The **Internet** in the **Workplace:** How New Technology Is Transforming Work

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Contents

1 The Internet Transforms the Workplace

"What people have not grasped is that the Internet will change everything."
– John Chambers, CEO of CISCO

The Internet was virtually unknown among business leaders in the 1970s, confined as it was to the arcane academic and government research domains. By the late 1980s, though, and especially in the 1990s after the World Wide Web made its debut, the Internet set off a wave of creative destruction that affected business around the world. John Chambers, chair of what was once an obscure networking company that made the routers for the Internet's infrastructure, rapidly became one of the most widely quoted visionaries in the new era. Developing an "Internet strategy" became the battle cry for many organizations, as their anxious leaders watched infant net companies like Amazon.com and eBay rise to spectacular heights on Wall Street and in the public consciousness. The leaders of these newcomers, along with the hosts of techno-savvy entrepreneurs who were attracting so much investment capital, seemed to "get it." Yet when most of the dotcoms crashed at the end of the decade, it became very clear that competing effectively in the Internet age is far more difficult than anyone thought. Riding the Internet wave and truly understanding its impact and underlying role in massive changes turned out to be more complex than just "getting it."

The Internet's dramatic effects on business models and strategies have captured the headlines, and business leaders have been struggling through some very turbulent times as they experiment with ways to exploit the net to achieve competitive advantage. The changes the Internet has brought to the workplace itself, however, have received much less notice in the rush to e-business. Most of us are now working in a *netcentric* environment, one in which the influence and capabilities of the Internet permeate our work lives.

We are only beginning to understand the nature of the changes and how dramatically they alter the organizations in which we work and our roles within them. We are just learning, for example, what "virtual leadership" is and how internal power relationships change when any employee from the kitchen staff to the board of directors can send an email to the CEO or launch a Web site that criticizes the company. We are only beginning to glimpse the effects that around-the-clock access to email, the Web, and wireless devices has on the lives of employees and their families. In offices around the world, workers have desktop access to every Internet corner, whether work-related or not. The tools to monitor and control their activities are widespread and easily implemented, and businesses are adopting those tools without fully understanding how this kind of surveillance affects productivity or the psychological characteristics of the workplace.

Internet in the Workplace: A Brief Tour

In *The Internet in the Workplace*, we explore the many changes this shift to netcentricity has triggered. Some of those changes are dramatic, but others are quite subtle. Most office workers, for example, already had seen their dumb terminal retired by the early 1990s and welcomed the new microcomputer on their desks that they could use for far more tasks. They could not only still access the company's mainframe database, but also do word processing, spreadsheets, statistical analysis, and presentations. Most were also connected to a local or wide area network and could share files, printers, and send email and documents to one another. Adding the required telecommunications equipment and the connection to the Internet would not contribute any remarkable physical changes to the typical office or cubicle. Yet this imperceptible alteration opened a gateway to the outside world – beyond the walls of the corporation – that has had, and will continue to have, far-reaching effects.

Though the Internet as a "desktop gateway to the world" is probably the most obvious change from the worker's point of view, the Internet's effects on the workplace go far beyond that. It changed the context of work, the context of business in general, and the context of entire industries. The Internet became a catalyst for new business models, strategies, and organizational structures. It introduced new factors that affected the competitive landscape, new rivalries, new competitors, and new pressures that many business leaders were not prepared to address. It triggered new ways of thinking about how to do business, some of which fared well and some of which failed miserably. It also led to surgery on the components of many value chains. The kinds of work that make a contribution to the value chain

changed, making the roles that many people were playing along that chain obsolete – often rather suddenly.

The Internet's role as a catalyst for technological innovation is another signficant feature in its effects on the workplace, and it is the subject of the second chapter. The net's architecture was designed to support all kinds of innovative add-ons, some of which have already found their way to the landfill, the flea market, or to the online auctions. The Internet itself and the evolving standards and protocols that make it up form a stage on which considerable innovation can develop, though not all the new gadgets and software will make it much beyond a single season. Netcentric technologies have, however, certainly made their way into the workplace, and this book examines their effects as well.

