in procurement costs this year and $80m by 2003. Cordiem supports trading for complex aircraft parts and systems as well as general procurement services. "Cordiem has become very important to Delta," says Mr Caminiti.

Delphi Automotive is using FreeMarkets (www.freemarkets.com), a global marketplace for industrial parts, raw materials, commodities and services, to connect with suppliers. Since 1998 Delphi has conducted more than 90 auctions through FreeMarkets, totalling $900m in transactions. "Delphi has yielded more than $140m in identified savings through these transactions," says Mr Radecki. Delphi is also a member of several other public exchanges, including Covisint (www.covisint.com), an automotive industry exchange developed by DaimlerChrysler, Ford, General Motors, Nissan and Renault.

Public marketplaces falter on lack of trust …

Public or industry-wide exchanges have experienced a number of setbacks, however, as Covisint's hesitant start-up suggests. Supplier companies are often reluctant to sign on, perceiving the exchange as a mechanism that will be used by major component purchasers to heighten price competition and drive down their margins. Trust is also in short supply: truly effective collaboration would require that participants reveal sensitive information to competitors, or to suppliers that are also serving those competitors. In fact, exchanges are probably best seen as a means to cut costs through improved planning, rather than by pitting suppliers against each other in no-holds-barred price competition.

Private exchanges build trust

Hence private B2B exchanges seem to be faring better than public ones. A private exchange allows a business to take advantage of many of the same transaction and collaboration capabilities provided by a public marketplace while limiting membership to a group of favoured—and trusted—partners. "A public exchange is built along a many-to-many structure, whereas a private exchange has a one-to-many framework," explains Yale's Mr Dhar.

… but private exchanges are gaining ground

One company that has put the private exchange concept to work is Bayer. The firm's Bayer Online E-Business (BayerONE—www.bayerone.com) exchange was created last year to establish online trading relationships with preferred accounts in the company's polymers and chemicals business. "Our experience with the first 100 customers linked to BayerONE has been so successful that we're now making it available to more customers," says Mr Gaughan.

Features available to BayerONE users include online ordering, forecasting, access to material safety data sheets and order status monitoring. "We want to move beyond simply providing a way to order products," says Mr Gaughan. "The idea is for us to help customers by precisely matching their purchasing, scheduling and inventory needs." Customers are given flexibility to tailor their account profile needs and may obtain as much or as little information as they desire.
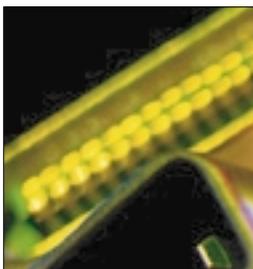
A recent upgrade to BayerONE allows customers to download standard order history and status reports or to build their own customised reports. Customers can also request to have their reports automatically compiled and delivered by e-mail as frequently as they like. Event notification is another new feature, allowing users to be notified of changes in shipping dates, quantities, containers or other criteria. If a selected event occurs, the customer automatically receives notification by e-mail.

The BayerONE improvements were based on responses received from the exchange's customers. "BayerONE is completely customer driven," says Mr Gaughan. "We are developing the exchange based on the feedback we receive from users, not according to what we think they want."

Something for everyone: Inside the firm

Self-service for the back office

The key principles of automation, self-service and information transparency can also be put to work internally, in back-office operations such as finance, IT and human resources. Self-service expense reporting, in which online record-keeping replaces time-consuming paper processing, reduces administrative over-heads. CIGNA, for example, expects to save $1m per year by placing its employee travel reimbursement and related operations online.

Web-enabling procedures like expense reporting have two added benefits. They enable management to monitor employee spending more closely and in a more timely fashion. And they pay off in terms of employee satisfaction, as reimbursements come faster and staff can monitor the process. As Jeremy Burton, Oracle's senior vice-president for products and services marketing, says, "Self-service is an amazing thing, whereby you get employees to do more work and then they like it better."

Web-based applications improve corporate communications …

Internet technology can also help businesses trim costs by reducing the number of paperwork mistakes. After transferring all of its employee benefits enrolment forms to a web-based application, CIGNA saw error rates plunge from 25-30% to less than 1%. "You can submit paper forms that have blank spaces; our software won't allow you to do that," says Mr Gordon. The system has worked so well that CIGNA is now planning to offer a similar technology to its customers.

Creating a virtual workplace

Web-enabling internal communications and training can also cut administrative costs. Delta uses the Internet to distribute information directly to its employees. Mr Caminiti estimates that about 89% of the airline's 90,000 workers now have home Internet access. "This allow us to pass along rich, personalised information," he says.

