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Telecommunications 2004
Strategy, HR Practices & Performance

Cornell-Rutgers Telecommunications Project

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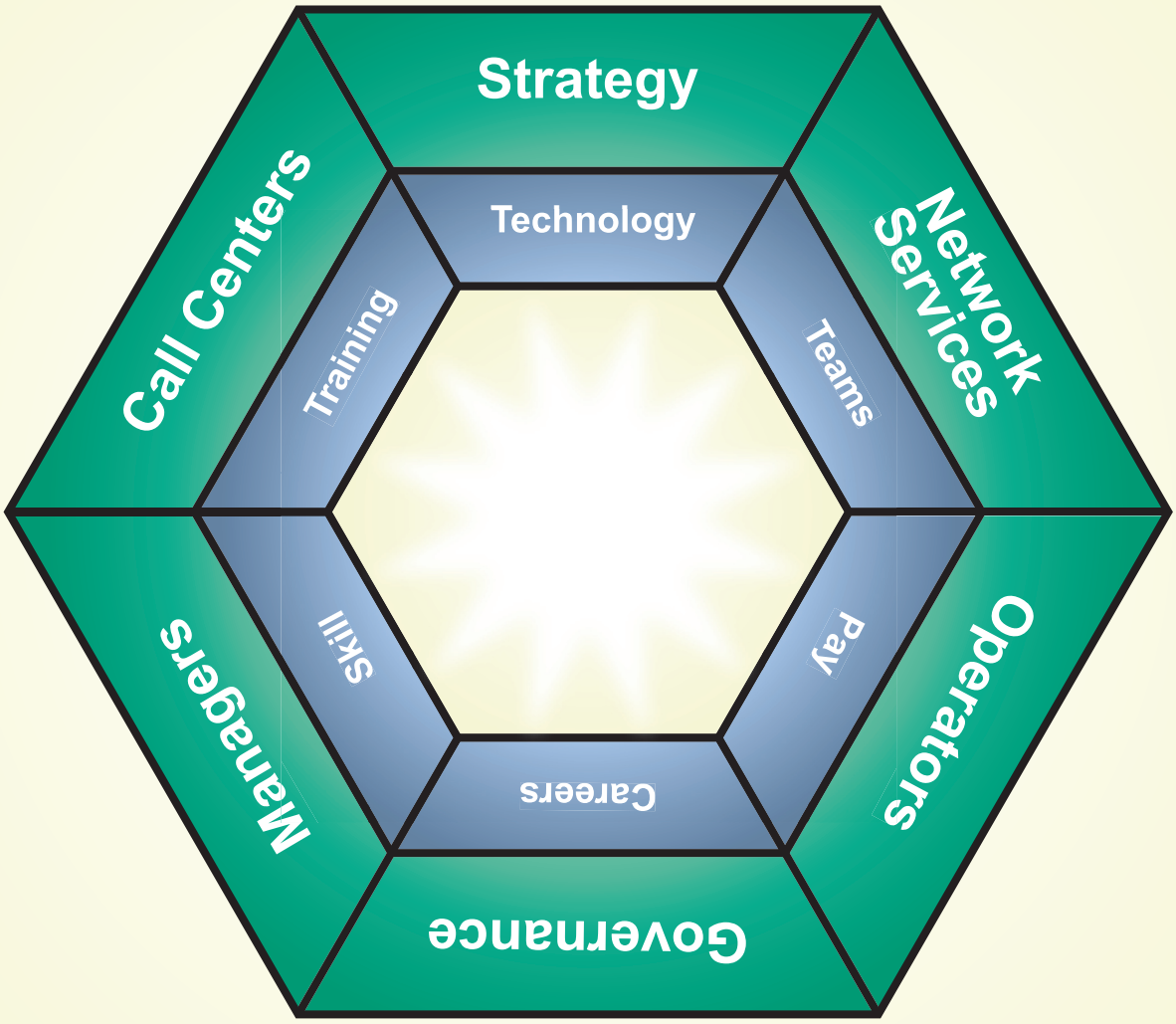

Rosemary Batt, Alex Colvin, Harry Katz, Jeffrey Keefe
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Highlights

This national benchmarking report of the U.S. telecommunications services industry traces the tumultuous changes in management and workforce practices and performance in the sector over the last 5 years. This is a follow-up report to our 1998 study. At that time, when the industry was booming, we conducted a national survey of establishments in the industry. In 2003, we returned to do a second national survey of the industry, this time in a sector that was recovering from one of the worst recessions in its history.

This study captures the dramatic organizational changes that occurred between 1998 and 2003. While the popular and business press has reported widely on the economic boom and bust in the industry – stock price fluctuations, financial mismanagement, extensive mergers and consolidations, and technology developments – it has had much less to say about what is happening inside companies.

- How have managers responded to the industry's crisis?
- What new strategies and work practices are contributing to firm performance?
- What has happened to the skills, productivity, and welfare of the workforce?
- How have companies repositioned themselves in the increasingly global economy?

Managers and employees in this industry have faced tough challenges in their daily work. Managers have had the difficult job of crafting appropriate business strategies and human resource practices in the face of technological uncertainty, volatile demand, and heightened price competition in markets plagued by overcapacity. Similarly, frontline employees have confronted on-going change in product offerings, legal regulations, and new work methods and technical processes. Thus, they have needed to regularly upgrade their knowledge and skills in order to serve customers well. Managers and employees alike have faced employment and income security in the face of downward pressures on wages and the growth of global outsourcing.

This report addresses these and other issues of concern to managers and employees in the telecommunications industry. This report constitutes the second benchmarking survey of business and human resource practices among a nationally representative sample of workplaces in the broadly defined telecommunications industry that includes wireline, wireless, cable, and internet providers. It grows out of a multi-year study of organizational change in the industry, and is based on extensive field study, site visits, interviews, and surveys conducted by research teams at Cornell and Rutgers Universities. Managers at 479 worksites across the country gave generously of their time during a lengthy telephone survey.

The study was made possible through a generous grant by the Alfred P. Sloan Foundation. While this report is based on data collected among workplaces in the U.S., it has implications for the restructuring of the global telecommunications industry. In other research, we have found that the United States has been at the forefront of market deregulation and technology change, but many other countries have followed a similar path and look to the United States as a model for organizational restructuring (Katz 1997). Thus, at least some of the patterns we find here are likely to occur in other countries undergoing similar patterns of deregulation.

Acknowledgements

We would like to thank the Alfred P. Sloan Foundation, especially Gail Pesyna, for generous funding and support for this study. The survey was ably administered by the Survey Research Institute at the Industrial and Labor Relations School, Cornell University. The executive director, Yasamin Miller, along with Erik Nisbet and Jose Delgado gave countless hours to ensure the accuracy of the data. Thanks also to Hyunji Kwon, Danielle Van Jaarsveld, and Virginia Doellgast for their diligent research assistance and to the managers in the industry who gave generously of their time to complete the survey.

What's in this report?

Given this environment of rapid change and uncertainty, managers have experimented with a wide range of business and human resource practices. In this report, we examine:

- The skills of the workforce and investments in training
- Alternative approaches to using information technology
- Adoption of "high involvement work practices" such as quality improvement teams and self-directed teams
- Use of flexible staffing, including the part-time and contingent workforce
- Use of performance-based pay
- Wages, benefits, and total compensation levels
- Alternative approaches to governance and dispute resolution procedures

We provide data on the frontline workforce and managers in the two primary sides of the business:

- call centers, including customer service, sales, and telephone operator services
- network operations, including central office and field technicians

What we found:

In Call Centers...

❖ *Customer segmentation*: Segmentation strategies have continued to grow as the predominant approach to organizing retail distribution channels. Eighty-five percent of call centers in this study targeted a particular customer segment. The remainder takes a universal approach of serving multiple segments through the same channel.

❖ *Business strategy*: The most popular business strategy reported by managers was service differentiation, followed by one-stop shopping and customer loyalty.

❖ *Professional service and high involvement work practices*: Providing quality professional service can be accomplished through the adoption of high involvement work practices in call centers. These include investing in skills and training, designing work that provides employees with broad discretion to meet customer needs, using of problem-solving groups and self-directed teams, and adopting incentives such as high relative pay and employment security through permanent full-time staffing strategies. We found that centers targeting higher value added business customers were significantly more likely to take this professional approach to service management than were centers serving residential consumers or small business customers.

❖ *High involvement practices and organizational performance*: Those centers that use high involvement practices have significantly lower annual quit rates and higher sales growth than centers that take a more "production line" approach to services. That is, despite the fact that high involvement practices are more likely to be adopted in centers serving business customers, we found that high involvement practices led to better organizational performance in all centers, not just those targeting business customers. These findings suggest that the production line approach to call center management doesn't "fit" the complexities of serving today's residential or business customers. Given the wide variety of products and services in today's market, firms want to compete on the basis of bundling services — or "mass customization". To do so, however, requires investment in human resources. The variety and customization options available for today's mass market products call for better skilled workers who know the products and have the opportunity to respond to customers as needed. High involvement work systems motivate them to do so.

❖ *Declining use of professional service and high involvement practices*: Despite the fact that high involvement practices are associated with better performance outcomes, we found that call centers in all customer segments were reducing their use of these practices and focusing heavily on production efficiencies. Compared to our 1998 national survey, call center managers in 2003 reported lower levels of discretion at work, lower use of problem-solving groups, higher levels of electronic

monitoring, and higher use of scripts, among other practices. The number of calls per employee per day rose substantially, while the average length of calls diminished.

❖ *Factors predicting wage levels in call centers*: We analyzed factors associated with higher median annual pay, taking into account the industry segment, customer segment served, human capital of the workforce, and human resource practices used. After taking all of these factors into account, we found that workers in large business centers still earned an average of 23.3 percent more than those in residential service centers, and 17.8 percent more than those in small business centers. Small business center service agents enjoyed a 5.5 percent premium over those working in residential service centers. Union workers earned 17.8 percent more than their non-union counterparts. Workers in the wireline industry segment earned 14.6 percent more than their counterparts in the cable TV industry segment.Turning to human resource practices, we found that every additional year of education was associated with 6 percent higher wages. Call centers with a higher percent of women in the workforce paid significantly lower wages. Those centers that made greater use of self-directed work teams and hired permanent full-time workers (rather than part-time and contingent) also paid higher annual wages.

In Network Operations...

❖ *Technician pay*: Technician pay is largely driven by education level, experience, and unionization. Overtime earnings play important role in the pay of non-exempt technicians, increasing base wages approximately 10 percent a year. Unionization provides on average a 15 percent pay premium for technicians. During the last five years, only technicians in the cable television segment had real pay increases, which reduced earnings inequality. In 1998, cable television technicians earned 33% less than other technicians in the industry in 2003, they earned 25% less.

❖ *Network Digitalization and Pay Inequality*: The conversion of networks from analog to digital continued to advance. In 1998, technicians working with digital network technologies earned a 20 percent pay premium, but by 2003 digital technology was ubiquitous, eroding any pay premium for technicians who worked with digital technologies.

❖ *Technician employment*: Technician employment is still concentrated at the local exchange carriers, who employ 66% of all technicians and 81% of field technicians.

❖ *Flexible human resource practices*: Variable pay has grown by 61% in the last five years and now accounts for eleven percent of annual pay. Contingent workers, employee participation, and downsizing have been widely adopted by the newer entrants in the industry: wireless, internet service providers, and some long distance carriers. Local exchange carriers, in contrast, rely on more traditional human resource practices that are associated with long tenure employees: promotions, pay linked to experience, employment security, and training.

❖ *Unions*: Unions represent 64% of telecommunications technicians but only 37% of the establishments covered by this survey, indicating that unions represent the largest establishments in the industry. Local exchange carriers employ 95% of the unionized technicians in the industry.

❖ *Productivity*: Since our last study productivity continued to grow at its five percent annual rate in the traditional local exchange network, thereby maintaining its sixty year pace. At wireless carriers, as a result of new technologies, mergers and consolidations, productivity advanced at a record rate of eleven percent annually. On the other hand, in the cable television sector productivity declined as cable television increased its service menu to include cable modems and to improve its customer service.

❖ *Office technicians*: 24% of the technicians surveyed are office versus field technicians. They tend to be more educated than field technicians and are more likely to participate in employee involvement programs and self-directed teams.

Regarding Managerial Employees...

❖ *Managerial pay*: Managerial pay varies sizably between union versus non-union establishments ($10,700 higher in union), between network operations versus customer sales ($8,000 to $9,000 higher in networks), and across call centers that target different market segments.

❖ *Managerial numbers*: Managers constitute 16% of the workforce in call centers and 30% in network operations. Across call centers, the percent of the work force that is managers varies substantially, ranging from 21% in those centers targeting the large business market to 8% in operator services. In small business and residential centers, the comparable figures are 17% and 15%.

❖ *Manager-to-worker pay*: In call centers the manager-to-worker pay differential is larger in non-union establishments (90.0%) than it is in union establishments (82.9%). Manager-to-worker pay differentials vary sizably across various market segments in call centers.

❖ *Organizational levels*: The number of levels between top management and front-line supervisors differs in network operations versus call centers and between union and non-union establishments.

In Dispute Resolution Procedures...

❖ *Types of dispute procedures*: Types of nonunion dispute resolution procedures used vary significantly across establishments. Procedures varied between one and five steps, with the most common type of procedure (49%) involving three steps. The most common final step in nonunion procedures was review of the complaint by a single manager (74%). Seventeen percent of respondents said they used an appeals board consisting of managers who hear employee complaints. Less common are features involving review of complaints by non-managers. Six percent of establishments used peer review procedures, where employees who are peers of the complainant are a majority of the members on a panel that review the complaint. Eight percent of establishments used mediation. Finally, 14% of respondents said they had mandatory arbitration procedures covering employment law claims.

❖ *Use of dispute procedures*: Grievance rates are higher for union than nonunion procedures. However, grievance rates for all types of procedures were lower in 2003 than in 1998.

❖ *Discipline and termination rates*: Discipline and termination rates are lower for unionized establishments than for nonunion establishments. Amongst nonunion establishments, discipline and termination rates are lower where there is nonunion arbitration, peer review or a management appeals board. In general, termination rates were lower in 2003 than in 1998, but discipline rates were higher.

❖ *Employee turnover*: Voluntary quit rates are lower under nonunion arbitration or peer review procedures, but quit rates are lowest of all in unionized establishments. For all categories of establishment, quit rates were lower in 2003 than in 1998.

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1. Industry Overview

The Telecommunications Revolution

In the two decades following the breakup of the Bell System in 1984 , the telecommunications services industry has witnessed a profound transformation — an explosion of new services in wireless, data, video, and Internet communications; dramatic employment declines in some segments and rapid growth in others where digital skills are in high demand; de-unionization, growing wage inequality, and the unraveling of the traditional social contract that exchanged employment security for loyalty. Despite technological innovation, deregulation, and facilities-based competition, the legacy of the Bell System continued to dominate the industry, with the former Bell affiliates employing the majority of the core industry's workforce and comprising the majority of the industry's market capitalization. In recent years, however, the legacy of the Bell System is being challenged by the digital transformation of telecommunications access.