The Internet changed the business landscape, making it far more competitive and the workplace considerably more fast-moving. It also hastened the advent of widespread twenty-four-hour connectivity, particularly through netcentric technologies such as cell phones and wireless devices that can receive and send email. Together, these factors led to a reconceptualization of what constitutes the "workday" or the "workweek." The concept of work–life balance has gained new meaning in a highly competitive, netcentric, global economy, in which each worker is accessible any time, any place, and employees can access their colleagues, documents, and data from just about anywhere. For many people, this "always on" mode has become second nature, and it has emerged as one of the major advantages or drawbacks of the Internet's effects on the workplace, depending on your point of view.

By the late 1990s, the volume of email traffic surpassed the volume of telephone traffic, marking a milestone in the Internet's influence on our patterns of communication. Instant messaging has grown rapidly as well, along with several other forms of communication that rely on netcentric technologies. Although neither the business letter nor the interoffice memo has become extinct, their roles in and between organizations, and between the organization and its customers, have changed considerably. Yet the long history and common understanding about how letters and memos should be written and used do not yet exist for the new communication styles, so blunders, misunderstandings, and missteps are frequent. In this book, we will also look closely at the new modes of business communication and explore case studies that demonstrate how they have been integrated into the workplace.

Management and leadership have also been affected by the Internet. Managing groups of people in the netcentric age brings new opportunities and challenges, especially for people whose management skills were

honed in a more traditional face-to-face environment. How are managers adapting their styles to an organization in which much of the interaction occurs over the network, often in choppy, asynchronous rhythms? One management challenge that arises from this new environment involves the ease and frequency with which employees can use – or overuse – the cc: or the bcc: features during email exchanges. Many employees now include their managers in very routine conversations, though they would rarely have included them in these exchanges in person, by phone, or by memo when those methods were the only alternatives. The leaders of the organization are also confronted with new challenges. How can a leader who relies on a charismatic, personal style to effect change and communicate a vision take advantage of the Internet?

Another impact of the net in the workplace involves access to information and the growing realization that more is not necessarily better. Access to the Internet has had an enormous influence on the kind and amount of information that can reach every employee's desktop. Intranets can give employees access to voluminous and up-to-date internal information, and the Internet provides access to vast quantities of business intelligence. Email among employees often contains significant bits of knowledge that would help new employees and veteran colleagues avoid reinventing wheels. Taking advantage of this wealth of information, however, and turning it into useful knowledge that can help the worker solve problems or increase productivity have been far more difficult than most people anticipated. Although the field of "knowledge management" was in progress before the Internet became widespread, the net certainly made it clear that access to more and more raw, unfiltered information did not necessarily lead to productive "knowledge." We explore the young field of knowledge management in this book and describe how some of the initiatives to harness knowledge in organizations have fared. The challenges involve far more than technology, and knowledge management efforts have met with mixed success because they frequently encounter organizational resistance.

The Internet has enabled distance education and "e-learning" and altered the ways in which many organizations provide training and professional development to their employees. Distance education programs have grown at a startling rate, with the emergence of numerous virtual universities, online learning consortia, and endless partnerships among publishers, educational institutions, commercial training programs, in-house development efforts, and technology companies offering distance learning environments. The advantages of distance programs in the workplace are powerful, if they are successful, because they can dramatically reduce travel expenses and time

away from work. They can also offer just-in-time learning on the job in ways that were not feasible when most training was conducted in classroom settings and had to be scheduled well in advance. As you will see in this book, a variety of e-learning approaches have emerged, and many studies have been conducted to determine how effective these programs are compared to more traditional, face-to-face classroom settings.

The value of teamwork became clear long before the Internet permeated the workplace, but most of the time team members were physically collocated. Meetings, brainstorming sessions, after-hours relaxation, and formal team briefings to the boss occurred in the face-to-face mode. The Internet, however, and the collaborative technologies that have been built to take advantage of the global network, raised the possibility of virtual, global teams. You will see later in this book how virtual teams are faring and how group dynamics unfold in a setting in which team members may never actually meet one another in person. Trust, in particular, is a key ingredient to the success of any team, and virtual teamwork requires innovative strategies to develop trust among team members.