… and cut training costs

Mr Caminiti says he's so impressed with the Internet's potential to reach workers and streamline costs that he plans to launch a full-fledged employee portal next year to provide a variety of information and support services. He's particularly excited about the portal's ability to offer online training to counter staff and other workers: "Users will be able to access the training at any time, including during downtime and off hours, potentially saving us millions of dollars in overtime expenses while also ensuring a better-trained workforce."

While placing human resources and staffing applications on the Internet can generate direct savings in printing, mailing and other "hard" costs, the technology also offers indirect "soft" savings. Delphi Automotive's Mr Radecki says that has been the experience at his firm. Perhaps by adding an application, you can save an employee 20-30 minutes a day, he says: "It's harder to measure these soft savings, but they're there."

Location is irrelevant

The Internet can also help businesses shed staffing costs by allowing selected employees to telecommute. Linking employees to the office via the Internet can generate substantial savings in office overheads. According to technology research firm Cahners In-Stat, approximately 24% of the US workforce—or more than 30m in all—will telecommute at least once a week during 2001. Cahners In-Stat expects this percentage to increase to 28%, or nearly 40m telecommuters, by 2004, says Kneko Burney, the research company's director of e-business infrastructure and services research. "These employees are prime candidates to access remote corporate systems through VPN [virtual private network] connections [and] use Internet-delivered business services."

Telecommuting is catching on

Delta now has more than half of its call-centre staff working at home. Mr Caminiti believes that telecommuting makes sound business sense, since most of the questions and complaints the airline receives arrive via e-mail. "With the advent of laptops, it makes no sense to tie these people to a central location," he says.

Putting information into circulation

Companies can also gain by using the web to share information internally. In research and development, for instance, the Internet can help organisations trim costs by allowing managers and researchers to retrieve information more efficiently and collaborate more closely. This is particularly important during a downturn, when corporate R&D activities are often moved to the back burner.

The web facilitates collaboration

Welch Foods is using the Internet to give its researchers and production workers easy access to highly confidential product formulas and package designs. The company is using a web-based database that can be accessed by authorised workers and managers in all of its plants, as well as at the firm's central R&D facility. "We've even taken this down to storing pictures of caps and labels," says Girard Liberty, Welch's chief information officer and vice-president of information services. The inclusion of label pictures may appear trivial, but Mr Liberty notes that in this age of high-profile lawsuits and increasing government oversight, it's vital that each product bear the correct label. "By looking at the website, production can see an example of the new label so they don't accidentally use an old type that may still be left in inventory," he says.

The web can also be used as a collaborative tool to connect an organisation's knowledge professionals to each other, counterparts at business partners and customers. Morgan, Lewis & Bockius, one of the largest US law firms, is using web-conferencing software to interact with more than 1,100 attorneys and thousands of clients worldwide. The technology was implemented to solve a co-ordination problem of daunting proportions. Legal and financial documents, often in conflicting file formats, had to go through several drafts and win approval from actuaries, accountants, lawyers and other experts, says George G Loveless, a partner based at the firm's Philadelphia headquarters. "We needed a technology that could untangle a quickly growing knot."
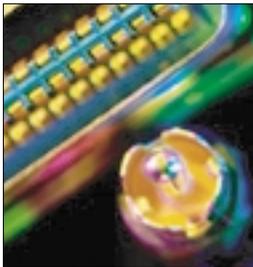
Next best thing to being there

Morgan, Lewis uses eRoom software, supplied by eRoom technology, to create a web-based virtual workplace that includes text conferencing, instant messaging, file sharing, project management and polling capabilities. The firm routinely uses eRoom for multiparty litigations, in which numerous participants need to review draft pleadings and case developments. By assigning various levels of security privileges to conference participants, the firm can control access to documents according to the needs of specific users. "You can do anything online that you can do in a conference room," says Mr Loveless. Morgan, Lewis provides eRoom to its attorneys, clients and other parties involved in client matters, at no additional charge. The company runs the software on a dedicated, secure server that's attached to the Internet via a high-speed connection. "This is an environment we can work in, except it's in cyberspace," says Mr Loveless.

