

The Real New Economy

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A mythic aura surrounds the soar and swoon of the “new economy.” The scale was breathtaking, illusions abounded, and the forces at work seemed at once powerful and elusive. As the bubble inflated, many felt that information technology, and the Internet in particular, would “change everything.” Today, with the technology sector in shreds, more than a few believe that IT changed scarcely anything at all. The truth, of course, lies somewhere in between. But where? What became of all the innovation we thought we were seeing? What actually happened to productivity growth? What effect did IT really have on companies and their ability to compete? Most important, what can managers learn from it all?

For more than two years, the McKinsey Global Institute has been studying labor productivity in the United States, France, and Germany and its connection to corporate IT spending and use. My colleagues and I have examined a large body of statistical and experiential evidence and conducted in-depth case studies of 20 industries, eight in the United States and six apiece in Germany and France. The studies involved not only the collection and analysis of data on industry and company performance but also extensive interviews with executives in each sector.

We found that a new economy did indeed come into being in the 1990s, but that it is very different from the one that was widely promoted and discussed at the time. Rather than

springing from the Internet, it emerged from intensifying business competition and a resulting surge in managerial innovation. Information technology's role in the new business world, we also discovered, is more complicated than has been assumed. IT is of great, but not primary, importance to the fate of industries and individual companies. By uncovering the true drivers of corporate success today, our research provides a clearer understanding of the recent upheavals in business and points the way to a more effective deployment of corporate IT investments and assets.

The Truth About Productivity

Something did change in the economy in the late 1990s, and it is visible in the productivity statistics. After growing at an anemic 1.4% annual rate from 1973 through 1994, U.S. labor productivity shot up 2.4% a year from 1995 through 1999. And productivity has remained fairly vigorous even during the recent economic downturn, rising at 2.9% in 2000, 1.1% in 2001, and 4.8% in 2002, according to the Bureau of Labor Statistics.

The late 1990s productivity surge coincided with a big increase in the money and attention U.S. companies devoted to information technology. In many industries, technology spending doubled as businesses wove computer and communications systems more deeply into the fabric of their operations. Overall, the percentage of the gross domestic product accounted for by technology goods rose sixfold, from 2% to 12%, during the decade.

Not surprisingly, many people looked at these numbers and concluded that the IT investments drove the productivity gains. But it's not that simple. When we examined the performance of different industries, we saw little correlation between productivity and IT investment. Although most industries significantly boosted their IT spending, their rates of productivity growth varied enormously. In fact, in the United States, productivity gains were concentrated in just six sectors: retailing, securities brokerage, wholesaling, semiconductors, computer assembly, and telecommunications. These sectors account for only 32% of the U.S. GDP, but they contributed 76% of the country's net productivity gain. Many other sectors, such as hotels and television broadcasting, invested heavily in IT but saw little or no productivity growth. (See the exhibit "America's Uneven Productivity

Boom.”)

If information technology wasn't the primary factor in the productivity surge, what was? The answer is clear: Intensifying competition led to productivity-boosting innovations in the six key sectors. Our research shows that managers in those industries were forced to innovate aggressively to protect their revenues and profits in the face of strong competition. It was those innovations—in products, business practices, and technology—that led to the gains in productivity. In fact, an important dynamic of the new economy—the real new economy—is the virtuous cycle of competition, innovation, and productivity growth. Fierce competition spurs innovation, in both technology and business processes. These innovations spread quickly, improving productivity across the sector. As productivity rises, competition intensifies further, bringing a fresh wave of innovation.

The crucial role played by competition can be seen clearly in the performance variations that were evident across countries and industries. In sectors where competition was promoted—through the dismantling of regulatory constraints, primarily—innovation flourished and productivity soared. But wherever regulation or other forces warped the competitive environment, competitive pressures eased, innovations failed to develop or to spread rapidly, and productivity growth slackened.

Look at the mobile-telecommunications industry. In the United States, the government's auction of additional spectrum in 1995 led to increased competition, with the average number of competitors in a local market jumping from two to almost five. Prices fell, usage increased, and the entire sector's productivity grew at an average annual rate of 15% during the decade. That's a very healthy rate, yet it pales in comparison with the 25% gains posted by the mobile-telecom sectors in France and Germany. The difference is that U.S. regulations created a fragmented and protected market with dozens of subscale regional providers and little national competition. Today, more than 50 providers serve fewer than 200,000 customers each in the United States. In France and Germany, by contrast, a handful of national providers serve an average of 10 million customers each. The strong rivalry among the big European providers, as well as their superior scale, led to the exceptional productivity gains.