The telecommunications digital revolution is transforming the way we conduct business, live our lives, and interact with each other. Progress, however, is nonlinear. In the late 1990's the industry boomed, but in 2000, the boom turned into a major bust that has besieged most, but not all, segments of the telecommunications industry. Since our report in 1998, telecommunications carriers deployed a panoply of digital local access technologies that increased local access connections by 58 percent. At the same time, the industry has been shaken by the bursting of the Internet Bubble, which created a severe financial crisis. Major equipment providers, such as Lucent and Nortel have verged on bankruptcy, while every new broadband local carrier (Covad, XO, Northpoint, etc.) went bankrupt. Most visibly the crash exposed massive financial fraud leading to bankruptcies at WorldCom, Global Crossing, and Enron (a wholesaler of bandwidth) and substantial "accounting irregularities" at the nearly bankrupt Qwest. The industry in 2003 was still working its way through its financial problems, excess capacity in some areas, and shifts in service demand.

While undergoing enormous change, three out of the top four local access providers are the recently reconsolidated Bell Companies, Verizon, SBC, and BellSouth that still dominate the local exchange, wireless, and data access segments of the industry. Joining the top four is Comcast, after its acquisition of AT&T cable assets, which AT&T had just acquired from TCI and MediaOne. Comcast is now the leader in residential broadband in the United States.

Between 1998 and 2003, the unregulated local access providers grew rapidly, as the traditional regulated sector declined. Wireless subscriptions increased by 73 million customers and high speed data access grew by 68 million additional circuits. Residential broadband technologies, ADSL and cable modems, also largely unregulated, reached 25 percent of U.S. households by the end of 2003. The traditional regulated sector, however, is in decline as other technologies overtake the publicly switched circuit network and as government policy to induce and promote competition by unbundling network elements impedes new investment. In 1984, the circuit switch network provided over 98 percent of local communications access, which declined to 60 percent in 1998, and fell to 35 percent in 2003. The absolute number of switched access lines fell for the first time since the Great Depression, by 24 million lines between 2000 and 2003. Figure 1.1 shows that the growth in access lines that occurred between 1998 and 2003 (from 284 to 448 million) was led by wireless, which had 73 million new customers and by data circuits (68 million additions), while a decline occurred in traditional telephone lines. Figure 1.2 shows the changing distribution of access lines in percent share terms.

Figure 1.1 Growth in Access Lines by Technology, 1998 to 2003

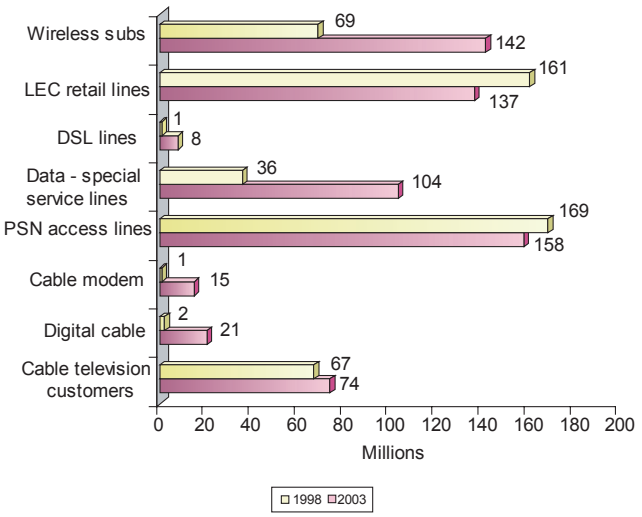
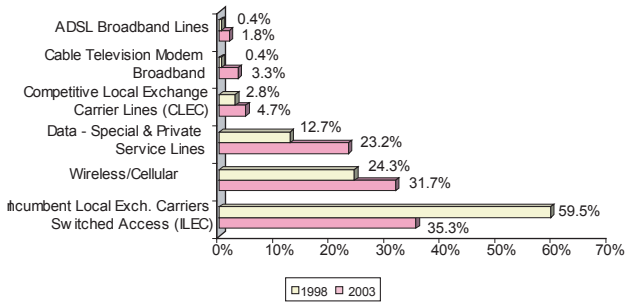


Figure 1.2 Changing Distribution of Telecommunications Access Lines, 1998 to 2003



Once telecommunications traffic gains local access, regardless of access technology, it is routed over networks that are increasingly comprised of high capacity fiber optic backbones linked together by high-speed soft-switches or routers. These backbone networks are owned and managed by the local exchange carriers, facilities-based long distance companies, such as AT&T, MCI, Sprint, and Qwest and wholesalers such as Level 3 and Global Crossing. Each facilities-based retailer, however, increasingly acts as a bandwidth wholesaler to resellers, wireless companies, Competitive Local Exchange Carriers (CLECs) and other circuit switched service providers. In addition, they are the providers of rapidly growing data networks for data circuits and broadband access. Traditional voice long distance service has been in decline, reflected in declining revenue since 2000 as it faces stiff competition from e-mail, wireless one-price packages, and Voice over Internet Protocol.

Local access only recently has been subject to meaningful facilities-based competition. The residential market historically has been resistant to cost effective facilities competition. Currently, voice service is served by traditional circuit switched wireline service, wireless cell phones, and increasing by broadband, Voice over Internet Protocol (VoIP).

Traditional wireline still provides homes with universal service. Approximately 95 percent of U.S. homes have basic telephone service. The doubling of wireless subscribers between 1998 and 2003 has poised wireless to overtake the number of wireline subscribers. In addition, two-thirds of homes have cable television. Twenty percent have digital cable, and 13 percent have a broadband cable modem capable of supporting VoIP. Some 8 percent of homes get their broadband connection by DSL, which uses the existing telephone network for access. Computers remain the gateway device that households use to gain access to the Internet, and it is the Internet and e-mail that has created the demand for residential broadband services.

Businesses and large institutions, on the other hand, are increasingly migrating off the public switched network and on to high speed private data access lines, such as T-1/DS-1, DS-3, and SONET. Demand for data circuits is rapidly growing.

Almost a decade after the passage of the Telecommunications Act of 1996, the FCC has been unable to establish a legally supportable framework to promote competition. Federal and state regulation continues to produce endless litigation battles. The focus of federal policy has been to induce competition through the unbundling of network elements in the obsolescent circuit switched telephone network. Unbundled network element pricing (UNE) using current replacement cost methodology, rather than historical costs,

has generated litigation, lobbying, and gridlock at all levels of the regulatory system, which has impeded incumbent investment in forward-looking broadband technologies. This gridlock is reflected in a recent OECD survey reporting that the United States is ranked tenth in the world in broadband deployment, but number one in the world in unbundling its traditional telephone network. A second result of policy gridlock has been the failure to develop a broadband policy for the United States. A third long term consequence of policy gridlock is a growing conflict between federal competition policies and the states' cross-subsidized universal service policies, which if not reconciled, could result in the financial ruin of the incumbent local exchange carriers.

The Internet boom and bust has had profound effects on employment in the telecommunications sector. Formerly an oasis of stability, employment has become highly volatile. Between 1998 and 2003, there was both boom and bust. Employment in the telecommunications services sector increased by 17 percent between 1998 and 2000. The growth in employment was followed by massive employment reductions as the industry shed 20 percent of its workforce between 2000 and 2003, yielding a six percent loss of jobs from its 1998 base.

Four factors led to variations in the extent of employment growth and retrenchment across the various segments of the telecommunications industry: service demand and competition, technological change and productivity growth, organizational consolidations, and global outsourcing.

For example, although the demand for wireless service more than doubled, wireless carriers through the application of new technologies and mergers and consolidations, recorded an annual productivity growth rate of eleven percent. This allowed wireless carriers to meet growing service demand while reducing employment by two percent between 2001 and 2003. On the other hand, in the cable television sector, productivity declined as cable television companies consolidated, raised prices to finance network upgrades, increased their service menus to include cable modems and digital cable, and sought to improve their customer services. The net effect of these changes was a 23 percent increase in cable television employment between 1998 and 2003 and no boom-bust employment cycle even though the demand for cable television subscriptions increased by only ten percent during this same period.

Figure 1.3 Employment Boom and Bust and in the Telecommunications Industry, 1998 to 2003

The wireline segment of the telecommunications services industry is comprised of three sub-sectors: the declining publicly switched local access sector, the shrinking switched long distance sector, and the rapidly growing data circuit business, which grew by 188% between 1998 and 2003. The annual rate of productivity growth in wireline remained at its historical level of more than five percent. During the boom years, employment in wireline grew by thirteen percent, as customers added second lines to access the Internet. This trend dramatically reversed itself after 2000, when employment shrank by 25 percent. The employment reductions can be attributed to the seven percent drop in demand for access lines, as well as rationalizations and global outsourcing. This reversal had an immediate impact on the wireline equipment manufacturers. They reduced their workforces by 58 percent between 2001 and 2003, while the entire telecommunications equipment sector cut employment by 40 percent.

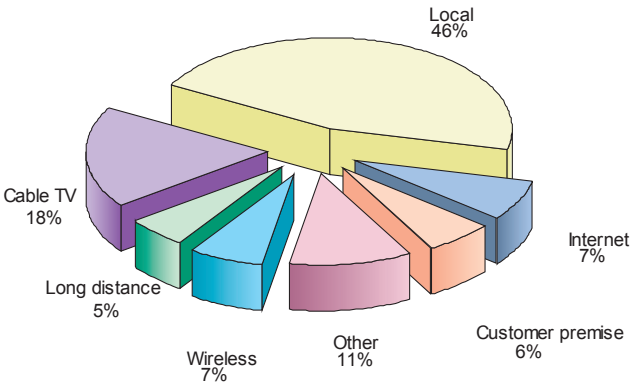
The National Telecommunications Survey

In this section of the report, we describe the structure of the industry and organizations. The patterns we describe are based on a survey of a nationally representative sample of establishments based on the Dun and Bradstreet listing. General managers at each workplace, not managers at corporate headquarters, provided information on the strategies and practices used at their particular work-site (See Appendix A for details on the sampling and survey methods used).

Markets and Industry Segments

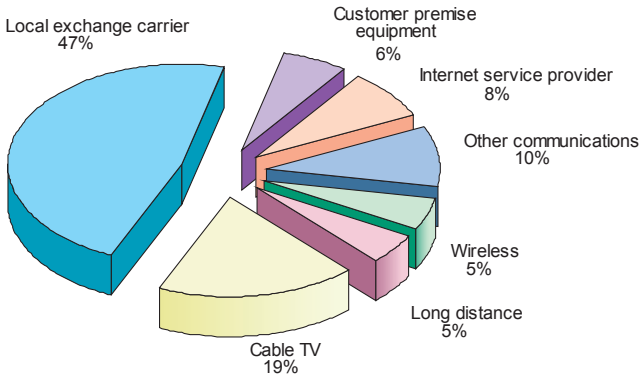
This report covers 479 establishments in the telecommunications services industry — 242 in customer service operations and 237 in network operations. The total workforce in these establishments is 69,000 in call center operations and 33,000 in network operations. Included are six market segments in the industry: local exchange, long distance, cellular, customer premise equipment, cable TV, and internet providers. As shown in Figure 1.4, the highest percent of call centers in this study serve the local exchange market. The segments with the next largest coverage are cable TV, wireless, and Internet providers.

Figure 1.4 Call Center Establishments by Market Segment, 2003



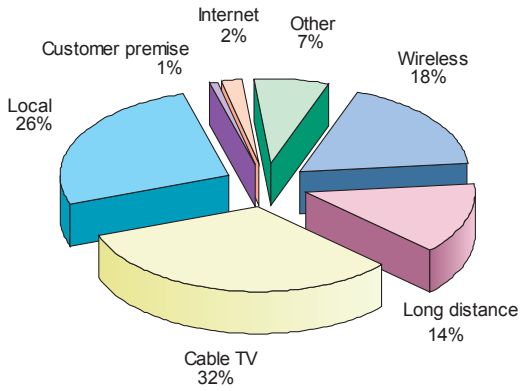
In network operations, 47% of the surveyed establishments serve the local exchange market, followed by 19% in cable TV, and smaller percentages for the remaining segments (see Figure 1.5).

Figure 1.5 Network Establishment Distribution, 2003



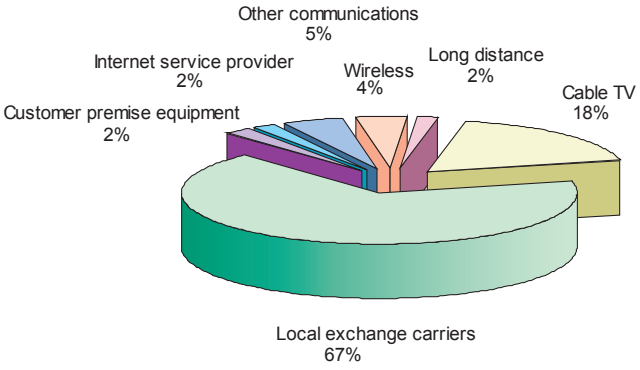
When viewed from the perspective of employment in the industry, the cable TV segment covers 32% of the workforce in call centers, followed by the local exchange market with 26% and the wireless market with 18% (Figure 1.6).

Figure 1.6 Call Center Employment by Market Segment, 2003



In network operations, however, the majority of the workers are still employed by the local exchange market (67%), followed by cable television (18%) and wireless (4%). (Figure 1.7).

Figure 1.7 Network Employment Distribution, 2003



Organizational Restructuring

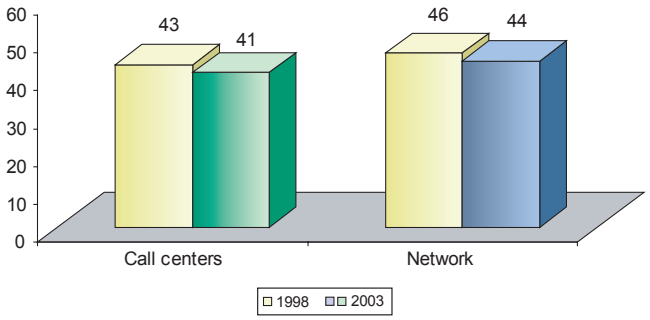
This study includes a wide range of workplaces in terms of their size, structure, and whether they are branches of larger organizations. Most of the establishments in this study are owned by larger firms. In both call centers and network operations, over 75% of the workplaces are branches of larger organizations, while the others are small single firms. Establishments also range widely in size, from less than 10 employees to several thousand.

Organizational size and structure in the industry continues to be influenced by the legacy of the Bell System, where unionized worksites are concentrated in the traditional wireline segment. Union worksites, for example, are smaller in number but larger in size than non-union establishments. This pattern holds in both call center and network operations. Thus, we report trends here by comparing union and non-union worksites.

The economic downturn in the industry in the past few years resulted in substantial organizational restructuring. This is not surprising given the wide spread merger and acquisition activity that has occurred.