One of the most controversial aspects of the Internet's role in the workplace is the issue of workplace surveillance and employee privacy. Although employers have always had extensive legal rights to monitor behavior in the workplace, the netcentric environment vastly increases the scope and ease with which they can perform such surveillance. Digital documents – including email – are stored and may remain accessible for years, and software tools to track net-surfing activity, downloads, and virtually any keystroke are widely available. Small, inexpensive digital cameras can become Webcams, generating video images that can be accessed anywhere in the world from the Web. In this book, we examine the reasons underlying the increase in surveillance by employers and also look at the ethical and legal issues involved.

The impact that technological advances have on employment and job displacement has been an important subject of debate for centuries. In Chapter 10, we examine these historical debates and then zoom in on the recent past, in which the Internet's rapid growth initiated a wave of dislocations, disintermediations, and astonishing changes in compensation packages. For example, many organizations are placing people trained in information technology into special, privileged categories because of workforce shortages. Certain types of IT workers continue to be in high demand and short supply, and human resource managers have responded with special compensation plans. While shortages in some areas exist, some other jobs and whole business units become candidates for disintermediation and

phaseout because of the Internet. This chapter explores these trends and their implications for equity, retention, and career planning.

Finally, we look to the future of the workplace, given the growing extent and influence of netcentricity around the globe. The Internet itself is a vivid reminder of how quickly trends come and go, and of how frequently predictions are made, even by very knowledgeable people, that are far off the mark. For example, IBM Chairman Thomas Watson's remarks are very easy to find on the net. In 1943, he predicted, "I think there is a world market for maybe five computers." Instead of making predictions about the next-generation workplace, I propose various alternative futures, ones that will have pros and cons based on what we now know about netcentricity and on the psychological and sociological effects it can have on human beings in the workplace.

The Context of Change: The Evolving Netcentric Economy

A substantial portion of the Internet's effects on the workplace arise from the economic environment itself, an environment that has been affected a great deal by the growth of the digital network. Although we are not yet conducting business at the speed of thought, as Bill Gates suggested, the pace of business is fast – largely because large quantities of information can be transmitted and processed so much more quickly. Equally important, the cost of transmitting information has dropped precipitously, making it possible to send it farther, to more people, and to almost any place on the globe.

We hear about "Internet time," a phrase that has been applied to many different business processes. The time allotted to product development, for example, has been compressed so businesses can create new products and market them much faster. Systems development has also undergone some remarkable time compressions. Companies that want to bring up e-commerce applications so their customers can reach them and transact business on the Web do not want to wait through the old-fashioned "waterfall" method of life-cycle systems development, in which the many phases – from feasibility study to requirements analysis to software development to implementation – follow one another in sequence. This methodology was always slow, but in the Internet age it could lead to disaster. Given how fast companies are changing their strategies to respond to customer needs and new competition, the application under development would be obsolete before it made it to the second phase. An alternative is to bring up applications quickly in rougher form, even when they have not been tested

thoroughly on many different browsers, for example, or with different computer platforms. Web users are very familiar with this approach – it is never much of a surprise when an online application doesn't seem to work properly, or even causes the computer to freeze. Also, the "under construction" icon on Web sites is very familiar. Imagine how appalling that approach would be in other technology contexts, such as in a kitchen appliance. A consumer who read "under construction" on the digital readout of a new coffeemaker when trying to operate the bean grinder would immediately return the product, not shrug his shoulders and come back later.

Clearly, the intensity of competition among firms has risen. At the same time, the strategies companies use to deal with these new competitive pressures are immature and not well tested. Let's take a look at some of the underlying forces that make the new business landscape so tense and examine some of the strategies corporations are using to address those forces.

Information Asymmetries

The ease with which consumers can now obtain information about competing products, prices, features, repair histories, and company profiles is a major contributor to the change in the context of business. *Information asymmetries* have, in the past, been part and parcel of the business landscape. In any business exchange, it is not uncommon for one party to have more information than the other, and that inequity changes the power equation. For example, when a retailer decides how to market a particular product, the retailer would know that many customers would not take the time or effort to do a comprehensive and exhaustive comparison of all the pros and cons of similar products offered by many different vendors, including the product's features, price, service agreements, or reliability histories. That would require a lot of research and entail much driving, parking, or at least telephoning. It would just be too much trouble, so most customers would settle for a quick survey, or a check of one or two competitors. Though the net has not had much effect on information asymmetries in some contexts, it has become a major leveler of information for an important quantitative variable: price. Here, the analytical power of the net's computers can be put into action.