Such differences between nations were evident in other sectors as well. Competition in retail banking, for example, is freer in the United States than in Germany, where small state-owned and cooperative banks have been unable to build sufficient scale yet remain shielded from the shareholder demands of capital markets. Our study showed that weaker competition kept German banking at a significant productivity disadvantage, even though the sector grew healthily as a result of higher customer demand and a wave of consolidations. Retail banking productivity in Germany was only 74% of the U.S. level by the end of the 1990s.

In food retailing, France fell behind the United States in productivity gains. Again, the culprit was restrained competition. Zoning laws effectively shielded the dominant French hypermarkets from innovative competitors, and smaller, traditional merchants also enjoyed considerable governmental protection. The productivity of the French grocery sector actually fell at a 0.5% annual rate in the 1990s, while U.S. food retailers posted 1.6% annual gains.

Competition was not the only force driving productivity in the 1990s. Strong consumer confidence, for example, led customers to purchase more expensive goods, which also helped boost productivity. And buoyant capital markets contributed to gains in the securities sector. But our research clearly shows that wherever competitive intensity was greatest, innovative products and practices proliferated and productivity grew robustly. And wherever competition was constrained, innovation waned and productivity suffered.

The Role of Information Technology

When competition intensifies and companies face the possibility of lost customers and profits, managers have overwhelming incentives to pursue creative ways to cut the costs of their operations and increase the value they provide to buyers. The choice really is to innovate or die. There are many ways for managers to innovate, of course, but during the 1990s information technology proved to be a particularly powerful tool. We found three reasons why that was so. First, IT enabled the development of both attractive new products and efficient new business processes. Second, it facilitated the rapid industrywide diffusion of innovations. And third, it exhibited strong scale economies—its

benefits multiplied rapidly as its use expanded.

IT's power to promote innovation was not felt equally in all industries, however. The sectors most dependent on intensive information processing—those with highly complex operating processes, heavy transaction loads, or technically sophisticated products, for example—reaped the lion's share of the gains. When an industry had such characteristics and exhibited intensifying competition, productivity boomed.

New Products and Processes. Some of the IT-based innovations of the last decade came in the form of new products and services (such as faster microprocessors or on-line securities trading). Others were enhancements to existing business processes (such as check imaging and centralized credit authorization in retail banking). In many cases, the new products and processes were tightly intertwined. In the semiconductor industry, for instance, the rapid increase in the complexity of chip designs required ever stricter process controls and diagnostics. That spurred the development of sophisticated new information systems for managing chip fabrication, which boosted productivity throughout the sector.

The six industries we identified as showing the greatest productivity gains during the 1990s all leveraged new IT capabilities to create products or refine processes. Sophisticated new IT systems were, for example, a godsend for retailing. Big retailers execute millions of relatively small transactions each day, creating extraordinary operating complexity. IT helps them manage that complexity much more effectively. It not only automates routine functions such as inventory receiving and control, price scans, and checkout, it also optimizes many complicated processes, including supply chain management, merchandising, and customer relationship management.

Securities brokerage is another information-intensive industry that benefited greatly from new IT capabilities. Between 3 million and 4 million securities transactions, with an average size of \$25,000, take place in the United States each day. With the spread of the Internet, innovators like Charles Schwab and E*Trade were able to incorporate highly efficient on-line trading into their already productive discount brokerage models. Our research reveals that, without on-line interfaces, these brokerages would have needed ten

times more brokers or other customer service employees to handle the demand they encountered. The adoption of on-line interfaces has been remarkably swift. Almost no retail brokerage trades were executed on-line in 1995; by 2000, 40% were handled over the Internet. Interestingly, on-line trading was the only instance in which the Internet contributed significantly to the economy's overall productivity jump during the so-called dot-com boom.

In U.S. wholesaling, the use of IT in distribution centers significantly boosted productivity. By combining relatively simple hardware (like bar codes, scanners, and picking machines) with sophisticated software (warehouse management systems for inventory control and tracking, for example), wholesalers were able to partially automate the flow of goods and thereby reduce labor costs significantly.

Diffusion. As new technologies spread across a sector, they often had a striking impact on productivity. In the retail sector, for instance, many companies were quick to adopt warehouse management and automation systems, bar code scanners and readers, and ERP modules for human resources, payroll, and reporting. Those systems helped automate processes that traditionally required large staffs, leading to significant reductions in labor costs throughout the industry. In the U.S. trucking industry, major carriers rapidly embraced network optimization systems and bar coding and scanning technologies, driving productivity gains across the sector. French and German trucking firms, only recently exposed to strong competition through EU deregulation, lagged in their adoption of these new technologies. As a result, their productivity remained well below that of U.S. companies, with France at 85% and Germany at 83% of U.S. levels.