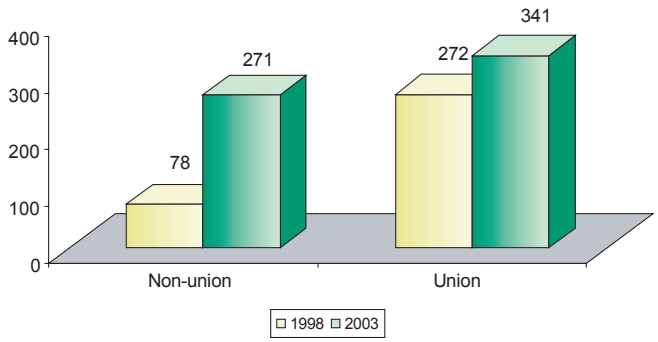
One reflection of the downturn in the telecommunications sector is less overtime pay. While employees continued to average more than 40 hours per week, the amount of overtime work fell by about 5 percent. Technicians worked 46 hours per week on average in 1998 and 44 hours per week in 2003. Call center employees averaged 43 hours each week in 1998 and 41 hours per week in 2003 (Figure 1.8).

Figure 1.8 Work Hours, 1998 and 2003



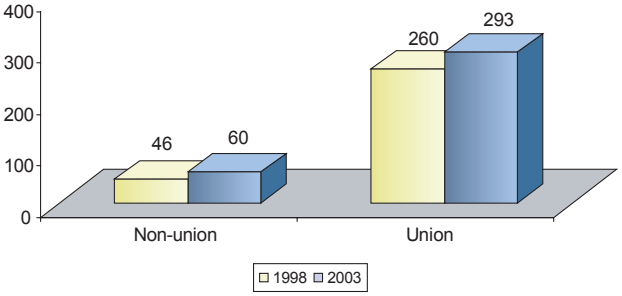
Telecommunications firms also cut costs by consolidating operations into larger entities. In call centers, for example, the average size of the core workforce increased by two-and-half times in non-union centers and by 25% in union centers (see Figure 1.9).

Figure 1.9 Core Workforce in Call Centers, 1998 and 2003



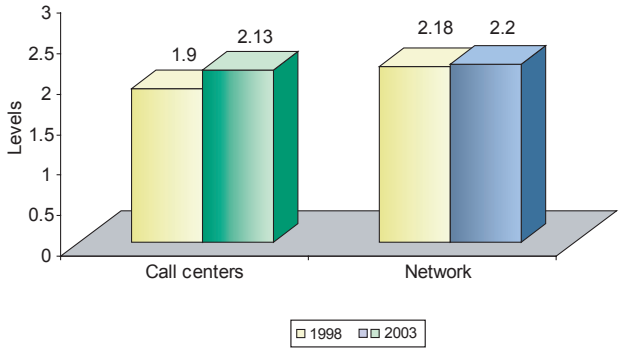
The changes were less dramatic in network operations, but nonetheless show a pattern of increased size at both union and non-union sites (Figure 1.10).

Figure 1.10 Core Workforce in Network Operations, 1998 and 2003



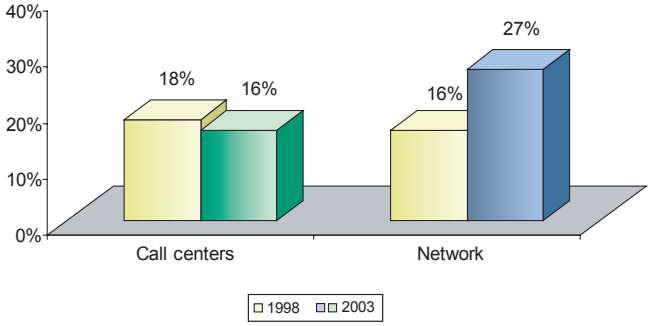
With these changes came a modest increase in organizational hierarchy in call centers and a higher percentage of managers in network operations. Thus, in call centers the management hierarchy was 12 percent higher in 2003 than in 1998 (Figure 1.11).

Figure 1.11 Number of Management Levels between Supervisors and Top Manager, 1998 and 2003



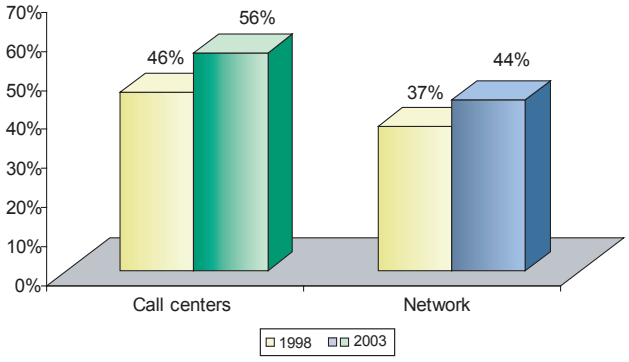
In network operations, the percent of employees who are managers jumped from 16 percent in 1998 to 27 percent in 2003 (Figure 1.12).

Figure 1.12 Percent of Workforce in Management, 1998 and 2003



In the last few years, firms also formalized their human resource management systems. In 2003, 20 percent more workplaces had HR departments on site than they did in 1998 (Figure 1.13).

Figure 1.13 HR Department on Site, 1998 and 2003



In sum, the tumultuous economic downturn in the telecommunications services industry over the last 5 years is reflected in changes in the size and structure of organizations. Firms downsized employment, reduced work hours, and consolidated operations. At the same time, they increased the management hierarchy and the use of human resource departments to oversee these changes.

2. Call Center Operations

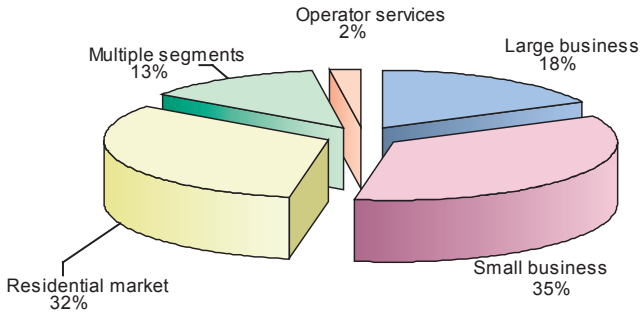
This section focuses on the enormous changes that have transformed service and sales distribution channels over the last decade. While telecommunications grew up as a technology-driven business under historically regulated conditions, one of the most striking changes in the industry is the extent to which firms have come to espouse the strategic importance of customer service and sales operations.

To manage customer service and sales, most companies have reorganized operations into remote, technology-mediated centers referred to as call centers. Through these channels, service agents may handle a wide range of customer inquiries, including billing, new orders, sales of enhanced features, repairs, complaints, and collections. This study focuses primarily on in-bound customer service and sales centers rather than telephone operator centers or outbound telemarketing centers.

A central strategy in the reorganization of service delivery is the concept of customer segmentation. Historically, companies served all customers in a given geographic area, providing 'universal' service. Increasingly, however, they have taken a 'segmented' approach in which they target a particular customer market or segment, typically defined by the value of their accounts. Most telecommunications companies now design their call centers to serve a particular group – for example, residential consumers (the mass market), small business customers, or large business customers. Some have developed more refined approaches to segmentation as well.

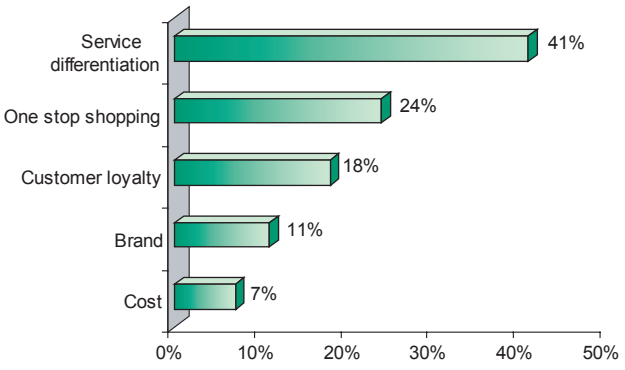
In our 1998 survey, we found that 25 percent of the call centers in our sample were 'universal' centers and the remainder targeted a particular market segment. In 2003, we found that only 13 percent of those surveyed were universal centers and the rest adopted a segmented approach. As shown in Figure 2.1, 32 percent of call centers in this study focus primarily on residential consumers, 35 percent target small business, 18 percent target large business. Only 2 percent of call centers in this study provide telephone operator services so we are not able to provide reliable data on this function in this report.

Figure 2.1 Percent of Establishments by Market Segment, 2003



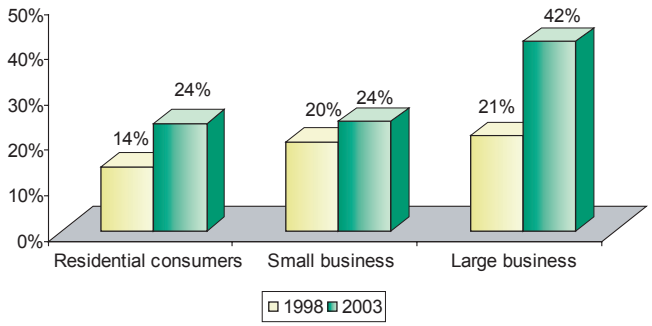
Consistent with this strategy of targeting customer segments, the most popular business strategy reported by call center managers in 2003 was one of service differentiation. By designing call centers dedicated to a particular customer base, managers believe they can provide differentiated service to that market. While over forty percent of managers said they used a strategy of service differentiation, another 24 percent said they focused on providing one-stop-shopping – whereby customers are able to get all of their services met through one point of contact. The third most popular strategy was to compete on customer loyalty, while brand identification and cost strategies were the least likely to be used (Figure 2.2).

Figure 2.2 Business Strategies of Call Centers in 2003



By consolidating service operations and expanding the size of call centers, as discussed in section one above, companies have been able to take advantage of economies of scale. Another manifestation of this trend is that a larger percentage of call centers than in the past now serve a national market, as opposed to a local or regional one. A quarter of call centers targeting residential or small business customers serve a national market, while 42 percent of large business centers are national in scope. It is noteworthy, however, that 70 percent of residential and small business centers still focus on local and regional customers, and over 50 percent of large business centers do. Less than 5 percent of the centers in this study serve international customers (see Figure 2.3).

Figure 2.3 Percent of Call Centers Whose Market Is National, 1998 and 2003



Customer Segmentation & Human Resource Systems

The use of call centers dedicated to unique market segments also allows managers to design human resource systems to match the demands of customers. The service management literature identifies two broad approaches to managing the frontline service workforce. The first is referred to as the "production line" approach, and draws on principles of industrial engineering to standardize and automate work processes in a manner parallel to that found in mass production manufacturing. This approach seeks to solve the problem of low productivity growth in services. Better performance is measured by labor efficiency: for example, maximizing the number of calls handled per employee per day and minimizing the length of each call, or 'call handling time.' Automation helps eliminate low skilled work, and standardization of job tasks allows the organization to recruit relatively less skilled workers who require limited training. This approach usually entails high levels of electronic monitoring and little use of commitment-enhancing incentives such as performance-based pay, promotional job ladders, or employment security.

While the benefits of this approach are heightened productivity, call centers run the risk of irritating customers, who experience impersonal automated voice systems, self-service standardized menus, limited options, and lower service quality. Estimates of customer satisfaction in call centers hover at roughly 50 percent (Purdue University 1999).

An alternative approach is to compete on quality service and customer loyalty by adopting a professional model of service management. Often referred to as a 'high involvement' model, this approach includes hiring higher skilled employees, providing them with the tools and discretion to respond to customer demands, and creating incentives that reward good service. Information technology is used less for electronic monitoring, and more as a rich resource of information that helps employees in their service and sales interactions with customers. This strategy views good service as a "bridge to sales." Research by the Harvard Business School Service Management group has shown that loyal customers buy more, so that profitability per customer is multiplicative (Reichheld, 1996; Heskett et. al., 1997).

Clearly, most call centers attempt to reach some balance between costs and quality. However, our survey shows that the production line approach is more typical of centers serving residential consumers, while the professional approach characterizes centers serving large business. Small business centers take an intermediate approach between the two. In the charts below, we show how human resource

practices vary systematically across the centers serving these different customer segments.

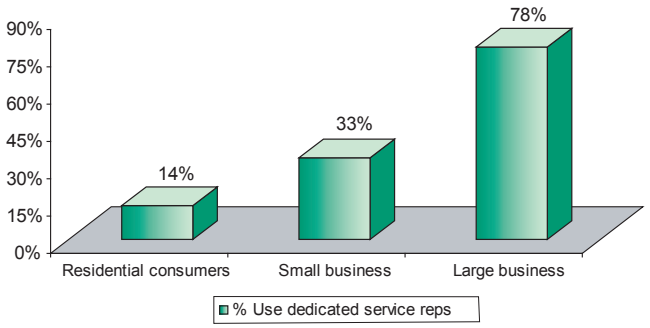
In call centers serving residential consumers, service agents typically handle a wide range of inquiries that include setting-up new orders, adding enhanced features, arranging transfers, and handling billing issues. The level of complexity of transactions is considerable as is the opportunity to sell customized features. Customer-provider relationships, however, are still highly transactional in this segment. In 2003, the typical agent handled 150 calls per day, averaging 5.6 minutes per call. These service reps spent over 80 percent of their work-time simultaneously answering calls while manipulating on-line databases. On average, they completed over three-quarters of all transactions while the customer is on line.

Small business agents have more opportunity to develop relationships with their customers and customize or 'bundle' service offerings. Nonetheless, in 2003, they handled 94 customers per day, on average, with a call handling time of 5.6 minutes. They spent over 70 percent of their work time simultaneously on the phone and managing databases, and two-thirds of their transactions were completed while the customer was on line.

Large business service agents, by contrast, are much more likely to engage in what is referred to as 'customer relationship management' – the strategy of building personalized and longterm relations with customers. According to our 2003 survey, they served an average of 69 customers per day; averaged 10.9 minutes per call; spent only half of their work time simultaneously on the phone and on-line; and when they do so, they completed less than 40 percent of transactions with the customer on-line.

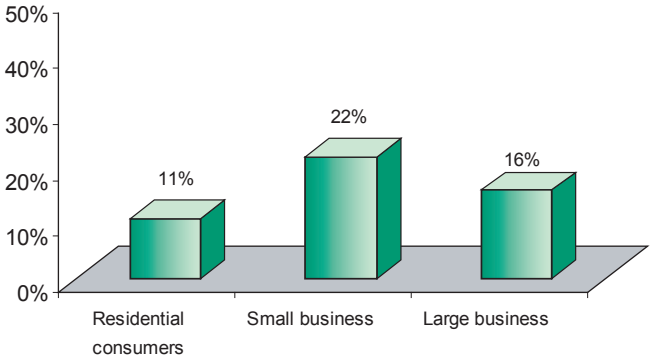
One indicator that demonstrates the differences in approach across the three customer segments is whether call centers use 'dedicated service representatives' – that is, agents who are dedicated or personally responsible for a given set of customers. As shown in Figure 2.4, 78 percent of large business centers relied on dedicated reps in 2003, compared to 33 percent of small business centers and only 14 percent of centers serving residential customers.

Figure 2.4 Use of Dedicated Service Representatives by Market Segment, 2003



Managers can also help implement a strategy of customer relationship management by designing jobs with discretion and flexibility so that employees can respond appropriately to customer demands as they arise. Such flexibility provides employees with the opportunity to match their own strengths and abilities to the demands of customers. The use of flexible job descriptions, however, is not widespread. Only 16 percent of large business centers used flexible job descriptions in 2003, while 22 percent of small business centers and 11 percent of residential centers used them (see Figure 2.5).