INFORMATION ASYMMETRY AND INTERNET PRICES: EARLY EXPERIMENTS

Information asymmetries associated with pricing have been especially affected, and reduced, by the Internet, particularly for products that are offered via e-commerce. A consumer can now, with very little effort, check out

the prices of a product from multiple vendors around the country, or even around the world, by using one of the many shopping bots (shopbots) or price comparison engines. These scour the Web for product prices and organize them into tables for ease of comparison. The products can be sorted by vendor, price, model, or other variables, and the consumer can easily draw comparisons. A recent search on MySimon, for example, revealed that the same printer was selling for prices that differed by as much as $100 through different outlets. A consumer could just click on the "buy now" button next to the lowest priced offering and go right to that vendor's e-commerce site to conduct the transaction. This dramatically reduces search costs for the consumer and makes the competition very fierce among businesses selling similar products.

In principle, the lower cost of comparison shopping associated with the reduction in information asymmetry should make these electronic markets more efficient, so prices for products available through the Internet should be lower than those sold through conventional channels. This could be a great advantage to the consumer, though it also changes the intensity of competition among businesses in the same industry. As it turns out, though, pricing is more complicated than this. Research on this subject suggests that businesses have been struggling with different strategies and appear to be unsure of how to deal with the new information asymmetries or with their own competitors. As we see several times throughout this book, we are in an early period of e-commerce, and experimentation is common, often with painful results. There is little research or history to help companies understand how the digital economy actually works or to predict how their actions will affect consumers, competitors, or their own bottom line.

Joseph P. Bailey of the University of Maryland's Robert H. Smith School of Business followed the prices of a shopping basket of books, CDs, and software sold on the Internet and also through conventional stores in the mid-1990s.[1] Surprisingly, he found that the prices of these products on the net were actually higher than they were in the stores, even though the products themselves were exactly the same. He argued that the results could have been due to the immaturity of the electronic markets. Given how new these markets were at the time, it would have been premature to assume that they would not eventually be more efficient, with lower prices for the consumer. It was more likely that the companies were experimenting,

[1] Bailey, J. P. (1998). Electronic commerce: prices and consumer issues for three products: Books, compact discs, and software. Organization for Economic Co-Operation and Development, *OCDE/GD*(98)4.

not completely sure how consumers or competitors would behave. After all, the companies had to invest in the technology infrastructure to offer their products online, and the higher prices were an attempt to recoup those initial investments. The companies may also have reasoned that the convenience of online shopping warranted a little premium that customers would be willing to pay.

In 1997, Bailey found evidence for more experimentation, this time during the period in which Amazon.com – the main online outlet for the shopping basket goods, faced competition from a very worthy competitor – Barnes and Noble. When Barnes and Noble opened their online channel, Amazon reacted dramatically. During the three months after their March 19 debut, Amazon dropped its prices by 10 percent to match their competitors.

MARKET EFFICIENCIES AND FRICTION

Later in the decade, the electronic markets began to show the increased efficiency economists predicted. Eric Brynjolfsson and Michael Smith of the MIT Sloan School of Management compared the prices of books and CDs, collecting over 8,500 price observations over a period of fifteen months in 1998 and 1999 in both online and conventional retail settings.[2] They found that the prices for these products online were nine to sixteen percent lower than they were in the stores, even after considering shipping, handling, and local sales taxes. The electronic market may not be totally without any friction, but it does appear that goods can be sold at lower costs online than they can in stores, or at least they are offered for lower prices, perhaps because of the brutal competition and easy switching by the customers.

Another intriguing finding from this investigation was that the Internet retailers were making many tiny price adjustments to their online offerings, in some cases as small as a penny. The costs for making such changes, called menu costs, are much lower online than they would be in a conventional outlet. For online products, the retailer need only change the price in the central database and the new price will appear immediately whenever shoppers bring up the details for the product. In contrast, a conventional retailer must relabel the products on the shelves in all the stores.

