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Pick up just about any major newspaper in the United States these days, and you'll find the words somewhere on the front page. Articles about offshoring lament the movement of labor to foreign countries, and outsourcing headlines decry the loss of middle-class jobs to contractors. Of late, the words have been conflated to suggest that a corporate cabal bent on "exporting America" has handed high-paying, white-collar American jobs to well-trained but less expensive workers in India and other locales.

The brouhaha over the loss of service jobs, which currently account for over 80% of private-sector employment in the United States, is not merely an American phenomenon. Service jobs are at risk in all developed countries. In the UK, where some claim that as many as 50,000 jobs moved offshore in 2003, the issue is just as prevalent and just as contentious. Countries like Germany and Sweden are feeling political tremors as well.

Nor is any of the noise new. Protectionism raises its ugly, if discredited, head whenever

economies undergo a major transformation. Sometimes, the political process plays out for good—as it did in the United States in the 1980s, when companies went into competitiveness overdrive and the economy rebounded brilliantly. Sometimes, it plays out for ill, as it did when the 1930 Smoot-Hawley tariff on imported goods exacerbated the Great Depression. Then, as now, society and business have no choice but to confront the economic facts on the ground.

In my opinion, the worry about outsourcing and offshoring distracts from the point. Even job loss is not the issue. As painful as it truly is for people who struggle to find work in a restructuring economy, the unemployment situation will eventually be taken care of by baby boomer retirements and job creation. (Fortunately, many jobs opened by boomer retirement will not be subject to offshore movement.) The real issue then is the loss of service competitiveness. We are now riding a tidal wave of change that we can think of as the industrialization of services. Global competition is on the

rise, and some service markets are being invaded by foreign firms and new entrants. Automation is also transforming the services sector. New hardware and software systems that take care of back-room and front-office tasks such as counter operations, security, billing, and order taking are allowing firms to dispense with clerical, accounting, and other staff positions. And self-service is having a major impact: Why use a travel agent when you can book your own flight, reserve a hotel room, and rent a car online?

To survive the revolution, service firms of all stripes must start defending themselves, just as their manufacturing cousins did a generation ago, by putting themselves through competitiveness boot camp. The work ahead will require proactive, far-reaching, often draconian changes, focusing on customer preference, quality, and technological interfaces. Specifically, companies will need to rewire their strategies to find new value from existing and unfamiliar sources; deintegrate and radically reassemble their operational processes; and restructure the organization to accommodate new kinds of work and needed skills. In this article, I will suggest specific ways that companies can prepare themselves for the dramatic changes ahead. But first, let's take a closer look at the driving forces behind the service transformation.

The Industrialized Information Chain

To understand what's happening in the services sector, we need only review the transformation of manufacturing in the United States, a bellwether due to its economic heft and the pace of change it has experienced. In the early twentieth century, manufacturing moved from the local shed to large-scale, mass production facilities. By 1950, the manufacturing sector employed 34% of all workers in the United States.

Fifty-three years later, the picture was vastly different. By 2003, manufacturing accounted for just 12% of U.S. jobs. In the three years from 2000 to 2003, more than 2 million U.S. manufacturing jobs were lost to offshore outsourcing and global competition. Corporations that showed flexibility and adopted new strategies, such as IBM, GE, and Intel, have survived and succeeded. Companies like Zenith, American Motors, and RCA, which remained entrenched

in old positions, have gone away. Many others, like GM and Xerox, are still struggling to recover from past inertia.

Service firms are now subject to a similar fate. In a prescient study done for the World Bank using employment data from 1990, Uday Apte of Southern Methodist University estimated that about 10% of U.S. service sector jobs had the potential to be outsourced, moved offshore, or automated; other G7 countries showed a similar pattern. An ongoing research project at the Center for Management in the Information Economy at UCLA confirms with current data that, in absolute terms, roughly 10 million service jobs could be lost to all causes. This study encompasses surveys and interviews with 300 senior IT managers and case material from more than 100 companies in several countries, as well as analyses of data from the U.S. Department of Commerce, the Bureau of Labor Statistics, and the U.S. Census Bureau.