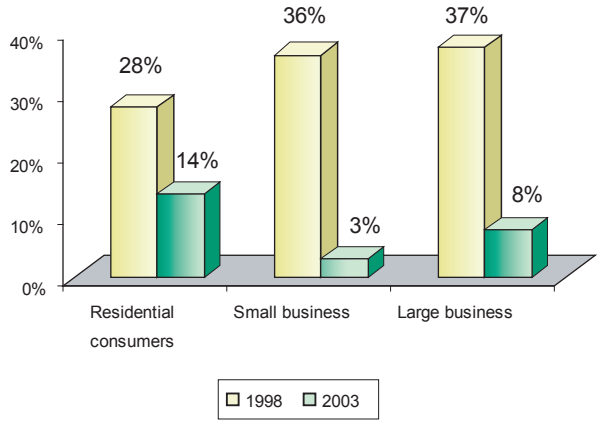
Figure 2.5 Use of Flexible Job Descriptions by Market Segment, 2003



Economics & Organizational Change

So far in this report we have focused on the important differences in human resource management systems across centers serving different market segments. However, there are also substantial changes that have occurred in the five years between 1998 and 2003 that have affected call centers in all markets. Given the economic turbulence in the industry in recent years, for example, managers across the board reported significantly lower rates of sales growth — 50 to 90 percent lower rates — in 2003 compared to 1998. In fact, the lower rates of sales growth were much more severe in centers serving business compared to those serving the mass market. As shown in Figure 2.6, managers of centers serving small business reported sales growth of less than 3 percent, while those serving large business reported rates of less than 8 percent.

Figure 2.6 Sales Growth in Previous Year by Market Segment, 1998 and 2003



Given these economic conditions in the industry, call centers across the board appear to have increased their labor productivity. Modest declines in average call handling time are evident in centers serving all three major customer markets, as shown in Figure 2.7.

More importantly, however, the average number of calls per employee per day was substantially higher in 2003 compared to 1998 – about 50 percent higher in centers serving residential and small business customers and 120 percent higher in those serving large business (Figure 2.8).

Figure 2.7 Average Call Handling Time by Market Segment, 1998 and 2003

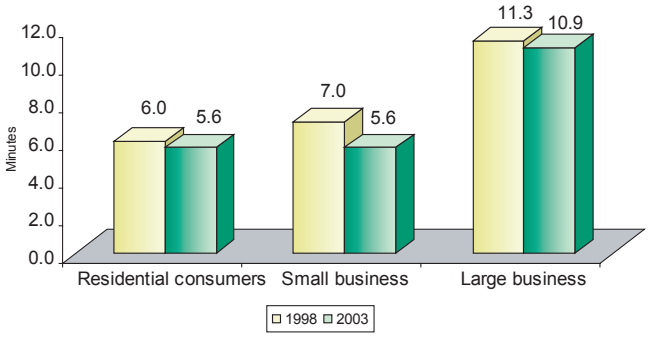
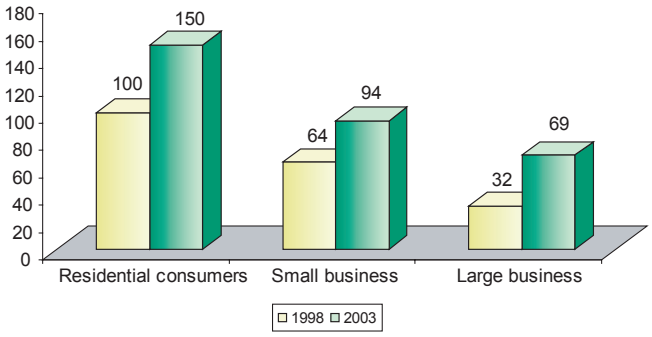
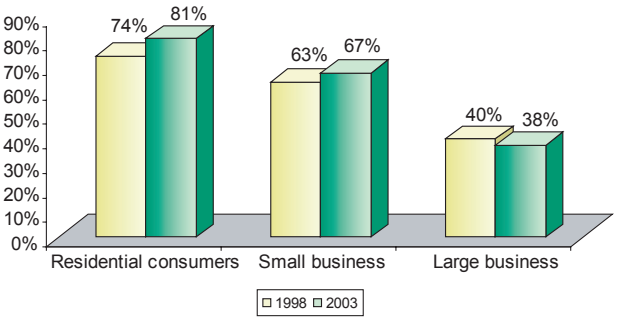


Figure 2.8 Customers Per Employee Per Day by Market Segment, 1998 and 2003



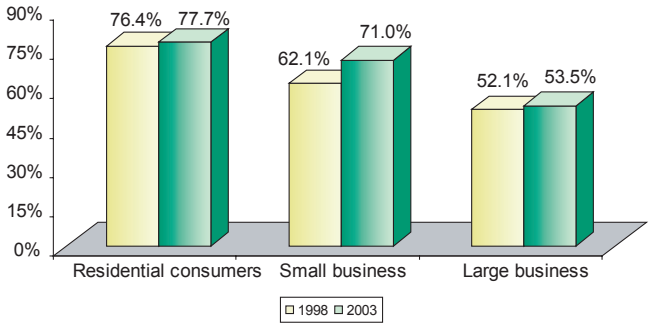
Efficiency also appeared to be incrementally higher in residential and small business centers, when measured by the percent of transactions completed while the customer was on line. These completion rates reduce the amount of labor time allocated for follow-up or call backs to customers (Figure 2.9).

Figure 2.9 Call Completion Rates by Market Segment, 1998 and 2003



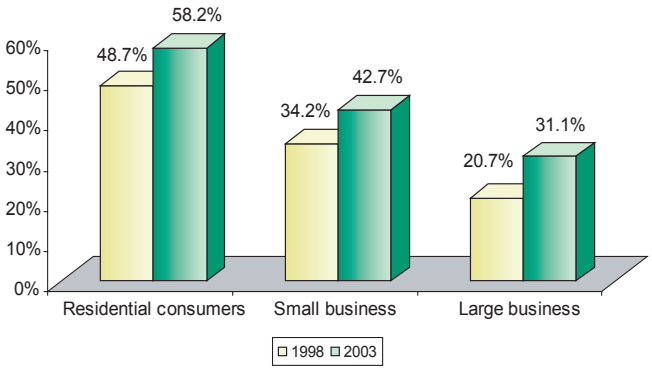
Another indicator of work intensification is the percent of work time employees spend simultaneously on the telephone with customers and inputting information into databases. These rates were between 2 and 14 percent higher in 2003 than they were in 1998, depending on the market segment served (Figure 2.10).

Figure 2.10 Percent of Work Time on Phone/ Computer by Market Segment, 1998 and 2003



Finally, the use of electronic monitoring for quality control was also higher in 2003 compared to five years earlier (Figure 2.11). It was 20 percent higher in centers serving residential consumers, 25 percent higher in those serving small business, and 50 percent higher in those serving large business.

Figure 2.11 Percent of Time Electronically Monitored by Market Segment, 1998 and 2003



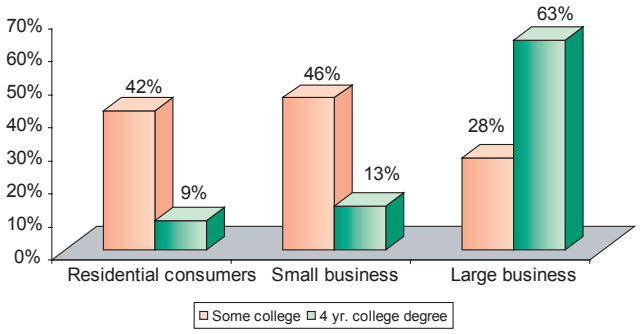
In summary, these indicators — and others below — suggest a pattern of heightened efficiency and work intensity in 2003 compared to 1998. It particularly suggests a pattern of heightened use of the production line approach in centers serving business clients.

Skills, Training, & Technology

While call center jobs are often viewed as 'clerical' or low-skilled, they in fact require relatively high levels of product knowledge, technical knowhow in database management, and sophisticated social interaction and negotiation skills.

To capture the education level of call center workers, we asked managers to provide the education level of the 'typical' call center employee. We defined typical as 'half the workforce has a higher level and half has a lower level'. On average across all centers, managers reported that 42 percent of call center workers had at least one or two years of college education and 21 percent had a four-year degree. In centers serving residential consumers, an estimated 42 percent had some college while 9 percent had a college degree. In small business centers, the comparable figures were 46 percent and 13 percent; and in large business centers, 63 percent had a four-year degree and another 28 percent had some college (Figure 2.12).

Figure 2.12 Educational Levels by Market Segment, 2003

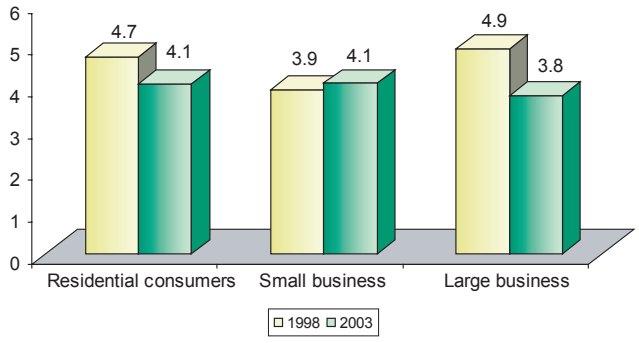


Beyond a general education, however, call center workers need to develop specific knowledge of the firm's products, customers, and work processes – what is often referred to as 'firm-specific human

capital.' Firm-specific human capital is important because call center employees manage the boundary between the firm and the customer, and they shape the customer's buying behavior. In order to persuade customers to buy a firm's products and services, employees need a clear understanding of specific product features, service agreements, pricing, packaging, promotions for particular customer segments, and legal regulations. They need customer-specific knowledge regarding the demand characteristics of particular individuals or segments and how to use that knowledge to negotiate customized offerings. Employees also require specific knowledge of the structure and content of the firm's information systems, the work flow from point of sales to delivery, and how the company's processing capabilities affect each customer and product offering.

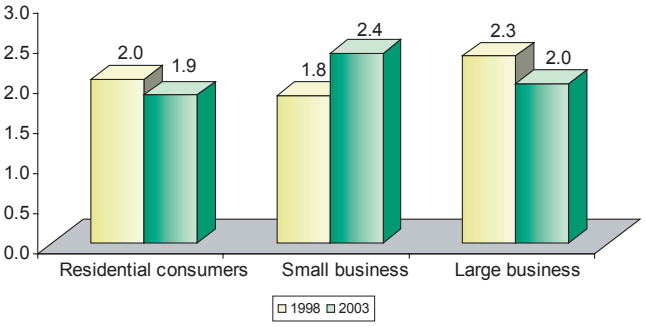
This logic suggests that firm investments in training should pay off in terms of more loyal customers and higher sales. But in times of economic constraints, training budgets are often the first to be slashed. Instead, we found that telecommunications companies have made considerable investments in training for call center workers in all segments. While there is some suggestion of marginally lower levels of training in 2003 compared to 1998, in general call centers averaged about 4 weeks of initial training regardless of customer segment served (Figure 2.13).

Figure 2.13 Weeks of Initial Training by Market Segment, 1998 and 2003



For employees beyond their first year, managers reported that they provided two weeks of on-going training per year (Figure 2.14). That represents 3.8% of an employee's annual work time – a considerable investment. However, it is not clear whether this level of investment is sufficient, given the high demand for new skills and information-processing entailed in these knowledge-intensive jobs.

Figure 2.14 Weeks of On-going Training by Market Segment, 1998 and 2003

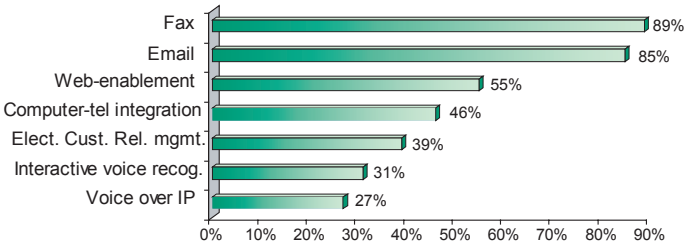


With on-going deregulation of the industry, legal regulations are an ever moving target. Advances in information systems require employees to continually learn new software programs and databases. New technologies have also reduced product life cycles so that the features, packaging, and marketing of products and services are constantly changing. Thus, employees who provide service and sell these products need continuous learning and upgrading of their knowledge and skills.

An important dimension of new call center technology is the shift from voice technology (telephones) to multiple channels for customer interactions. While 85 percent of the centers in this study used email and fax as well as voice for customer communications, 55 percent also used web-enablement. In addition, 39 percent used electronic customer relationship management, 31 percent used interactive voice recognition, and 27 percent used voice over internet protocol (VoIP) (see Figure 2.15). As call centers adopt

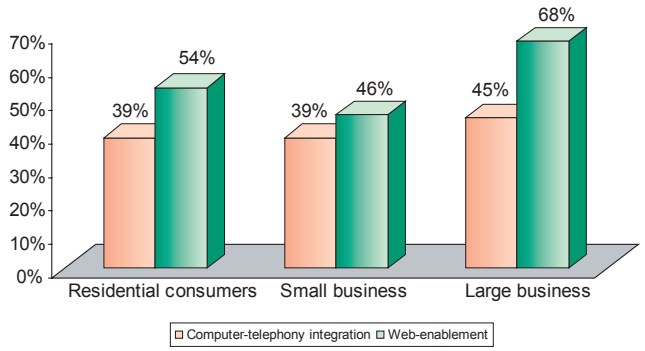
multiple channels, the demand for a wider range of skills and technical proficiencies increases, and hence the need for additional training.

Figure 2.15 Adoption of Technology, 2003



Investments in new technologies follow the pattern we have described above, in which investments are higher in centers serving large business compared to those serving the mass market or small businesses (Figure 2.16). However, even in residential centers, the new technologies are spreading rapidly, for example, with web-enablement reported in over 50 percent of residential call centers in 2003.

Figure 2.16 Use of New Technologies by Market Segment, 2003

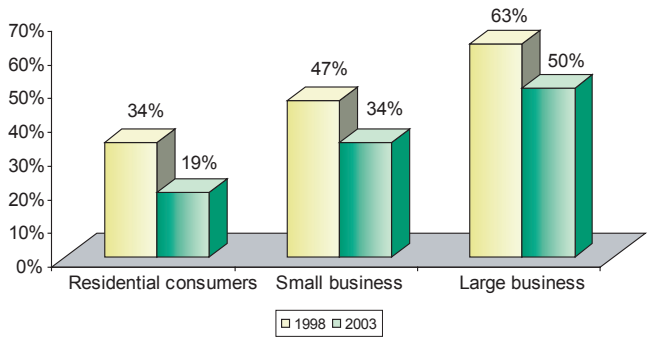


The Organization of Work: Discretion, Participation, Teamwork

With new technologies such as electronic customer relationship management and web-enablement, employees have greater need for discretion – to utilize the information in databases and to react quickly to customer preferences. Participation in problem-solving and team-based work structures are likely to provide needed sources of on-going learning.