The low menu costs make it easier for online retailers to experiment with pricing strategies, but they also make it easy for companies to respond very

[2] Brynjolfsson, E., & Smith, M. (2000). Frictionless commerce? A comparison of Internet and conventional retailers. *Management Science, 46*(4), 563–586.

quickly to any price cuts by their competitors. In fact, Hal Varian, Dean of the School of Information Management and Systems at the University of California at Berkeley, points out that thanks to the low menu costs, the effects of the comparison shopbots can work both ways. They reduce information asymmetry for consumers and help lower friction in the markets, but they can also, in some circumstances, lead to higher prices rather than to lower ones.[3] This is partly because the shopbots reveal the competition's pricing as soon as it occurs. A price cut is most effective in gaining new business if enough new customers are drawn to the retailer before the competitor responds with its own price cut. But if competing firms can move even faster than the consumers, there is no advantage to cutting prices. This is another example of what "Internet time" is all about, and how it has created a blindingly fast business climate.

Price is not the only factor consumers use to decide which company to patronize, and for many, it is not the main one. The vendor with the lowest price online does not necessarily have the largest market share because consumers are influenced by other variables, such as brand name and reputation. This has certainly drawn many big players into e-commerce, even when their online business competes with physical stores. It has also launched ferocious competition for valuable online "real estate," so customers can easily find you, a competition that has unleashed technological attempts to un-level the playing field and introduce more market friction.

For example, figuring out what key words a customer might use to search for vendors of a product, and then designing Web sites that will be considered "highly relevant" by the search engines and listed on the first page, has turned out to be an extremely important task. The widely used search engine Google uses a ranking algorithm that takes into account a site's "popularity" in terms of how many other sites contain links to *it*.[4] A more popular site containing the user's key words would be listed before a less popular one when the matches are retrieved. Google considers this a fair metric to include in the ranking process, analogous to word-of-mouth recommendations. However, to artificially manipulate popularity level without waiting for outsiders to add links to their site, designers build "link farms." These are groups of circular Web sites that link back and forth to each other for the sole purpose of optimizing their rankings. Google doesn't publish all of its criteria and warns Web site designers not to use tactics like link farms to rig

[3] Varian, H. R. (2000). Market structure in the network age. In E. Brynjolfsson & B. Kahin (Eds.), *Understanding the digital economy.* Cambridge, MA: MIT Press.
[4] Grimes, B. (2003). Fooling Google. *PC Magazine, 22*(8), 74.

the system and jockey for position. They even threaten to drop persistent offenders from Google's index entirely. The link farms, after all, introduce a new kind of market inefficiency that prevents customers from making the most informed choice. They also diminish the public's faith in the trustworthiness and fairness of the search engine's results.

Disintermediation along the Value Chain

Arguably, the longest and most unpronounceable word associated with the netcentric economy is also one of the most feared. The Merriam-Webster Collegiate Dictionary defines *disintermediation* as the diversion of savings from savings accounts with low fixed interest rates to direct investment in high yielding instruments. The word has been redefined in the Internet era to refer to the bypass of a wide variety of middlemen, or intermediaries, that have been traditionally part of the value chain that led from the actual suppliers or manufacturer of a product to the consumers who buy it to use. Middlemen serve many different roles along this process. For example, they might bring together a party in search of a particular service with the firms that provide the service, or they might aggregate many buyers to create a larger volume of demand. Intermediaries might serve a filtering role, qualifying various products or companies to save the buyers the time required to do this themselves. They also might serve in the capacity of distributor of many related products, so their creators or manufacturers need not attempt to market or distribute individually.

A key ingredient in the wave of creative destruction that the Internet brought about involves various kinds of disintermediation, and entire industries have been shaken to their foundations by the process. After the meltdown of dot-coms in the late 1990s, the fears abated somewhat, especially as many of those who served intermediary roles found new ways to add value to the value chain within the context of the emerging digital economy. Nevertheless, the Internet fundamentally changes what the value chain looks like and what kinds of activities add value to it.