The loss of service jobs is not the result of some whimsical and unprecedented love affair with the 0 words. Outsourcing and its complement, vertical integration, have been part of the standard repertory of business practice as long as there have been shopkeepers. The primary change driver behind the service revolution is technology. Forget about the information highway, Moore's Law, and the wonders of wirelessness. Rather, think of technology as creating an information assembly line—information today can be standardized, built to order, assembled from components, picked, packed, stored, and shipped, all using processes resembling manufacturing's. Industrialized information becomes steadily more efficient, less expensive, and more highly automated. The costs of logistics and storage are minimal; only labor and intellectual property matter.

Consider what's happening in one information-intensive business, the diagnostic imaging industry. Born in the 1980s, when CAT scans, radiography, ultrasound, and fax machines first came into widespread use, diagnostic imaging involved multiple discrete processes and people, all of which were located together, typically in a large hospital. A doctor referred a patient to the radiology department, where a technologist performed a scan on a machine. The film image passed to the radiologist, who inspected it for anything suspect. The radiolo-

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gist recorded his or her interpretation of the image on an audiotape, which moved to a medical transcriber while the physical X-ray was shipped to a football-field-size film storage facility. The transcribed report was subsequently faxed or mailed to the physician.

With today's technology, however, the entire process can be reconfigured. A patient can be scanned at a convenient location by a technologist operating a machine out of a storefront or even a mobile trailer. The images can be sent electronically to the diagnosing radiologist, who may be in a clinic many miles away, or directly to the referring physician. Voice recognition software transcribes the diagnoses, or the transcriptions can be performed offshore. Intelligent software tools are being developed to aid in the actual diagnosis, and one day they may even supplant the radiologist for certain problems.

Who wins? Certainly the customer, who enjoys greater convenience and lower costs. The outsourced imaging company enjoys the benefits of economies of scale, easy maintenance,

and volume purchasing. Who loses? The transcribers and all but the very best radiologists. Hospitals, too, lose revenue, though they save some money by outsourcing a complex service.

Thus we see that the same phenomena that forever altered services like simple data entry and credit card processing are now affecting more interactive, complex business services (IT, market research, and content management) and administrative work (accounting, tax returns, data management, billing, and customer services). Other information-intensive fields such as engineering, management, publishing, financial services, and education are not far behind. As technology turns information services into industrialized components on an assembly line, jobs will become ripe for the plucking by global competition and offshore outsourcing. Meanwhile, jobs in the physical services—nurses, construction workers, bricklayers, janitors, restaurant and hotel workers, mechanics, and so on—will remain localized and buffered from the disruption. (For more on the global movement of service jobs, see the exhibit "Map-

Choosing Your Industrialization Strategy

The strategies that service organizations select will depend on the work they do and whom they serve. Companies whose business processes are relatively straightforward but tailored to customers' specific needs (retail sales, Web design, travel and tourism, and technical support, for example) should consider shifting portions or all of their businesses toward automation, self-service, or providing end-to-end services; they may also want to consider outsourcing those portions of their businesses that are not very profitable. They might want to think about opening their own plants or offices overseas (captive offshoring), since keeping close tabs on the customer is important in this segment. Firms delivering standardized services using simple processes (retail banking, data management, telemarketing, billing, and so on) will want to look at outsourcing or offshoring all or some of these services to cut costs. But a key strategic direction for them will be to provide complete, end-to-end services in a one-stop shop. These areas may see global competition, and companies must not only

defend against it, but must globalize themselves. Businesses whose processes are complex and require customization (such as personal financial planning, expert medical diagnosis, relationship marketing, engineering, and design) will want to keep their work in-house and localized, but focus on decoupling and deintegrating their processes and selectively automating or outsourcing where feasible. Finally, companies whose work is standardized yet whose processes are com-

plex (credit analysis, technical research, content management, software development, routine medical diagnosis, tax preparation, and so forth) should consider captive offshoring, capitalizing on their expertise through in-house automation, and outsourcing selectively where they need to fill capability gaps; they may also want to think about globalizing their businesses, especially if they have unique expertise with complex processes or have automated such processes.