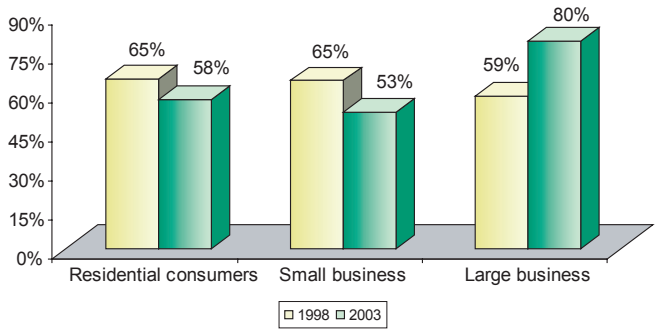
However, with few exceptions, we found that call center managers reported much lower levels of employee discretion and participation in 2003 than they did in 1998. To measure the level of discretion, we asked managers to rate how much discretion they gave employees on a 5-point scale. We then calculated the percent of managers who answered '4' ('a lot') or '5' ('complete'). By this definition, 19 percent of residential call centers gave employees discretion over tasks, compared to 34 percent of small business centers and 50 percent of large business centers. Compared to 1998, these responses are 44 percent lower in residential call centers, 26 percent lower in small business centers, and 21 percent lower in large business centers (Figure 2.17).

Figure 2.17 Discretion Over Tasks by Market Segment, 1998 and 2003



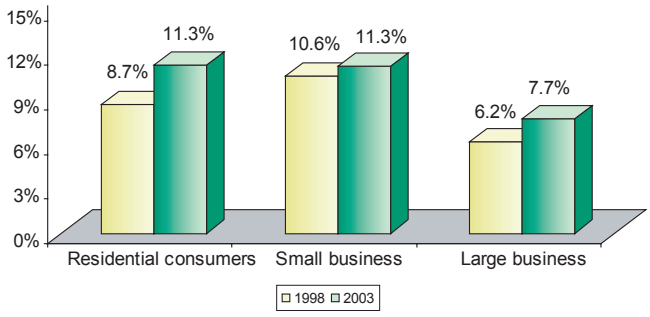
Managers report that they provide employees greater discretion when it comes to handling unexpected requests from customers. Here, the percent of centers that allow considerable employee discretion is 58 percent in residential centers, 53 percent in small business centers, and 80 percent in large business centers. Compared to 1998, these figures represent lower levels of discretion in residential and small business centers but higher levels in large business centers.

Figure 2.18 Discretion Handling Unexpected Customer Requests by Market Segment, 1998 and 2003



Another measure of employee discretion is the use of scripted texts, whereby employees follow are instructed to follow a predetermined script. Given the complexity of products and services in telecommunications markets, the use of scripts is unlikely to be effective. And, in this study, only a minority of call centers rely on their use. Nonetheless, it is worth noting that the use of scripts is higher on average in 2003 than it was in 1998 – with an increase of 31 percent in residential markets, 6 percent in small business centers, and 25 percent in large business centers (Figure 2.19).

Figure 2.19 Use of Scripts by Market Segment, 1998 and 2003

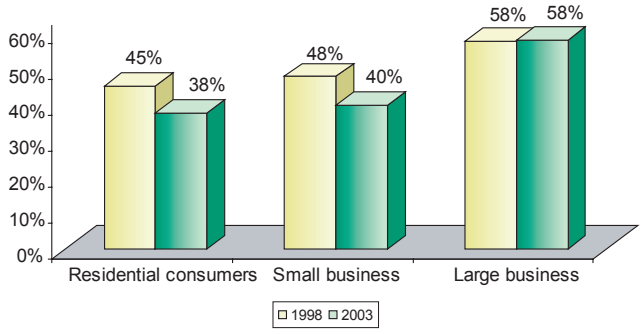


"Offline" problem-solving groups — such as quality improvement teams that meet on a regular basis to solve problems — have become widespread in American industry. Our study finds that the telecommunications industry is no exception. As noted earlier, given the rapidity of change in products, processes, and technologies in call centers, problem-solving groups are likely to be an effective tool for sharing information, learning, and resolving conflicts.

On average, 90% of call center managers in 2003 reported making some use of problem-solving groups. The average percent of employees in each center who were actually involved in these groups, however, was considerably lower, averaging 44 percent. In addition, the use of these groups was lower in 2003 than in 1998 – by about 17 percent in residential and small business centers (Figure 2.20).

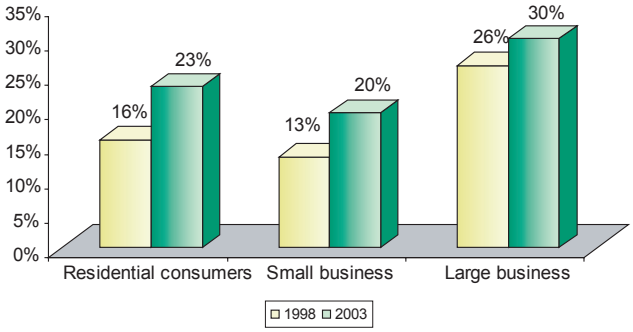
Figure 2.20 Percent of Employees Involved in Problem-Solving Groups by Market Segment, 1998 and 2003

In contrast to offline problem-solving groups, only about 35 percent of call centers in 2003 made any use of self-directed work teams.



The average percent of employees involved in self-directed teams was about 23 percent overall – with lower rates of use in residential and small business centers compared to large business centers. Nonetheless, this represents an increased of about 6 percentage points over levels of use in 1998. The increases particularly occurred in residential and small business centers. Their greater use could reflect managerial decisions to shift resources from management positions to frontline workers who are directly serving customers.

Figure 2.21 Percent of Employees Involved in Self-Directed Teams by Market Segment, 1998 and 2003



Recent research has also shown that the use of teams in call centers is associated with lower quit rates and higher sales growth (Batt 1999, 2003). Employees in teams appear to learn more from each other, find better ways to handle problem customers or sell more, and are better able to keep up with the rapidly changing information and the new technologies that they must manage.

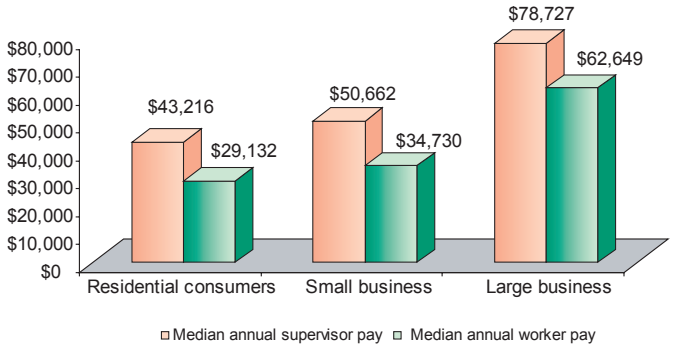
Pay Levels and Total Compensation

The differences in patterns of skill and work organization across centers serving distinct customer segments are also reflected in pay differentials. To measure pay levels we asked managers to report the annual pay of the 'typical' or median employee in the call center – meaning that about half were paid more and about half were paid less. Annual pay was defined to include all pay for performance, such as individual commissions, group bonuses, and profit sharing, but excluded any overtime pay.

On average, managers reported that the typical service rep in 2003 earned $29,132 in call centers serving residential consumers, $34,730 in centers serving small businesses, and $62,649 in those serving large businesses. Service agents in large business centers earned 115 percent more than those serving residential consumers and 80 percent more than those serving small business customers (see Figure 2.22).

First-line supervisors earned a wage premium over service employees of 32 percent in residential and small business centers and 20 percent in large business centers.

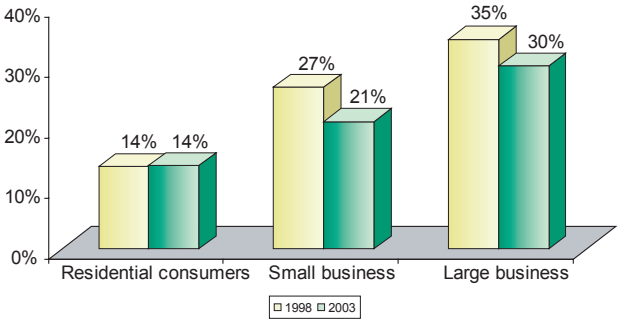
Figure 2.22 Median Worker and Supervisor Annual Pay by Market Segment, 2003



In addition, the median wage for union workers serving residential and small business customers averaged 27 percent higher than the wage for non-union workers.

The portion of this annual pay that was variable – or based on pay for performance – averaged 14 percent in residential centers, 21 percent in small business centers, and 30 percent in large business centers. Variable pay represented a lower proportion of pay in 2003 compared to 1998 probably because most variable pay in call centers is based on sales incentives or commissions, and sales growth has been lower in recent years than it was in 1998.

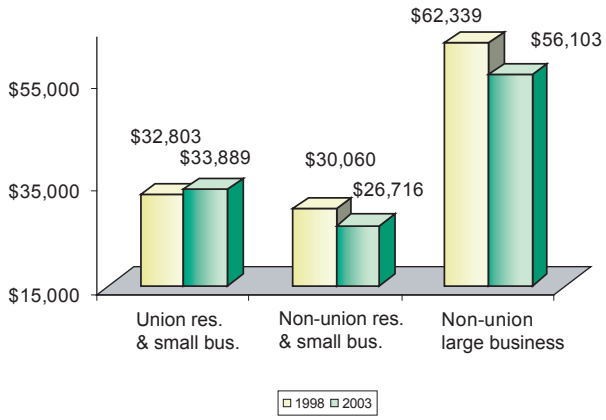
Figure 2.23 Percent of Pay That Is Variable by Market Segment, 1998 and 2003



The differences in real wages between 1998 and 2003 are found in Figure 2.24. Real wages were calculated by converting median wages in 2003 into 1998 dollars, using the consumer price index as a deflator for the five-year period (14.6% increase).

Based on these calculations, real median wages fell for non-union workers and rose slightly for union workers. In this study, unionized sites were only found in centers serving residential or small business markets. Thus, we compared wages for union and non-union worksites in these markets. We found that real median wages for union employees were 3 percent higher in 2003 than in 1998, while those for non-union employees in the same markets fell by 11 percent. Real wages for non-union employees in the large business centers were also 10 percent lower in 2003 compared to 1998.

Figure 2.24 Real Median Worker Wages by Union Status and Market Segment, 1998 and 2003



We calculated total compensation for the median worker in 2003 by adding median pay, overtime pay, and the cost of benefits. Overtime pay averaged $1,665 for workers in residential centers, $1,500 for those in small business centers, and $910 for those in large business centers. Benefits as a percent of median annual pay averaged 27.6 percent in 2003, compared to 26.2 percent in 1998. This brought total compensation to $38,348 for service reps in residential call centers, $44,207 in small business centers, and $86,090 for agents in large business centers. On average, the total compensation packages for union workers serving residentail and small business markets was 31 percent higher than that of non-union workers.

Staffing, Tenure, and Turnover

Turnover is a major problem for call center managers. Industry analysts often estimate that turnover averages about 30 percent per year in the typical call center, although it can be much higher. This level of turnover imposes high costs of recruitment and screening on call centers and managers find themselves in a perpetual search for additional workers. In this study, managers estimated that the costs to recruit, screen, and train each new employee averaged $3,254 in residential call centers, $4,336 in small business centers, and $7,125 in large business centers. These costs do not take into account the lost productivity of new employees.

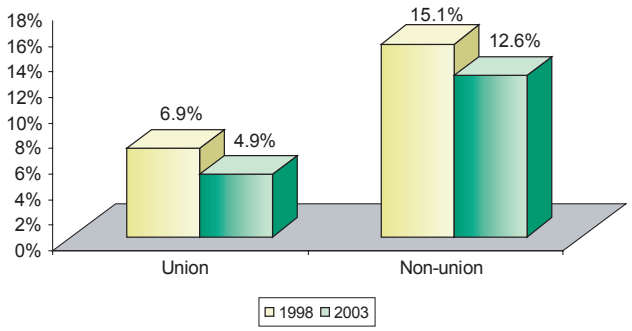
Another challenge in hiring concerns how selective employers can be – what is often referred to as the 'select rate'. This is the percentage of applicants that are eventually hired. A relatively low rate – for example of 10 percent, means that only 1 in 10 applicants eventually get hired. Call center managers reported that in 2003, the percent of all applicants hired was 27 percent in residential consumer centers, 24 percent in small business centers, and 21 percent in large business centers.

Total turnover, as measured in this study, includes employees that quit, left for better jobs, were dismissed, or retired. It averaged 26 percent in 2003, with 12 percent due to employee quits. This rate is somewhat lower than in 1998, and probably due to the worsening labor market opportunities in the economic downturn of recent years.

Turnover rates varied substantially by union and non-union status, however. Average annual turnover, as reported by call center managers, was 16 percent in union centers serving residential and/or small business customers, 27 percent in non-union centers serving the same markets, and 31 percent in non-union large business centers.

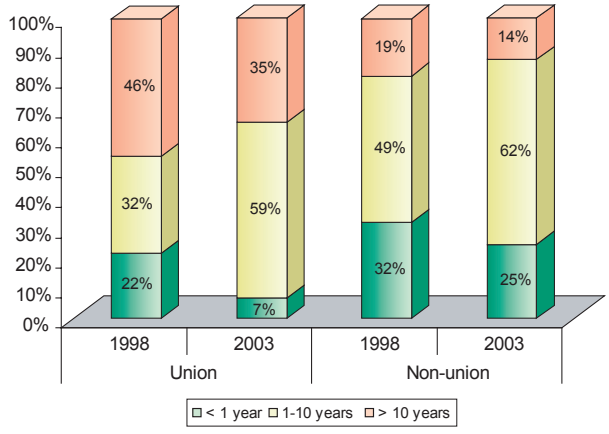
Simple quit rates were 4.9 percent in union centers and 12 percent in non-union centers.

Figure 2.25 Quit Rates by Union Status, 1998 and 2003



The somewhat lower rates of turnover in 2003 (versus 1998) are reflected in changes in the tenure composition of the workforce. In 1998, call centers had a higher percentage of low tenure workers and high tenure workers than in 2003. This was true for both union and non-union call centers, although the changes in composition are greater for unionized worksites (see Figure 2.26).

Figure 2.26 Employee Tenure by Union Status, 1998 and 2003

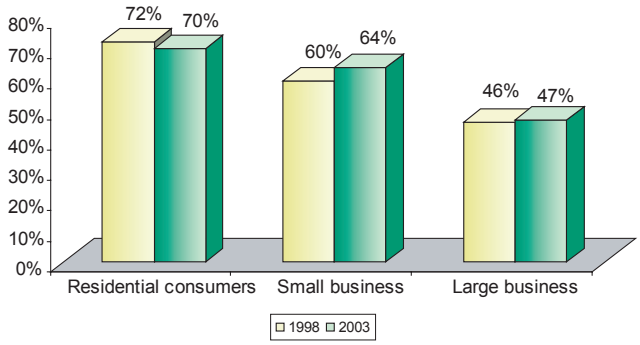


In 2003, both union and non-union centers had about 60 percent of the workforce with between 1 and 10 years of service. Unionized centers averaged only seven percent of the workforce with less than one year of tenure and 35 percent of the workforce with more than 10 years of service. Non-union centers, by contrast, had 25 percent of workers with less than one year of tenure and 13 percent with more than 10 years.