Authors, for example, can in principle reach out directly to their readers and fans through the Internet, bypassing editors, printers, layout artists, publishers, distributors, bookstores, promoters, and other kinds of intermediaries involved in the industry. Stephen King was the first best-selling author to publish one of his books through the Internet before it ever appeared in print. In the first forty-eight hours, an estimated half-million people downloaded the e-book *Riding the Bullet*, and King says he has made almost a half-million dollars in royalties. The cost of the e-book was low for

consumers, but publishers are offering authors higher royalty rates because they don't have to bear the burden of actually publishing a print version. Random House, for example, announced that e-book authors would receive 50 percent of sales revenue, which is considerably higher than the usual 10 to 15 percent that authors usually receive.[5] On the extreme end, an author can just publish his or her own book on a Web site and offer it for sale, or for free. Whether anyone notices it, or pays money to read it, is another question, of course.

THE VANISHING INTERMEDIARIES

Intermediaries have played key roles in many industries, such as insurance, real estate, travel, and financial services. Another example of disintermediation occurred when E*Trade began offering consumers the opportunity to research stocks online and conduct their own transactions to buy or sell stock holdings. The broker's role and the broker's commission were dramatically affected.

In the travel business, the independent agent's role as an intermediary between the traveler and the airlines has also been traumatized by the net. The airlines actively promote online ticket purchases, offering special "Internet only" deals and discounts for customers who will skip the travel agent or the phone call to make a reservation. They also make it easier for travelers who use e-tickets. At Los Angeles airport, for example, while my colleagues who attended a conference with me waited half an hour in a long line to check in, I went to an e-ticket kiosk with no line to get my boarding pass.

Consumers can now do considerable research and comparison shopping for their vacation deals online. Their information searches can also go well beyond the glossy advertisements and promotions launched on the Web by the tourist industry and can stretch into online newsgroups and discussion forums populated by travelers who have actually visited the locations and stayed in the hotels. For example, a quick search on the Web for Batopilas, Mexico, brings up dozens of commercial sites, some of which pay the search engine to obtain their top billing. This information is enormously valuable, with listings of accommodations, recreation, major architectural attractions, museums, nightlife, and things for kids to do. This is the kind of information that a traveler would have spent many weeks obtaining in the past. The net offers even more in the way of reducing search costs, however,

[5] Offline? (December 9, 2000). *The Economist, 357*(8200), 93.

and rebalancing that information asymmetry. A search for Batopilas in the discussion forums brings up some intriguing postings by actual tourists who describe their own experiences and give advice. Many will happily answer email queries from people who are interested in visiting the same place.

In the academic world, disintermediation is also on the horizon. Consider the high price of journal subscriptions that universities pay. These journals have very small distribution, mainly to academic libraries, and the authors of the articles, their reviewers, and the journal's editors are paid little or nothing. Yet the journal subscriptions are extremely expensive, crushing the library's budget and forcing librarians to make very difficult choices about what to buy each year. One university librarian lamented that faculty foolishly give away their intellectual output to the academic journal publishers, who then sell it back to the university at extremely high prices in the form of journal subscriptions.

Economist Manfredi La Manna of St. Andrews University in Scotland proposed the launch of an alternative academic journal distribution system, based on the Internet. He is starting the Electronic Society for Social Scientists, which will pay authors, reviewers, and editors small honoraria for their work and then distribute the articles via the Web for subscription charges that are half what the academic journal publishers now charge. He sees this organization as a template for academic publishing that will eventually replace the current model and disintermediate the academic journal publishers. Universities are slow to change, but more than a thousand scholars had signed up with the project.[6]

Disintermediation of pieces in the value chain that no longer add much value may seem like an obvious way to reduce friction and lower prices, but sometimes surprising obstacles surface. In this case, the journal publisher seems to be an obsolete appendage, but one of the barriers to moving in the online journal direction involves the way faculty are evaluated by their peers and by the committees that decide whether to grant tenure. Publishing in peer-reviewed journals is an essential ingredient of success, and some journals are more highly regarded than others. In fact, some departments maintain lists of journals in which an assistant professor must publish in order to be evaluated favorably by a tenure committee. These lists do not include any upstart online journals such as the ones La Manna is attempting to launch. Instead, they include the journals that are published by the same academic journal publishers whose contribution to the value chain is