	Simple Process	Complex Process
Customized Service	automation self-service end-to-end service captive offshoring selective outsourcing	insourcing, onshoring deintegration, decoupling selective automation selective outsourcing
Standardized Service	offshoring, outsourcing globalization one-stop shop end-to-end service	captive offshoring in-house automation selective outsourcing globalization

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ping the Service Migration.”)

The industrialization of services raises critical questions that executives in service organizations must ask themselves: What is the potential consequence of reorganizing our business proposition? How would a redesign and commoditization of our service affect different players in the information chain? Is there an opportunity for us to become involved in a new area? What could realistically come to pass for our sector? How can we remain relevant and competitive in a transformed industry?

To avoid the fate of many manufacturing companies, service firms must reject business as usual and face up to the fact of change. They should take a good, hard look at their strategy, beginning with a careful scan of their own end-to-end information chain. For just as master-

ing the supply chain is key to achieving manufacturing efficiency, having command of the end-to-end information chain will give service firms a competitive advantage. In particular, companies can race ahead of the competition by focusing on the neglected or overlooked links in the chain. They should gather helpful hints from their customers, who are clamoring for greater choice, more control, lower cost, higher touch, and higher-quality service than they are currently getting.

Reconnecting the Customer

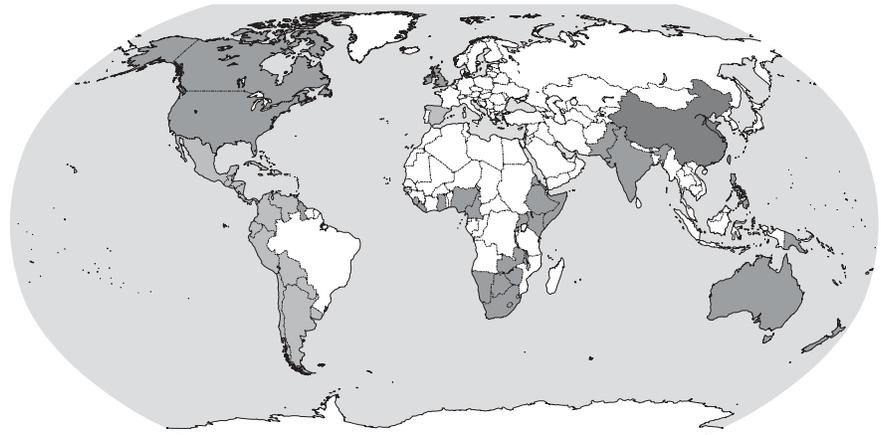
As technology affects the basic economics of service information, the balance of power and the distribution of profits in an industry can change quite radically. Creative destruction is the name of the game. A clever change that one company makes from seemingly far away

Mapping the Service Migration

While still miniscule in absolute terms, global trade in data and knowledge is growing rapidly. Surprisingly, this information trade does not follow the pattern of manufacturing trade. Instead, it echoes the older paths of colonialism. The reason? Language and culture rather than economics play a powerful role in the migration of information-intensive service jobs.

Manufacturing work has tended to migrate from countries with high labor costs to those with low costs, regardless of cultural or linguistic differences. But in information industry sectors, language barriers may well remain hard to cross for many years, especially in consumer services. Thus, the information trade will occur primarily between countries with linguistic and cultural similarities. The greatest opportunities will be in linguistic groups whose wealth distribution is highly bimodal.

For example, the English-speaking world contains some of the most developed economies (the United States, the UK, and Australia) along with some of the poorest (India and Pakistan); the poorer countries have opportunities to supply services to the richest in the group. Among Spanish-speaking countries, the world's third-largest language group, the income distribution is less ex-



The language footprints of English-, Spanish-, and Chinese-speaking countries show the different opportunity levels for service trade for each language group.



treme, the majority of countries being relatively poor. That means fewer companies (in Spain, primarily) are looking to outsource services offshore, though the supply of poor Spanish-speaking countries in Meso and South America able to provide the services is plentiful.