Other staffing patterns appear to have changed relatively little in the period between 1998 and 2003. The workforce in call centers is predominantly female, although the patterns vary by market segment. Seventy percent of employees in residential call centers are women, compared to 64 percent in small business centers and 47 percent in large business centers

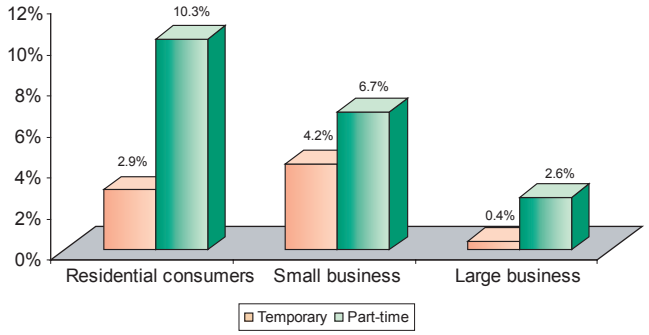
Staffing strategies and workforce characteristics vary systematically across these distinct segments — in terms of the size of the workforce, the gender composition, and the percent use of part-time and temporary staffing.

Figure 2.27 Percent Of Workforce Female by Market Segment, 1998 and 2003



The use of part-time and temporary staffing also appears to be relatively stable over time – at about 10 percent of the workforce in both 1998 and 2003 – and is concentrated more in residential and small business centers than in large business centers. Call centers also make considerably more use of part-time employees compared to temporary workers.

Figure 2.28 Percent of Workforce Part-time or Temporary by Market Segment, 1998 and 2003



Management Practices & Economic Outcomes

To understand whether high involvement practices lead to better outcomes in call centers, we developed an additive index of these practices. It includes: hiring higher skilled employees and investing in training; designing work with more discretion and use of problem solving and self-directed work teams; and using full-time, permanent staffing strategies rather than part-time and contingent staffing. When taken together, the high involvement work practices led to significantly lower quit rates, and these patterns held across all customer segments.

We did the same analysis for sales growth in the residential, small business, and large business segments. We found quite similar results, with high involvement practices having a significant positive influence on sales growth. The surprising finding is that even for residential customers in mass markets, the high involvement strategy produced better results. This result is notable because, as shown above, most firms have taken a production line approach to management in residential services.

These findings are remarkably similar to the results based on our 1998 national survey (Batt 2002). They reflect a growing amount of empirical research which demonstrates the value of investing in the skills and abilities of the workforce and organizing work so that employees can provide professional, quality service (Batt 1999; Batt and Moynihan 2001).

In sum, this research suggests that the production line approach doesn't "fit" the complexities serving s residential service market. Given the wide variety of products and services in today's market, firms want to compete on the basis of bundling services — or "mass customization". To do so, however, requires investment in human resources. The variety and customization options available for today's mass market products call for better skilled workers who know the products and have the opportunity to use their skills to deliver quality service.

We also analyzed the factors that predict higher pay for call center workers. Our results based on the 2003 survey are also very similar to those based on the 1998 survey. We analyzed factors associated with higher median annual pay, taking into account the industry segment, customer segment served, human capital of the workforce, and human resource practices used. After taking all of these factors into account, we found that workers in large business centers still earned an average of 23.3 percent more than those in residential service centers, and 17.8 percent more than those in small business centers. Small business center service agents enjoyed a 5.5 percent premium over those working in residential service centers. Union workers earned 17.8 percent more than their non-union counterparts. Workers in the wireline industry segment earned 14.6 percent more than their counterparts in the cable TV industry segment.

Turning to human resource practices, we found that every additional year of education was associated with 6 percent higher wages. Call centers with a higher percent of women in the workforce paid significantly lower wages. Those centers that made greater use of permanent full-time workers (rather than part-time and contingent) paid higher wages; and those that made greater use of self-directed work teams paid higher annual wages.

3. Network Operations

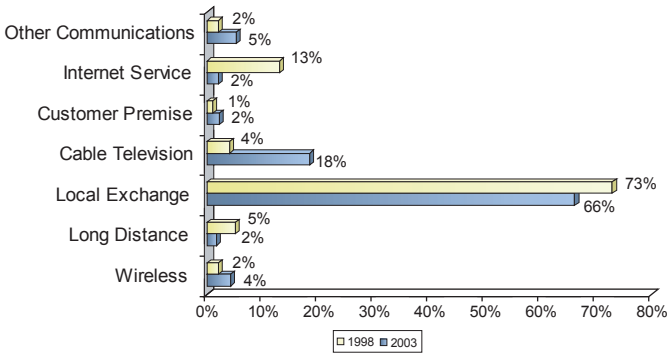
This section of the report compares the human resource policies and work practices that guide the work of the technicians who support the telecommunications networks in the United States. We examine employment practices affecting technicians employed by the network service providers in wireless, cable television, local exchange, long distance, customer premise equipment, and internet service providers. We compare our current findings with those we collected in our 1998 survey.

Networks and Technicians

Across the different network architectures and services, there is considerable variation in network technicians' pay and work practices. Nevertheless, some networks share several common features. In this section, we contrast the major local access providers, traditional local exchange carriers, wireless service providers, and cable television. The traditional Bell System employment practices are still embedded in the local exchange carriers and contrast with the mostly nonunion human resource practices of the wireless and cable television providers. In 1998, three–quarters (73%) of the telecommunications technicians covered by our earlier survey worked for the local exchange companies, and in 2003, two-thirds (66%) of the sample worked for the local exchange carriers.

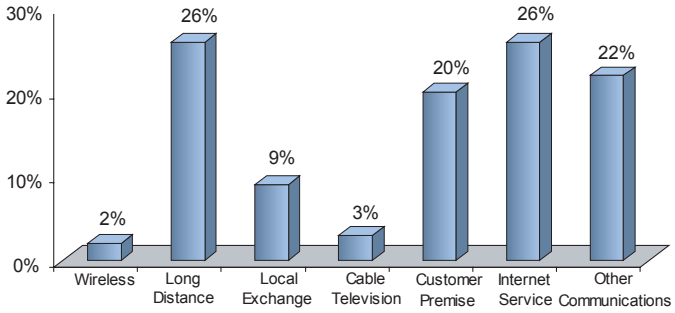
The dominant companies in this network segment are SBC, Verizon, BellSouth, and Qwest-US West. In 1998, only 4% of the sampled technicians work for cable television, but in 2003, 18% were employed by cable television local franchises owned by providers such as Comcast, Time Warner, Cox, and Charter. In 1998, two percent of the sample, covered technicians employed at wireless carriers, such as Cingular, Verizon, and Sprint PCS; in 2003, it is four percent of the sample.

Figure 3.1 Technician Employment Share by Network Type, 1998 and 2003



Between 1998 and 2003, each network downsized employees, except for local exchange carriers that mainly used retirement offers, the others relied on layoffs. ISPs and long distance carriers, respectively, laid-off 24% and 22% of their technicians between 1998 and 2003 (see Figure 3.2).

Figure 3.2 Percent of Technicians Laid Off between 1998 and 2003 by Network Type



On the other hand, network establishments have experienced wide variability in work volume between 1998 and 2003, (see Figure 3.3) from a decline of 6% in long distance service to an increase of 25% in wireless services.

Figure 3.3 Percentage Change in Work Volume from 1998 to 2003 by Network Type

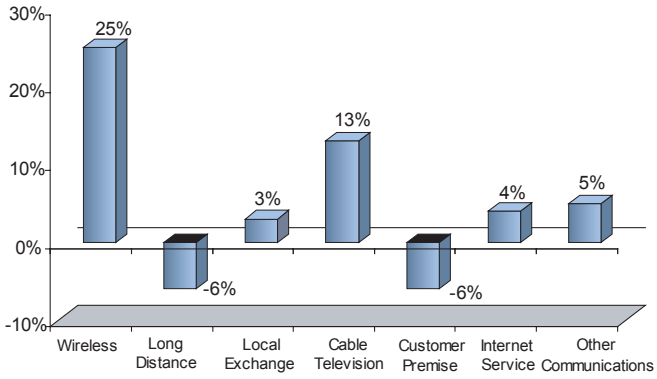
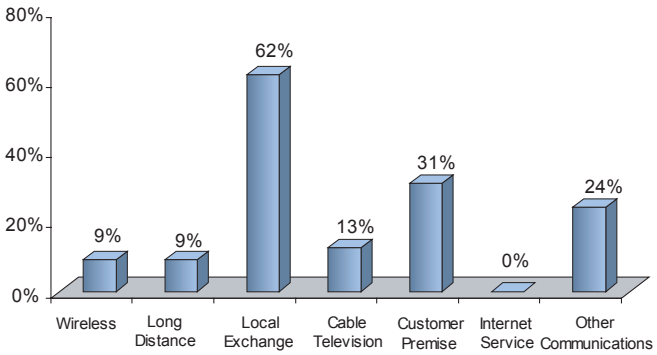


Figure 3.4 Union Density by Network Type, 2003



Work volume is greatly influenced by changes in market demand for services, technological innovation, and organizational consolidation and rationalization, each of which may have offsetting effects on the work volume of an establishment.

Traditional Carriers Retain Traditional Human Resource Practices That Value Experience: Local Exchange Carriers

The local exchange carriers retain the most experienced technicians in the industry with 61% of technicians having more than 10 years tenure, down from 66% in 1998. There are several other interesting features of their staffing practices. Local carriers have the lowest level of annual rate of quits at 1.6 percent and terminations at 1.2 percent. They have the oldest technician workforce, average age 40. They employ a disproportionately large number of field technicians, approximately 82% of the local exchange carriers' technicians work in the field, compared to 74% in other segments of the industry.

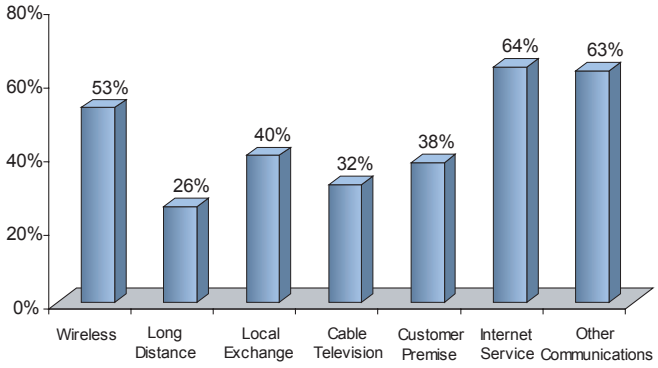
Local carriers are also the most heavily unionized segment of the industry with 97% of the eligible technicians being represented by a union or 63% of total network employees.

Local exchange carriers have the least digitalized networks with 60% of their network still analog. They also employ the least educated technicians, who on average have a high school education (12.8 years compared to 14.5 years in wireless); however, they provide the most initial training with 84 hours. Approximately 97% of the local exchange carriers' technicians are also full-time and permanent employees (compared to 87% in cable television).

Newer Networks Embed Nonunion Human Resource Practices: Internet Service Provider & Wireless Networks

The newer networks, wireless and internet service providers, have newer network establishments. The average wireless establishment has existed since 1990, whereas the typical ISP establishment was setup in 1995. They have implemented many contemporary nonunion human resource management practices. The newer network establishments make greater use of employee participation programs (64% ISPs and 53% wireless technicians, compared to an industry average of 42%) and self-directed work teams (65% ISPs and 40% wireless technicians, compared to an industry average of 22%).

Figure 3.5 Percent of Technician Establishments with Employee Participation Programs by Network Type, 2003



Although 78% of the industry's technicians are union represented, the newer network establishments are much more unlikely to be union represented with 9% union coverage in wireless and no union representation at the ISPs.

These newer networks employ more educated technicians with the highest ratio of college graduates: 41% of ISP technicians being college educated and 38% of wireless technicians with a college degree compared to an industry average of 12% of technicians holding college degrees. The rapidly growing wireless industry has the most inexperienced technicians with 71% of wireless technicians having less than 10 years tenure while in the ISPs 78% of technicians have less than 10 years experience compared to an industry average of 51% of technicians with less than 10 years service.

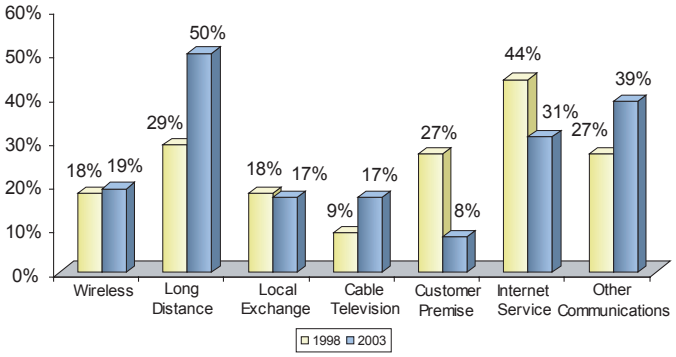
These networks employ more office-based technicians; 82% of ISP technicians work in offices, and 36% of wireless technicians work in offices, compared to an industry average of 30% of technicians based in offices.

The average ISP establishment surveyed employs 62 people and the average wireless establishment surveyed employs 86 people compared to an industry average of 139 employees per establishment. The newer networks also provide less than half the amount of qualifying training for their technicians compared to the industry average. ISPs provide 28 hours of qualifying training and wireless networks provide 24 hours of qualifying training compared to an industry average of 66 hours of qualifying training.

The Demise of Retail Long Distance Service and the Transformation of Employment

In the past, when the long distance retail market was dominated by AT&T, the long distance establishments were operated under the same human resource practices as the local exchange carriers. By 2003, however, long distance carriers were largely nonunion with only 9% of long distance technicians union represented. In part this can be explained by the growing proportion of technicians classified as exempt employees, who lacked the protected right to union representation. With 53% of the technician workforce classified as exempt, long distance carriers far exceed any other network type in this classification. The Survey also pre-dates the implementation of Department of Labor revisions to the classification guidelines for exempt employees.

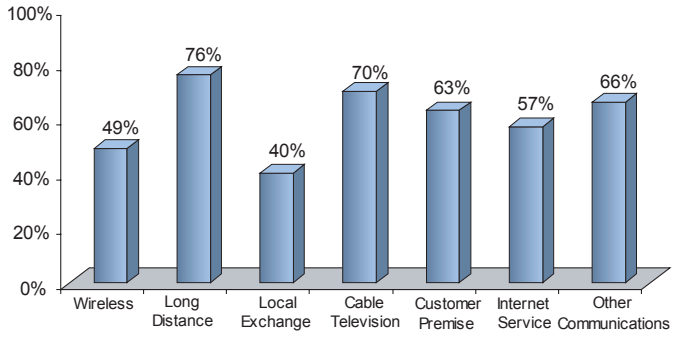
Figure 3.6 Percent of Technicians Classified as Exempt Employees by Network Type, 1998 and 2003



The major facilities based-carriers, AT&T and MCI, and Sprint, compete against service wholesalers and the local exchange carriers that have gained the right to offer long distance services over their own networks. As network backbone service provider, long distance carriers have the most advanced network technologies with 76% of their entire networks elements fully digital.