[6] Payne, D. (2001). A revolutionary idea in publishing. *Chronicle of Higher Education, 47*(26), 39–40.

under attack. To add fuel to this fire, and further complexity to any analysis of the value chain, the rankings of a university department can be affected by the journals in which its faculty publish. *U.S. News and World Report*, for example, publishes rankings of business schools each year. In 1999, the magazine announced that its rankings would add "intellectual capital" to the criteria by which it determines a business school's rank. This controversial new dimension judges the quality of the faculty's intellectual output by their publications and the potential influence and reach of their papers and books. For example, the quantitative measure includes not only a tally of book reviews in the major business journals but also the number of papers that are published in a select list of favored academic journals. Not surprisingly, these favored academic journals are not online journals – they are published by the academic journal publishers. A value chain, such as this one, is a complex mix of economic, historic, and psychological factors.

DISINTERMEDIATION IN RELATIONSHIPS BETWEEN BUSINESSES

We've seen examples of how the business-to-consumer relationship (B2C) has been touched by disintermediation and the rise of the Internet and of how university-to-business connections may be affected. Many economists predict that the most important economic changes will occur behind the scenes, at least with respect to the consumer, and will involve the way businesses interact and communicate with one another (B2B). These changes are not invisible to the worker, however, because the workplace is undergoing significant changes as a result of B2B e-commerce.

Some areas in which businesses can gain advantage from electronic communication with one another include procurement, inventory management, and logistics. For example, an online florist who takes orders from customers via the Web can dramatically improve its service by automating and coordinating the logistics of delivery. One company called Proflowers sells flowers online for delivery anywhere in the country, and the flowers are shipped directly from the grower rather than from a retail florist. Proflowers has a B2B relationship with FedEx such that the shipping process is automatically initiated when the customer makes the online order, including the creation of a shipping label that is downloaded to one of the growers. The whole process occurs in less than 5 seconds.[7] The growers who tend the farms and nurseries are connected directly to their consumers via this B2B e-commerce transaction, and the workers who formerly would have

[7] Boyson, S., & Olian, J. (1999). *Harnessing the power of netcentricity.* College Park, MD: Robert H. Smith School of Business, University of Maryland, College Park.

facilitated this process are, of course, no longer needed for much more than troubleshooting problems when the electronic supply chain breaks. The disintermediated list would include the retail florists, and it would also include those who coordinated contacts with the growers and supervised the logistics for the customers.

Another way in which B2B relationships are facilitated through the Internet involves the electronic marketplace in which many sellers can interact with many buyers in a hub. For example, Sciquest.com is one of these online marketplaces that specializes in the life science industry, providing a place to find and buy various scientific and laboratory products. A number of different kinds of organizations use this service, including pharmaceutical houses, biotech research firms, and educational organizations. (Like many such electronic marketplaces and other Internet "pure plays," this one had a turbulent ride in the late 1990s. By the time of this writing, it had not yet turned a profit.)

FROM EDI TO THE INTERNET

Electronic communication between businesses along the supply chain is not new, and many companies have used electronic data interchange (EDI) since the 1970s to reap some of the rewards. This system, which some consider to be the first form of e-commerce, was created to enable companies to transmit information electronically to one another – about inventory levels of various products, for example. One goal was to keep inventory levels low by ensuring the supplier knew when products were needed. Developing an EDI relationship between two companies involved negotiation, customized programming, and often the launch of two databases containing synchronized product information, one at each location. Also, the relationship depended on a proprietary value-added network (VAN) that charged for each byte of data transmitted, because the concept predated the Internet and its flat fees.

One of the differences between EDI and Internet-based B2B relationships involves their openness, and the ease with which companies can switch suppliers or new and smaller companies can join in a supply chain relationship. Because EDI relationships generally involved two companies who worked together to create the link, the investment in the relationship and the infrastructure needed to support it was larger. Because of this up-front investment, companies did not do much switching once they had things in place and working properly. As companies move to electronic marketplaces on the Internet, switching costs are lowered and relationships will be more