At the other end of the service trade spectrum are countries with languages that are geographically and economically concentrated. Despite being the largest linguistic

group in the world, for instance, China's language, culture, and income distribution is confined to the Asian continent. For those reasons, China will probably not be a big global player in the information-based service trade. Ironically, linguistically isolated countries like Italy might be spared some of the intense competition—and the attendant job losses—of the global service world. Given the current pressure on Italian manufacturing sectors, this could be a welcome respite.

can ripple through the system, leaving formerly large players in declining backwaters.

Where should service companies begin to look to gain a competitive edge? They should start with customers—particularly underserved or poorly served ones. Though we all know that customers want companies to anticipate their needs, doing so is particularly important for service firms. That's because the mechanics of consumer behavior play a much bigger role in information chains—where customers are directly involved in service processes—than they do in supply chains. By taking apart an information chain—deintegrating it—we can see all kinds of opportunities for enterprising firms.

Customer Behavior. Companies that spend time and money in understanding customer preferences and developing specific services for niche customers will do well. This becomes even more important as firms move all or some portion of their businesses to the Internet.

One company that has done a good job of understanding consumer behavior while maintaining a unique niche is Edmunds.com. Founded in 1966, Edmunds Publishing once sold a well-known series of books aimed at purchasers of new and used cars. Today, Edmunds's publishing business is secondary. Instead, the firm operates an interactive Web site that is a complete information source for car buyers. In making the leap online, Edmunds.com hired consumer psychologists to study the behavior of Web surfers and experimented intensively with Web design and layout. While its early sites would have never won awards for flashy design, they were carefully constructed to respond to customer preferences for simplicity, ease of use, and customization. Accordingly, over the years, the company has accumulated dozens of awards from organizations such as J.D. Power and Associates.

Demographics. Firms should find ways to serve growing but neglected populations. Consider the case of Wells Fargo Bank, a pioneer in online banking. Since just about every competitor has followed Wells Fargo onto the Web, the bank is now trying to differentiate itself by experimenting with some unique programs in the physical world. For example, in its West Coast strongholds, the bank has created services tailored to the Hispanic community. Intercuenta Express accounts make it easy for customers to transfer money to banks in Mexico, and the *matricula*, an ID card issued

by the Mexican consulate, is accepted as proof of identity to open an account. Wells Fargo even has a program for Hispanic customers to host dinners at local homes to introduce the bank to neighbors, rather like a Tupperware party for banking. New customers are flocking to the bank. It opens roughly 22,000 accounts a month in this underserved demographic.

Keeping the Ball in Play. Taking apart and reassembling the information chain causes some companies to lose touch with their customers. Firms that outsource customer service, in particular, tend to lose sight of the client. Most of us have experienced the sense of disconnection and helplessness brought to us by myopic companies that have tried to save money by outsourcing their call centers, billing, or e-mail communications. Companies that focus on delivering responsive and error-free service will have a competitive edge. Dell, for example, has chosen to return some customer service operations to the United States from India because corporate customers have protested against handoffs.

End-to-End and Personalized Service. Customers will increasingly seek to purchase from firms that offer end-to-end service. Companies like Virgin Atlantic Airways, which provides business-class ticket holders with complimentary limousine service and “drive-through check-in,” have the right idea. Recent years have seen the growth of hundreds of concierge services that attempt to take on the myriad daily tasks—shopping, laundry, yard work, home repair—that bedevil us all. Financial services firms are jockeying to offer the customer the complete financial supermarket. The lesson for service companies is that instead of competing over individual links in the chain, they should compete for the chain itself, which gives them the maximum opportunity to find areas of profit.

As competition increases, customers expect service firms to anticipate their needs and deliver on them more than ever. Some hotels, for instance, do everything possible to keep repeat customers from having to ask for anything. Everyone from the limo driver to the housekeeper knows what newspaper you read, what wine and snacks you prefer in the minibar, and how many pillows you like on your bed. (For more on using technology to anticipate customer needs, see “Diamonds in the Data Mine” by Gary Loveman in HBR's May 2003 issue.)

Information today can be standardized, built to order, assembled from components, picked, packed, stored, and shipped.