Technological innovations not only increased productivity in some sectors; IT itself also directly facilitated the diffusion of many business and technological innovations. Companies used more sophisticated corporate planning tools, improved communications systems, and continuous on-line monitoring to increase the speed with which they replicated the breakthroughs of their competitors. New technological capabilities played a particularly strong role in spreading innovations across distribution centers and stores in the retail sector and across banking and brokerage branches in the financial sector.

Fast diffusion is a double-edged sword, however. While it improves overall industry productivity, it can erode the competitive advantages of individual companies. Once rivals in a sector adopt an IT innovation, after all, it becomes just another cost of doing business. As a result, many companies that spent heavily on state-of-the-art technology in the 1990s failed to recoup their investments. On-line banking spread so rapidly, for example, that no individual bank was able to reap any competitive advantage—the benefits all went to customers. (In this case, the banks also had unrealistic expectations of changing consumer behavior. U.S. customers have adopted on-line banking so slowly that it has yet to have a major impact on sector productivity.)

The secret to retaining an edge from rapidly diffusing technologies, we found, is to couple them with other distinctive capabilities or processes in ways that are hard to replicate. J.P. Morgan Chase recently used IT to augment its strengths in the automotive finance market. In early 2001, the financial services giant had 9,000 dealers in its system and was a leader in the prime-lending segment. It then dramatically extended its distribution network—to 18,000 dealers—by rolling out its on-line DealerTrack system, which dealers use to help customers find and close loans electronically. Because DealerTrack supports J.P. Morgan Chase's existing advantages, its benefits cannot be easily copied by competitors—even if they install the same technology.

Scaling. The benefits of most IT innovations grow dramatically as scale increases. Once you install new software for transaction processing, for example, the marginal cost of processing additional transactions falls rapidly toward zero. Indeed, given the often high up-front costs of adopting a new technology, achieving scale is often crucial to reaping a return on an IT investment.

When technology innovations spread equally through countries, we found their impact on productivity could still vary widely depending on the extent of industry consolidation. IT innovations had their greatest impact in industries with a high degree of concentration or with a high volume output per customer. Retail banking is a good example. Retail banks in all three countries we studied have automated their back offices, enabling them to service a virtually unlimited number of transactions at negligible marginal cost. Yet U.S. banks have enjoyed the greatest productivity gains. That's because U.S. consumers typically

carry two to three times more financial assets and loans than their French and German counterparts. U.S. banks simply process more transactions per customer.

German retailing is also illustrative. Weak corporate governance kept unproductive German retailers in business, leading to overcapacity and meager profits. That limited German retailers' ability to invest in the IT-enabled, long-term efficiency improvements that some French and most U.S. retailers were adopting.

A New Agenda for IT

Even in the six sectors that gained the most from IT, many companies failed to earn strong returns from their technology investments. Some simply abandoned new systems when implementation difficulties arose or costs exceeded expectations. Others took a piecemeal approach, automating only parts of their business processes. Still others didn't invest in the areas with the biggest potential impact on productivity or invested too early in systems that competitors could easily copy.

Some of these errors seem surprisingly obvious. But in retrospect it's easy to see how some managers in the late 1990s got carried away with IT and spent money unwisely. As IT investment soared, so did productivity growth, economic growth, earnings, and stock market valuations. IT took on the appearance of a panacea, leading many managers to assume that "me-too" investments would pay off.

There's much to be learned from the companies that gained the most from their investments. Our research revealed, in particular, that three practices distinguish the companies that were most successful in their IT investments. First, such companies targeted their investments at the productivity levers that mattered most for their industries and themselves. Second, they carefully thought through the sequence and timing of their investments. Third, they didn't pursue IT in isolation but rather developed managerial innovations in tandem with technological ones. Let's look more closely at how these imperatives drive productivity. (For a discussion of the implications of these imperatives for technology companies, see the sidebar "The Challenge for IT Vendors.")

Target the productivity levers that matter. There are many ways to improve productivity, as the exhibit “Working with the Productivity Equation” illustrates. You can reduce labor or other factor costs. You can increase labor efficiency or asset utilization. Or you can sell new or higher value-added goods to your customers. IT can play a role in each of these areas. The trick is to concentrate your IT spending on those levers that will have the greatest effect on productivity. Many companies we looked at spent heavily on seemingly attractive new technologies, only to find that they had little effect on results.