Virtual conferencing cuts travel costs

Honeywell is using PlaceWare web-based conferencing software to provide training and streamlined information access. The company, like many global corporations, has a widely dispersed team of engineers that develops and tests products. "Getting these employees to share information quickly and efficiently is critical," says Richard Hoeg, the company's technical education and engineering information services manager.
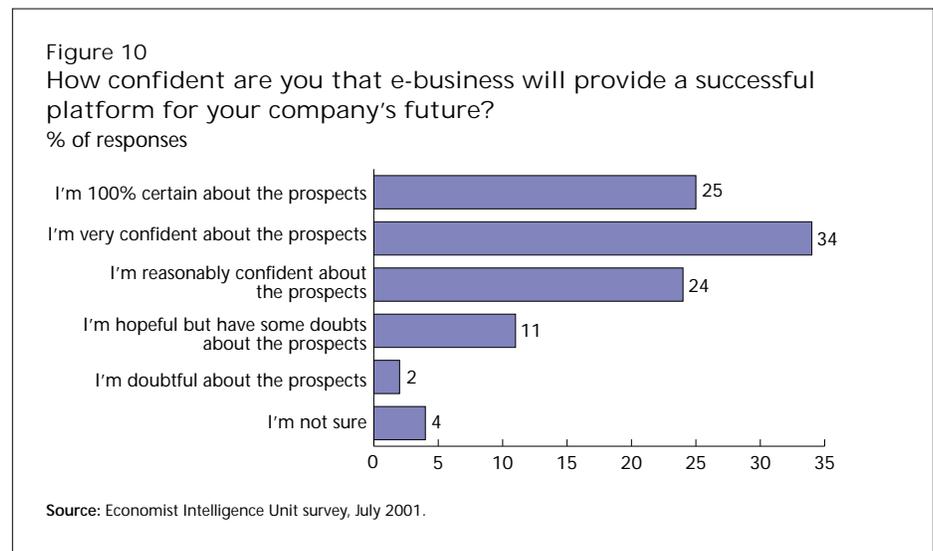
Honeywell's North American engineering team uses PlaceWare for training and meeting purposes in conjunction with the company's intranet site. The software is also used to make announcements and to provide links to important information on its own or external websites. "Our engineering staff has instant access to data without leaving their offices," says Mr Hoeg. The technology has slashed travel costs—often eliminating the need to fly and house dozens of engineers while attending routine meetings—and boosted productivity. "The savings have certainly justified the cost of the technology," says Mr Hoeg. "But, more important, we're now able to work in more detail even when separated by vast distances. It has really allowed us to accelerate our projects."

Conclusion

Rules of thumb

As this wide range of examples illustrates, the Internet has the potential to drive cost-saving benefits for virtually every corporate function, and across every industry. Delta is a case in point. "It's hard to think of an area of our business that isn't benefiting from the Internet," says Mr Caminiti. "It's sweeping across the enterprise." Executives remain stoutly upbeat, even if the work that remains to be done is daunting. In the Economist Intelligence Unit online survey, one-fourth of respondents said they were "100% certain" that e-business would provide a successful platform for their companies' future. Another 34% were "very confident", 24% were "reasonably confident" and only 13% confessed to doubts (see Figure 10).

Figure 10
How confident are you that e-business will provide a successful platform for your company's future?
% of responses

I'm 100% certain about the prospects	25
I'm very confident about the prospects	34
I'm reasonably confident about the prospects	24
I'm hopeful but have some doubts about the prospects	11
I'm doubtful about the prospects	2
I'm not sure	4

Source: Economist Intelligence Unit survey, July 2001.

Most executives remain upbeat about the Internet

Any shift to new technologies can be a costly endeavour in its own right, however, and the expensive mistakes of the past understandably temper enthusiasm for the potential economies of the future. Companies need to proceed gingerly, particularly during hard economic times. This exploration of the factors behind successful Internet initiatives suggests four rules of thumb for any web-centred cost-saving effort:

- Put strategy before technology.

- Choose small projects with big wins.

- Cultivate a partnership between the CEO and the CIO.

- Pursue automation, self-service, transparency and simplicity.

The bottom line

Following these priorities, companies should be equipped to push ahead with a realistic programme of Internet-driven cost savings. Executives should have no illusions, however. The Internet is no panacea, and cost savings take time to materialise. Although there are exceptions, it's the rare company where Internet-driven savings have reached sufficient magnitude to offset the revenue-eroding impact of the current economic downturn—or to bolster stockmarket values in a time of investor pessimism. Given the elusiveness of precise measures, and the generally substantial costs of shifting business processes to the Internet, executives should take a sceptical view of claims of a dramatic and immediate leap in profitability, particularly outside the high-tech sector.

Tempered optimism prevails

Realism about the pace of change should not obscure the significance of the gains yet to be made, however. Applied wisely, the Internet enables companies to cut costs while at the same time improve communication, provide management with better information and increase employee satisfaction. While certainly less intoxicating than the visions of infinite growth conjured up during the dotcom era, this reflects a healthy return to sober business principles. Yale's Mr Dhar puts it succinctly: "The days of experimentation are over. The Internet is finally getting down to business."