Delivery to Screens. In the wired world, the information chain ends in an appliance or tool that directly affects consumer behavior. PDAs, phones, TVs, personal computers, and various other boxes and screens will compete for the customer's attention. Customers will expect anywhere, anytime access to information; simple, possibly voice-activated, interfaces; and customization, personalization, responsiveness, and flexibility. As telecommunications providers, appliance makers, operating systems companies, and Internet service providers intensify their fierce battle for control of the customer, service companies have an opportunity to dominate the screen and the appliance closest to the customer. The design of the service and the interface, rather than the appliance or the technology, is what confers success.

One company that has captured the strategic ground—at least in one country—is NTT DoCoMo in Japan. NTT DoCoMo understands how to deliver information to the customer in just the right way. Introduced using a miserly communication rate of 9 kbps, its iMode handheld device is more than just another mobile phone service. It offers a range of low-priced services, including Internet access via NTT data networks and iMode servers, and thus access to a variety of services and content. iMode currently has more than 40 million subscribers. A significant part of iMode's revenue comes from content sold across the iMode platform. Banks and online magazines, for instance, pay for favorable placement of their content on the iMode screen. NTT DoCoMo uses its appliance to claim a disproportionate degree of power and control over other players in the information chain, much as Microsoft's hegemony over the desktop PC operating system allows it to dictate office computing rules. Other winners in the future will be those companies that bring experiential and intuitive solutions, along with bundles of services and content, to screens, interfaces, and appliances.

None of these suggestions pretends to offer a final remedy. But it's clear that service companies should focus their efforts on overcoming the feeling of disembodiment and depersonalization that technology has created between companies and customers.

The R Words:

Realign, Redesign, Restructure

The company that best understands and antic-

ipates customer needs, delivers consistently high-quality service, and connects to the customer via the channel of choice wins. To meet those challenges, top managers must put themselves through competitiveness boot camp, revamping their company's strategy, operations, and organization in the process.

Realigning Strategy. In attempting to link with customers directly, firms will need to overhaul their offerings, cost structures, and competitive platforms to align with the shortened information chain and with the changing demands and behavior of their customers.

Consider the legal publishing divisions of Thomson, a global publishing giant. In the days before electronic publishing, the company printed and distributed paper-based information about U.S. court decisions, new bills, and amendments. As courts started to publish material electronically, the role of the publishing firm began to be called into question. Understanding that it did not own the legal intellectual property, Thomson redesigned itself into an information packaging and shipping company—an organizationally far-reaching and painful effort spanning a decade. Rather than operating parallel and distinct product lines, the company chose to focus its operations around central electronic document databases; software systems took over tasks from indexing to citation. As a result, a whole slew of new specialized products could be sliced, diced, and priced out of the database. While Thomson reduced its need for lawyers and legal professionals, it added to the ranks of technologically savvy and operationally oriented managers. Today, Thomson is positioned as one of the world's dominant electronic publishers of legal, tax, and accounting information, as well as being a leader in scientific and technical data, learning, and assessment.

In this example, we see what happens as new technology changes the relationship between sources, services, channels, and customers. In Thomson's markets, speed trumps professional knowledge and processing. Many tasks shift to the customers as self-service. Professionals lose status and control. Operations and technology become more centralized, at least temporarily. And as the service becomes commoditized, competition intensifies, and differentiation grows vital.

Redesigning Processes. As the services revolution proceeds, not only will all companies

Instead of competing over links in the chain, service companies should compete for the chain itself.

have to understand their information work processes, but they will also want to examine each stage of the process: Should it be performed at headquarters or in the field, nearby or offshore, in-house or in some far corner of the globe? Processes, in other words, will need to be much more specific and carefully managed than ever before. In most cases, processes will need to be closely synchronized with those of other firms as well as with customers, who may routinely collaborate and participate in producing output.

Los Angeles-based IndyMac Bank, a pioneer in electronic banking, is becoming an online mortgage “factory.” The company views the back-room loan origination process as one of information assembly followed by credit analysis, underwriting, approval, and closing, in which some 15 discrete parts are brought together into a finished product. IndyMac has distributed some of these processes to different points in the United States; some customer contact processes are slated to move to call centers abroad. Other back-room processes, such as credit analysis, are partially automated. More complex and judgment-based aspects of analysis, such as underwriting and acceptance, remain with experts in the United States. All these processes are sewn together on the back end. On the front end is an automated, rule-based platform called e-MITS, which allows customers and brokers to apply for mortgages online and automates certain tasks of application evaluation, risk-based pricing, and rate-lock guarantees.