The levers that matter vary from industry to industry. That explains why the IT applications with the greatest impact are often tailored to particular sectors. We found, in fact, that no general-purpose application had much effect on productivity. In retail banking, customized applications for automating lending, credit card operations, and back-office transactions provided the greatest boosts to productivity. In consumer retailing, the key applications focused on streamlining distribution and logistics, merchandise planning and management, and store operations. In the semiconductor industry, the greatest gains came from highly specialized tools for electronic design automation, process control, and yield optimization. CRM applications, on the other hand, generally purposed to increase revenue through better customer management, tended to yield mostly poor results.

Even within an industry, different productivity levers can have very different impacts. Consider retailing. General merchandise retailers like Wal-Mart are low-margin, high-turnover businesses selling a vast number of items, many of which are consumer staples. They get the most benefit from tools such as warehouse and transportation management systems that allow for a tighter link with suppliers and an increase in inventory turns for a given product. On the other hand, specialty-apparel retailers like the Gap handle many items with short shelf lives and therefore rely on assortment and allocation planning tools to cut obsolescence and inventory-holding costs. Among electronics retailers like Circuit City or Best Buy, store allocation and price optimization tools play a key role in reducing markdowns. Home improvement retailers, whose profits hinge on after-sales services such as warranties, home deliveries, and repairs rely on extended order management systems to ensure greater customer satisfaction.

As these examples show, simply following broad IT trends can backfire. The smartest

companies analyze their economics carefully and spend aggressively on only those IT applications that will deliver outsized productivity gains. As for other necessary applications, they seek out the cheapest possible solutions. And they always remember that the system that pays off for one competitor may do little for another. Take supply chain management systems, for instance. Spending on these popular technologies has proven to be a boon to general merchandisers, but comparable investments by apparel companies have yielded very little.

Get the sequencing and timing right. IT investments build on one another, often in complex ways. Companies that install sophisticated (and expensive) new applications before they've done the necessary groundwork are almost always disappointed. They either fail to achieve the expected benefits, or they find themselves doing constant retrofitting. But companies that take a disciplined approach, sequencing their investments carefully, often reap great rewards.

Wal-Mart's "step change" approach to IT investment during the 1990s is a great example. First, the company installed software to manage the flow and storage of products through its far-flung network of suppliers, warehouses, and distribution centers. Once it had automated product flow, it focused on using IT to coordinate its operations more tightly with those of its suppliers, leveraging its greater efficiency. With that smoother coordination, Wal-Mart could invest effectively in technology to plan the mix and replenishment of its goods. Finally, after integrating all these capabilities, the company built a data warehouse that uses information pulled from a range of sources to handle complex queries.

KMart, by contrast, made a misstep in its IT investments that undermined their effectiveness. It invested in systems to improve promotions management before it had installed the supply chain systems necessary to handle fluctuations in sales volume. As a result, it was unable to capitalize on the more precisely targeted promotions. Many retail banks also made errors in sequencing. They invested in popular customer relationship management systems before they had built repositories of consistent and reliable customer data. Not surprisingly, the CRM investments fell well short of expectations.

Even with a sound plan for sequencing, firms have to consider the timing of their investments. They must ask themselves, in particular, one crucial question: Should we lead or follow IT trends? In making this decision, firms must understand that IT alone is almost never a true differentiator. As we saw with J.P. Morgan Chase's DealerTrack system, IT provides distinction only when coupled with other, less replicable advantages, such as scale or a strong brand.

A company should rush an investment, therefore, only when it's clear that the technology will advance the firm's business goals, enable true innovation that strengthens existing advantages, and be resistant to the leveling effect of imitation. In semiconductors, where superior chip design confers a major edge, Intel's investment in the development of the Pentium processor to replace the 486 proved essential to staying ahead of the competition. In semiconductor equipment, Applied Materials' aggressive investments in new manufacturing technologies also paid off, simply because its smaller rivals lacked the resources to rapidly imitate the advances.

Of course, it's hard to foresee whether an investment will yield innovative results. At the critical moment of decision, managers must be alert for red flags indicating that the investment will not differentiate the firm, such as widespread hype about the IT opportunity or a rolling wave of competitors considering it. Such signals of broad awareness suggest that any added profitability from the innovation will quickly dissipate. Companies must also know themselves: their taste for risk, their confidence that they can merge IT with other advantages to stay ahead of the pack, and their corporate track record in mobilizing people and processes to effect change. Where the indicators are weak, the best course is usually to follow, not lead.