Network digitalization led to reductions in work volume for technicians, while it shifted the locus of technical work from the field to the office environment.

Figure 3.7 Percent of Network Type Digital, 2003



Approximately 73% of long distance technicians work in offices rather than in the field. Digitalization, fraud, bankruptcy, and falling retail demand for long distance services, has resulted in more than a quarter of the technicians employed in long distance being laid-off.

In contrast to the local exchange carriers, only 30% of long distance technicians have 10 years service. The majority of long distance workplaces rely on self-directed work teams (64%) and managers report that a high proportion (92%) of their technicians perform at a satisfactory or higher level, but they also report terminating seven percent of their technicians annually.

Cable Television Networks

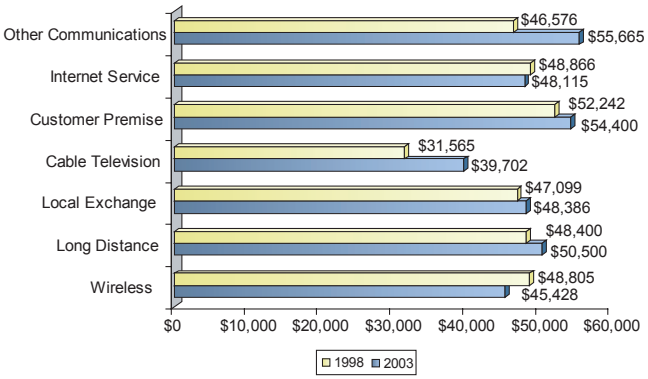
AT&T's sale to Comcast of its recently acquired cable assets, after its purchase of TCI and Media One, transformed Comcast into the dominant cable television provider in the United States. The other major cable providers are Time Warner, Cox, and Charter. This largely unregulated industry has also been touched by scandal and fraud, which devastated Adelphia Cable.

Cable television has been transformed from a broadcast medium into a conduit for high-speed network access and communications. We predicted in our last report that accompanying this transformation there would be a strong need for these companies to upgrade their human resource practices and increase the pay of the technician workforce. Our expectations with regard to pay have been met, yet the industry retains many of its traditional human resource practices. During the last five years, technicians in the cable television industry have experienced an improvement in their compensation, as the industry consolidates, offers broadband services, including cable modem, Voice-over-IP, and high definition television.

In 2003 cable television paid its technicians approximately 25% less than any other network establishment, even though the cable firms face relatively little competition in their local markets. Their relatively high service prices have financed the deployment of a new digital fiber broadband network. The cable network has significantly more digital access elements (70%) than any other local access network (wireless 49% and local exchange carriers 40%).

Wage equations reveal that cable television technicians earned 33% less than comparable technicians in the industry in 1998, but that gap was reduced to 25% in 2003.

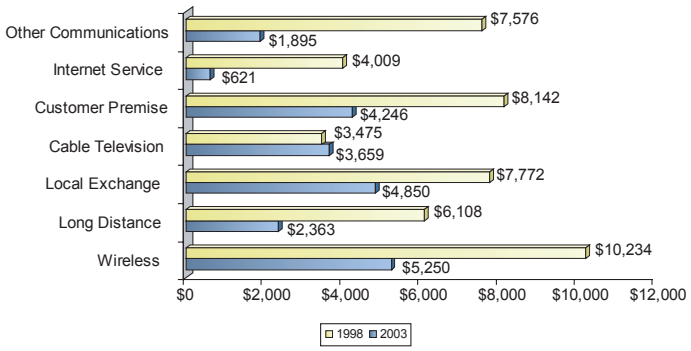
Figure 3.8 Average Annual Total Technician Pay by Network Type, 1998 and 2003



In part, the total pay improvement can attributed to overtime earnings, since cable television technicians worked more hours per week than any other technicians (46 hours), but it also reflects substantial real improvements in

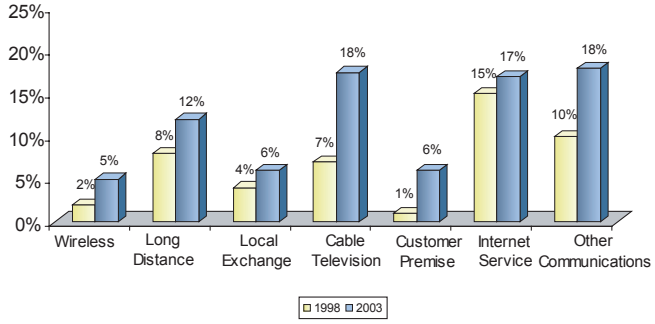
pay. Cable television was the only network, where technicians earned more from overtime in 2003 than they earned in 1998.

Figure 3.9 Average Annual Overtime Earnings of Technicians by Network Type, 1998 and 2003



An increasing proportion of all network technician pay is increasingly linked to performance. Cable television, however, has more than doubled the proportion of performance based pay in the last five years from 7% to 18%.

Figure 3.10 Percent of Earnings from Variable Performance-Linked Pay, 1998 and 2003



Cable television still has the highest rate of voluntary turnover at 10% annually, it uses temporary employees (13%) at twice the industry average, and it has technicians with relatively little experience, 68% of cable technicians have less than 10 years experience and 13% have less than one year experience. Approximately 15% of technicians have been recently disciplined and 7% are terminated each year. Managers report the lowest level of satisfactory technician performance in the industry (84%). Cable also relies more on contractors than other network providers. The unions in the industry argue that these contingent workers are part of an aggressive union free strategy employed by the cable sector, where only 12% of the surveyed establishments are union represented.

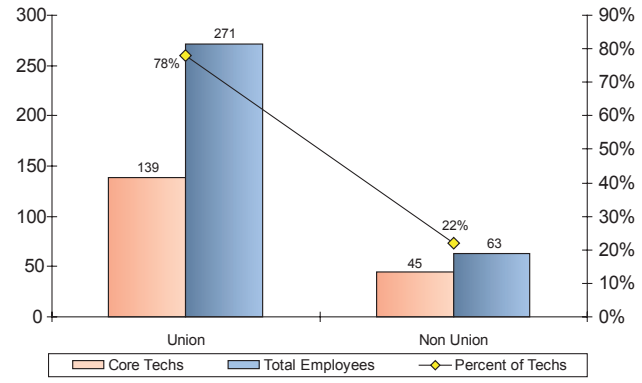
Customer Premise Equipment

Another segment of the telecommunications industry formerly dominated by the Bell companies is the customer premise equipment (CPE) business. This market segment is now comprised of many small contractors, who were outside the scope of our survey, and several large firms. They supply PBX, VoIP, and other customer premise network equipment, mostly to large organizations. Avaya, Cisco, Nortel, and Siemans are the largest manufacturers of this equipment. They rely on either their own technicians or vendors to undertake installation and maintenance work. The employers within the CPE industry segment are 31% unionized. There are several other distinguishing features about their human resource practices. These technicians have greater experience than average, 45% have more than ten years tenure with their employer. Only recently have these technicians begun to receive variable compensation They work in the smallest organizations in the overall industry. Some of the contractors in this market segment have IBEW hiring hall contracts, where the union supplies qualified and trained technicians who undertake projects.

Influence of Union Status on Work and Human Resource Practices

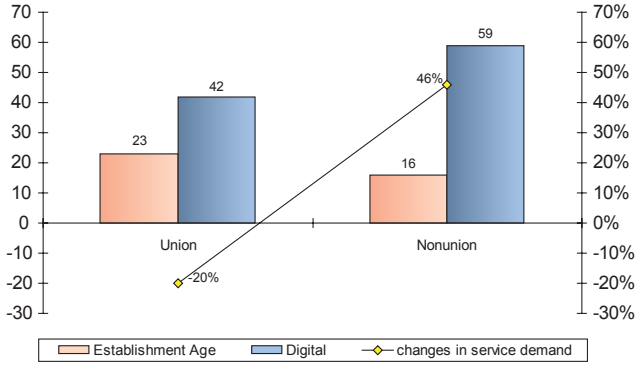
Telecommunications remains a relatively densely unionized industry: 78% of technicians covered by this survey are represented by unions. On the other hand, only 37% of the establishments surveyed were union represented; highlighting that unions represent relatively large workplaces.

Figure 3.11 Establishment Size and Union Status - Unions Represent 78% of Network Technicians in Mostly Larger Establishments



Nonunion workplaces are newer; the average nonunion workplace was 16 years (as of 2003) as compared to 23 years for union workplaces. Nonunion workplaces were more advanced in digital deployment with 59% of network elements digital compared to 42% digital in unionized establishments. In 2003, nonunion workplaces were serving growing markets where demand had increased by 46% (since 1998) whereas union workplaces provided services to markets that had shrunk by 20%. Work volume in nonunion workplaces grew by 10%, whereas union establishments had experienced a 2% decline in work volume (since 1998).

Figure 3.12 Nonunion Workplaces Are Newer, More Digitized, and Serve Growing Markets

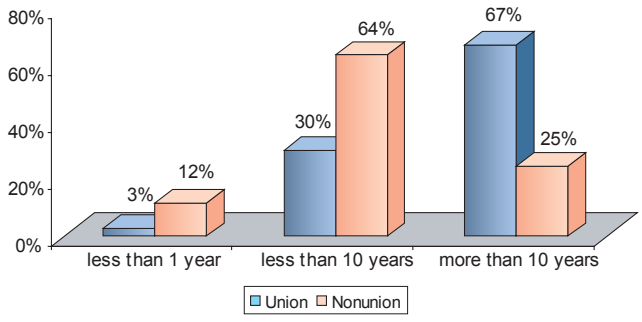


Unionized technicians earn more than their nonunion counterparts, approximately 8% in base pay and 13 % in total pay. When controlling for other factors that influence wage determinations, statistical analysis indicates that there is a 15% union wage premium. The union benefit premium, however, is 35%. Unions also influence how variable pay is allocated. Nonunion workplaces allocate 12 percent of compensation to performance bonuses, while union workplaces allocate six percent. Unionization also greatly influences the allocation of performance bonuses. In nonunion workplace 75% of performance pay is linked to individual performance, while in union workplaces 68% of performance-based pay is linked to group performance.

On average, nonunion technicians are more educated with 14 years of education verses 13 years for union workers. Nonunion technicians are also younger than unionized technicians. The typical age of a nonunion technician is 32 years compared to 41 years for union technicians.

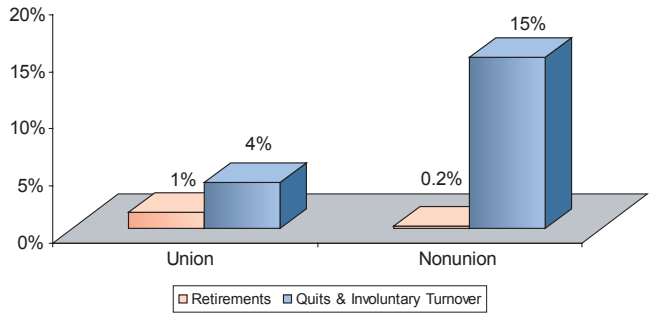
Union technicians, on average, have more experience with 67% possessing more than 10 years tenure, while only 25% of nonunion workers have 10 years with the same employer. This longer retention of union technicians is associated with employers providing 50% more qualifying training to union workers compared to nonunion technicians.

Figure 3.13 Union Technicians Are More Experienced, 2003



Human resource practices significantly vary by union status. Unionized workplaces are more likely to have technicians retire and have much lower quits (1% vs. 7% quits).

Figure 3.14 Unions Reduce Technician Turnover, 2003



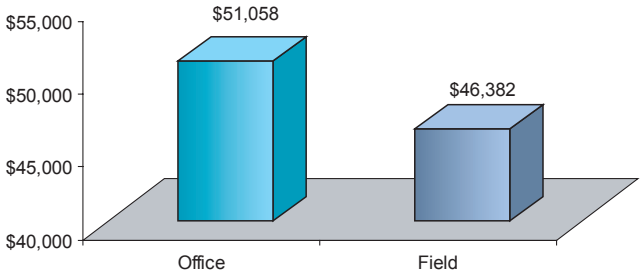
Eighty percent of union technicians work for the local exchange carriers, which employ 66% of the technicians in the industry. The nonunion workforce is based in long distance, cable television, internet service providers, and wireless communications. Four out of five union technicians work in the field, whereas only one out of two nonunion technicians works in the field. Most of the network characteristics and communications tools vary in conjunction with the differences in office and field status. Unionization of technicians is associated with higher compensation, lower turnover, a higher rate of retirements, more experience, and greater training.

Network Technicians in the Office and the Field

As network technologies advance employees' skill sets evolve. The office has become the central institution for technical work in the telecommunications industry. Electronic sensors allow comprehensive surveillance of the network by the network operations centers. Work formerly done in a field setting on network equipment can increasingly be performed either by computers running self-healing routines or by employees in offices manipulating software commands. Moving work from the field to the office is often associated with significant labor savings. Consequently, 74 percent of the technicians covered in our survey work in the field, the industry segment least susceptible to labor saving automation.

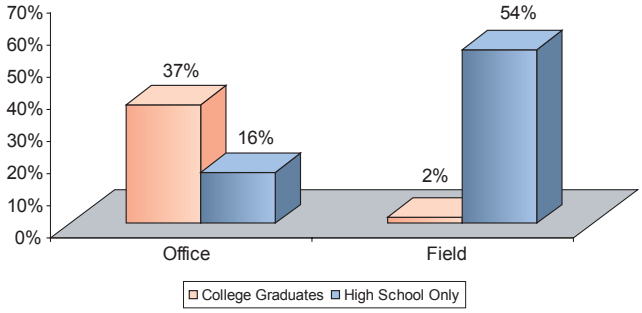
In 2003, technicians who worked in offices annually earned almost five-thousand dollars more than those in the field. This represents a substantial increase over 1998, where the gap was two thousand dollars. In part, this can be attributed to the reduction in overtime compensation for the field technicians and the growing educational gap between the office and the field technicians.

Figure 3.15 Average Annual Total Pay of Office and Field Technicians, 2003



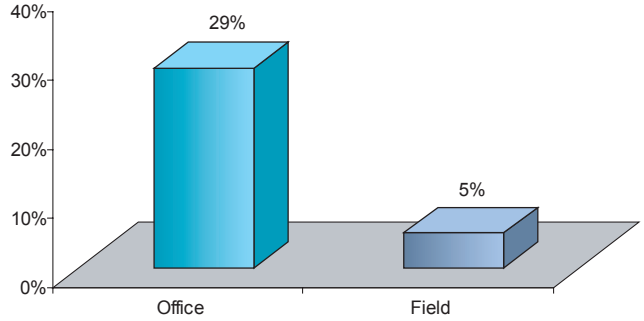
Over one-third of the office technicians work in an operation that requires a college degree, whereas only two-percent of field technicians work in organizations requiring a college education. All workplaces requiring graduate level education are offices. In 51% of field operations, employees have a high school diploma without any formal post high school education. Office technicians on average have one and one-half years of education (14.41) more than field technicians (12.81).