When a customer applies for a loan online, the software ensures that all qualifying requirements are met. If some information is lacking, the software informs the customer. Prompting customers to input the correct information greatly reduces work for IndyMac and avoids multiple iterations of the application. The clients, in turn, receive responses in minutes rather than days. As a result of IndyMac’s effort to streamline the mortgage process, its yield on underwriting loans has leaped from 30% in 1993 to more than 80% in 2003.

An adept firm like IndyMac looks quite different from the traditional service firm in terms of people, processes, and procedures. But overhauling a traditional service design is no one-shot, onetime deal. Because technological and infrastructure changes, competition, and industry restructuring are ongoing, service

companies need to constantly experiment and fine-tune their systems if they are to negotiate these changes in a sustainable manner.

Restructuring the Organization. Reorganization of processes necessitates organizational change. Already, online banking and ATMs have displaced tellers, and e-tickets and automated check-in machines are forcing travel agents and airline counter personnel to find new jobs. But such automation just substitutes technology for people. Deeper changes are necessary, and leaders will need to constantly redesign their organizations to adapt to new conditions, while ensuring that the customer does not get lost in the process.

How can a service company dealing with industrialization realistically create such an adaptive learning organization? One common approach is to call in consultants to provide suggestions about the kinds of capabilities that need to be added. This is not a bad first step, but it only works for relatively simple situations. Ongoing change management requires internal capabilities. Another short-term fix is to shift from individualized job responsibilities to a team-based structure—that is, to focus executive teams and task forces around key issues rather than around functions. But over time, this approach is hard to sustain, because individual performance is harder to identify and responsibility gets diffused.

A radical, but more sustainable, approach is to build the organization around the restructured information and value chain. The front office takes responsibility for the customer experience; the back room handles internal processes invisible to the customer; and a third organization is responsible for dealing with partnerships (suppliers and coproducers). All three are likely to be in constant flux. Most important, these three groups can and should overlap; flexibility and constant communication among them are critical. Like task forces, these groups have to be able to live with some fuzziness in their task definitions and be willing to share responsibilities with other groups.

What kinds of new skills will companies most need? First, they will want to make sure they understand the impact of new technologies, strategies, and channels on customer behavior. Management teams may need to include skilled managers in new areas—a chief experience design officer, a director of experience engineering, a chief of global service de-

livery, and so on. Second, technology experts will need to be distributed throughout the organization, rather than concentrated in a separate IT group. Third, managers of vendor and partner relationships will have a significant place in the new structure and will need to learn to deal with new global allies and organizations. Finally, because the employees of the new service company may be spread across the globe, management will have to adapt to a more diverse workforce. Some of this is not new to multinational companies. But it may well be very new to traditional service organizations.

Service firms will want to consider hiring executives capable of dealing head-on with the increasingly rapid change that the sector will experience. Managing changes in the executive ranks will be painful, however, since experience can become a liability when the future is likely to be far different from the past. Many senior managers will be slow to relearn how their industries work and will find themselves sidelined. The more flexible the manager, the better his or her chances of survival. One suggestion is to hire executives from global manufacturing companies who wear the scars of the competitiveness wars, as banks and utilities did when they tapped managers from deregulated firms.

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The industrialization of services is here, and outsourcing and offshoring are only part of the revolution. Automation, customer self-service, and global competition have been added to the mix, presenting a threat and a significant opportunity for all service companies. The churn, restructuring, and transformation of services will continue—and even accelerate—for the foreseeable future. Though the changes will not be accompanied by significant unemployment except during a painful transition period, they will certainly mean a radically different landscape for companies, managers, and workers.

In the end, the survivors of the service revolution will be those who understand that opportunities lie in removing and supplanting links of the information chain and also in understanding how the chain is being restructured. Once they understand their own information chains from end to end, companies must begin reorganizing strategies, processes, and people for the challenge ahead. Surviving competitiveness boot camp will be difficult, but the alternative could be disaster. 

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