Pursue managerial and technological innovations in tandem. History shows that technological innovations are typically of little use until managerial practices adapt to them. That was certainly true in the 1990s, and it remains true today. Wal-Mart, for instance, would have gained little from its investments in innovative information systems if it hadn't also redefined its relationships with suppliers and dramatically simplified the logistics practices at its distribution centers. Best Buy and Target would not have become leaders in retailing if they hadn't combined advanced IT with collaborative purchasing systems and

advances in warehouse automation, cross-docking, and inventory tracking. Intel's IT investments turbocharged its productivity because they accompanied breakthroughs in materials technology and manufacturing processes. In all these cases, business managers led the way, reshaping their companies' processes and practices so that the full benefits of new information systems could be realized.

CRM in retail banking provides the cautionary tale. Banks hoped that the new systems for gathering and sharing customer information would boost cross-selling rates, reduce customer attrition, attract new customers, and increase profitability per customer. Yet despite massive spending on CRM, the number of products held by an average household at its primary bank has remained flat over the past three years. One reason for this, as already noted, was poor sequencing—the required customer data was not yet in place when the CRM systems came on-line. But many bank managers also failed to make necessary changes to their sales and marketing processes. The banks' business units continued to be organized around specific products and customer segments, hindering the integrated management of overall customer relationships. In addition, incentive structures for sales personnel undermined the kind of cross-selling that CRM theoretically makes possible.

The success of IT investments hinges on the particular characteristics of different industries and the particular practices of different companies. That fact goes a long way toward explaining the lack of correlation between IT spending and productivity that we've seen in recent years. For IT to fulfill its promise, users and vendors must deploy it thoughtfully, tailoring it to individual sectors and businesses and merging it with other product and process innovations. The challenge will be to use existing systems effectively while at the same time making targeted new investments that maintain competitive parity and, when possible, strengthen differentiation and buttress advantage. IT is not a silver bullet. But if it is aimed correctly, it can be an important competitive weapon.

The Challenge for IT Vendors

Our research revealed three practices that distinguish the companies that gained the most from their IT investments. These imperatives for effective use of IT have important implications for vendors as well.

1

Managerial imperative

Target the productivity levers that matter.

Vendor response

Gain customer-specific know-how, and focus development and sales efforts on specific sectors and business models.

IT providers must learn more about how their technology can enhance each customer's business. Whether they are helping to improve retail supply chains, cut processing time for insurance claims, or reduce errors in hospital lab work, they must master the details necessary to raise their customers' productivity.

The shotgun approach—supplying all kinds of products to all kinds of customers—will almost surely be a losing strategy for vendors. Those with a panoply of offerings will become mired in the complexity of managing the business, and mediocre execution for all customers will likely ensue. So providers face hard choices. They must decide where to focus and, by implication, how to “right size” themselves. The good news is that the lessons of the past decade suggest that vendors can gain valuable benefits by addressing well-defined customer segments whose performance they can really improve.

2

Managerial imperative

Get the sequencing and timing right.

Vendor response

Help customers find value in sunken IT investments.

Many companies with apparently lifeless IT investments may be missing one final piece of technology. So IT vendors must develop solutions to help their customers turn around unsuccessful technology deployments and articulate and deliver a clear value proposition for future investments. Unless they do both, customers will be less likely to accept big up-front costs for software and hardware in the future.

3

Managerial imperative

Pursue managerial and technological innovations in tandem.

Vendor response

Innovate selectively, and form learning partnerships with customers and third parties.

Technology-driven innovation will remain vital, but as companies grasp the need for simultaneous managerial innovation, their IT investments will become much more selective. In this environment, partnering to learn is vital. Vendors in retail banking, for example, can build long-term partnerships with banks by working with them to identify and execute the business changes necessary to fully benefit from investments such as data warehouses, CRM, customer data integration, and on-line banking. Many customers made large infrastructure investments over the past five to eight years, and they want new products and services that leverage the assets they already have.

Partnering with third parties can also help vendors tie their technical innovations with managerial breakthroughs. To achieve the highest value from IT investments, buyers need to make critical improvements in their business processes and organizational

structures. An integrated information system will achieve little, for instance, if business units continue to be managed in isolation without any cross-unit incentives or reviews. By partnering with firms that specialize in redesigning processes and managing change, successful IT vendors will help ensure that their customers reap the full benefits of their new systems.

America's Uneven Productivity Boom; Chart; Working with the Productivity Equation; Chart; The Challenge for IT Vendors; Textbox

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