Figure 3.16 Educational Background of Office and Field Technicians, 2003



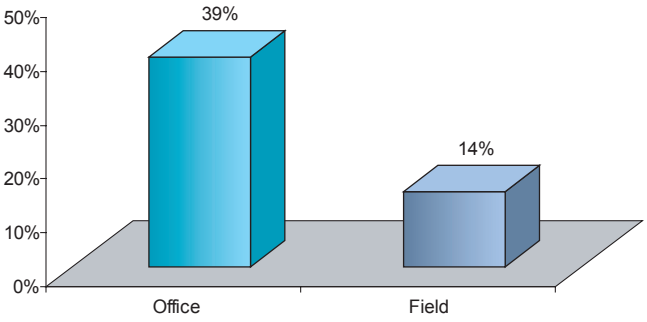
Almost one in three office technicians is female, while only one in twenty field technicians is a woman.

Figure 3.17 Percent of Office and Field Technicians Female, 2003



Over four out of five field technicians are union represented, whereas, three out of five office technicians are in a union represented bargaining unit. Office technicians are more likely to be exempt from federal labor laws (39%), compared to field technicians (14%), which partly explains their lower rate of unionization in office settings.

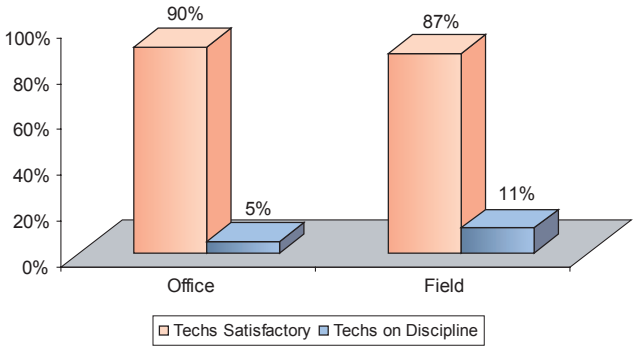
Figure 3.18 Percent of Office and Field Technicians Exempt, 2003



Office technicians receive significantly less initial qualifying training, 44 hours compared to 75 hours for field technicians. Local exchange carriers employ 28% of office technicians and 55% of field technicians and cable television employs 24% of field technicians and six percent of office technicians, whereas our sample of Internet service providers indicate that they employ nearly one-quarter (22%) of the office technicians, but hardly any field technicians (2%).

While there is only a small difference in managerial evaluations of satisfactory performance between office and field technicians, field technicians are more than twice as likely as office technicians to be subject to disciplinary action. On an average day three percent of field technicians are absent, whereas four percent of office technicians are absent.

Figure 3.19 Percent of Office and Field Technicians with Satisfactory Performance or Subject to Discipline, 2003



Office technicians are more likely to be involved in employee participation programs (48% vs. 40%) and self-directed teams (26% vs. 21%), while both groups enjoy some autonomy in their jobs.

Although local exchange carriers provide a decreasing proportion of local access connections, they remain the largest employers of telecommunications technicians. Seventy eight percent of network technicians are unionized. Nevertheless, nonunion technicians work on the new digital networks with rapidly growing demand and work volume. This new access nonunion competition is redefining human resource practices in this industry; however, no single model predominates. Nevertheless, the new models do share several attributes: higher voluntary and involuntary technician turnover, more individual performance-based pay, and lower levels of unionization.

4. The Managerial Workforce

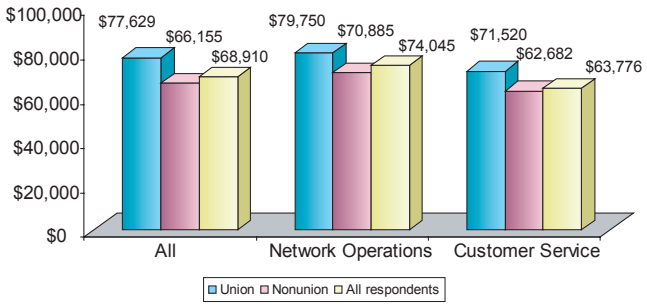
This section of the report examines outcomes related to managers in the surveyed telecommunications establishments. We focus on four variables: the level of managers' annual pay, manager pay relative to average worker pay, the percent of managers in the workforce, and the number of organizational levels between top management and front-line supervisors. For the first three of these measures the data concern managers at the establishment level, excluding first line supervisors. Thus those data exclude managers who directly supervise frontline workers. The data on the number of organizational levels deals with the levels between top management and front-line supervisors.

The data reported in the figures that follow are compared on the basis of whether the establishment was union versus nonunion, and whether the primary work activity was network operations versus customer service and sales. We also examine differences in managerial pay within customer services, according to whether the targeted market segment is the large business, small business, residential consumers, or operator services. Within network operations, we compare managers of central office technicians versus field technicians. Some of the discussion and figures compare data from our 2003 and 1998 surveys.

Level of Manager Pay

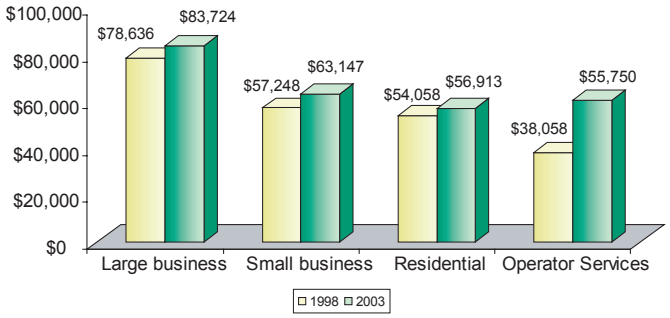
Figure 4.1 reports the average pay of managers in 2003 where pay includes annual wages but excludes any overtime, performance-based pay, or benefit payments. Average annual pay is $77,629 in unionized establishments and $66,910 in non-union establishments. Across union and non-union settings, on average, managers earn between $8,000 and $9,000 more in network operations versus customer service and sales.

Figure 4.1 Average Manager Pay by Union Status of Establishment, 2003



In customer service and sales operations, managerial pay varies sizably across centers that target different market segments (Figure 4.2). In establishments that target the large businesses in 2003, managers earn $83,724, compared to their counterparts in small business centers who earn $63,147, and those in residential services who earn $56,913.

Figure 4.2 Average Manager Pay by Call Center Market Segment, 1998 and 2003



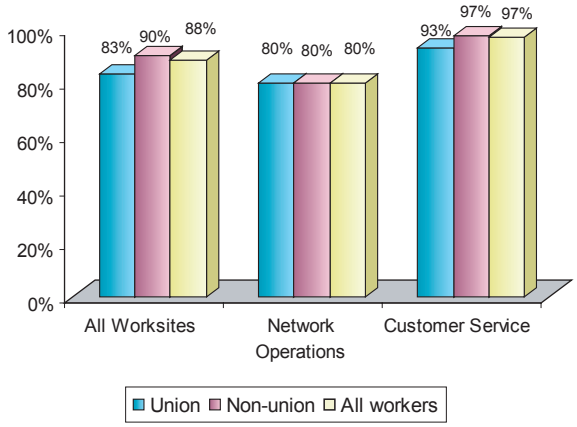
We surmise that manager pay in residential establishments is lower in part because the work is more routine. Also, managers in the large business market are likely to earn more because the sales agents there earn more.

In network operations, the salary differences are less accentuated: while managers in central office operations earn $76,062, those managing field staff earn $73,088.

The Relative Pay of Managers Compared to Average Worker Pay

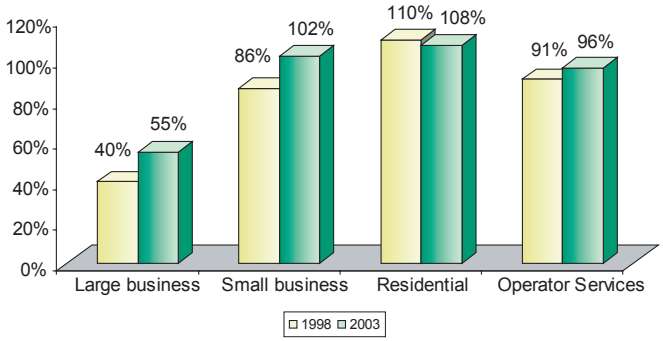
Managers earn 79.7% more than workers in non-union network operations and 79.5% more than workers in union network operations (Figure 4.3) in 2003. In customer service and sales establishments, the manager-to-worker pay ratio is even higher, and the differential is larger in non-union settings (97.0%) than it is in union establishments (93%).

Figure 4.3 Incremental Managers' Pay Relative To Average Worker in Union and Nonunion Establishments, 2003



Manager-to-worker pay differentials vary sizably across the various market segments in customer service and sales in 2003. Manager pay is 107.5% greater than worker pay in residential call centers, and respectively, 101.9% and 54.6% greater in small business and large business call centers. These differentials may reflect both differences in the complexity of managerial responsibilities and differences in worker pay across customer segments (Figure 4.4). In contrast to this variation across market segments, the manager-to-worker pay differentials in central office and field settings are not very different.

Figure 4.4 Incremental Managers' Pay, Relative to Average Worker by Call Center Market Segment, 1998 and 2003



The Percent of the Workforce That Is Managers

In the next set of charts, we examine the percent of the workforce that is managerial. This issue is of interest because many organizations have attempted to reduce managerial ranks in order to decentralize decision-making and increase the percentage of the workforce that carries out direct production activities. Managers constitute 29.8% of the workforce in network establishments and 15.8% in service and sales centers. Figure 4.5 shows that managers constitute a relatively higher percentage of the workforce in non-union network operations (30.4%) and relatively lower in union operations (28.8%). Similarly, in call centers the percent of the workforce in non-union establishments that are managers (16.1%) is greater than the percent of the workforce that are managers in union establishments (13.8%).

In customer service and sales operations in 2003, the variation in the percent of the workforce that is managers is substantial, ranging from 21% in those centers targeting large businesses to 8% in operator services. In small business and residential centers, the comparable figures are 17% and 15%. The high relative percentages of managers in the large business segment may be explained by the fact that large business call centers are less automated and rely less on electronic

monitoring. Thus, they use more managers rather than advanced technologies. Non-union call centers may have a large percentage of managers due to the need for more direct supervision for discipline and other purposes given the absence of a union contract. An alternative explanation is that greater numbers of workers are classified as managerial in these two sectors either to avoid their potential unionization or to lessen union influence.

Figure 4.5 Percent of Managers in Workforce, 2003

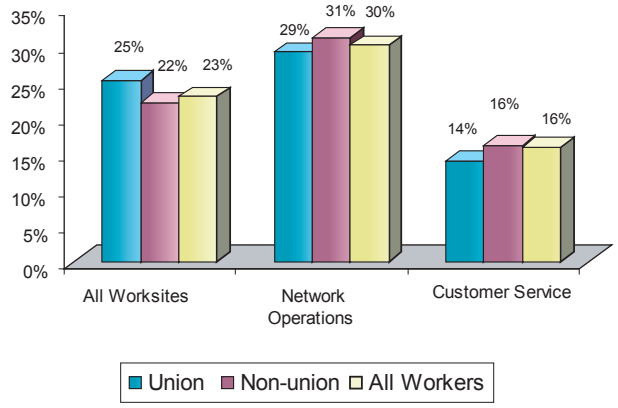
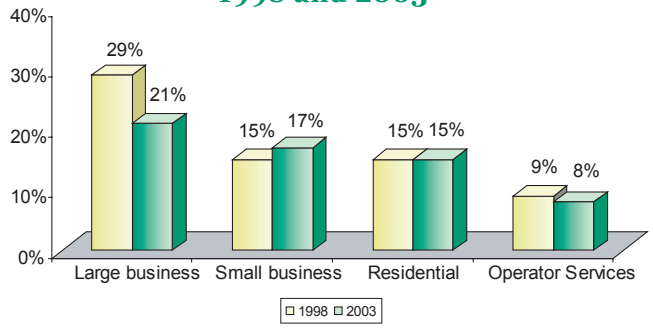


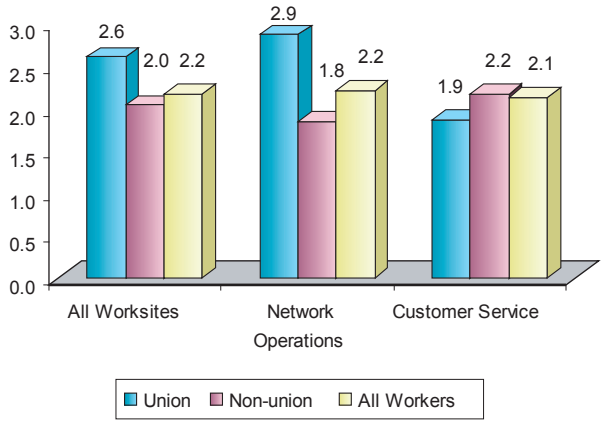
Figure 4.6 Percent of Managers in Workforce by Call Center Market Segment, 1998 and 2003



The Number of Organizational Levels between Top Management and Front-line Supervisors

Another important difference in the way work is organized across the various establishments is the number of levels in the organization that separates top management and front line supervisors.

Figure 4.7 Levels between Top Management and Front- line Supervisors in Union and Nonunion Establishments, 2003



As is the case with the managerial workforce in general, many firms have sought to reduce the number of managerial levels in their organization to save costs and to decentralize decision-making to frontline employees. The patterns differ in network operations as compared to customer service centers. Figure 4.7 reveals that the number of levels between top management and front line supervisors on average in 2003 in customer service centers is higher (2.2) in non-union as compared to union (1.9) establishments. In network operations, the opposite pattern appears as there are more levels in union centers (2.9) as compared to non-union centers (1.8).

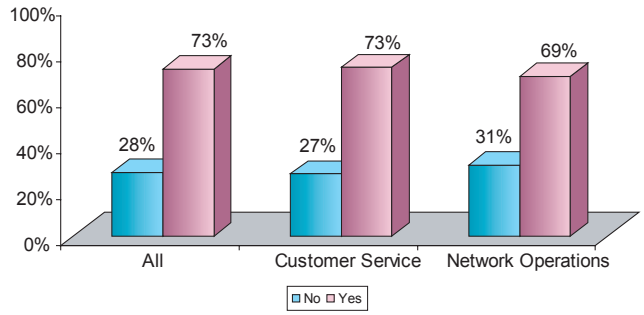
5. Dispute Resolution Procedures

Dispute Resolution

In this section, we focus on dispute resolution procedures. A sub-sample of 454 establishments answered questions in a 2003 supplemental survey dealing specifically with dispute resolution (a sample of 302 establishments had responded to a similar survey in 1998). Recent years have seen growing interest in dispute resolution in the nonunion workplace. Part of this interest has been inspired by the expansion of legal protections of individual employee rights. In addition, the Supreme Court's decision in Gilmer v. Interstate/ Johnson Lane 500 U.S. 90 (1991) has provided an impetus to the introduction of nonunion arbitration procedures. These procedures, often known as mandatory arbitration procedures, establish arbitration instead of litigation as the method for resolving legal claims by employees and effectively bar employee access to the courts. At the same time, declines in the rate of unionization have focused attention on the questions of the extent of dispute resolution procedures in nonunion workplaces and how these nonunion procedures compare to union grievance-arbitration procedures.

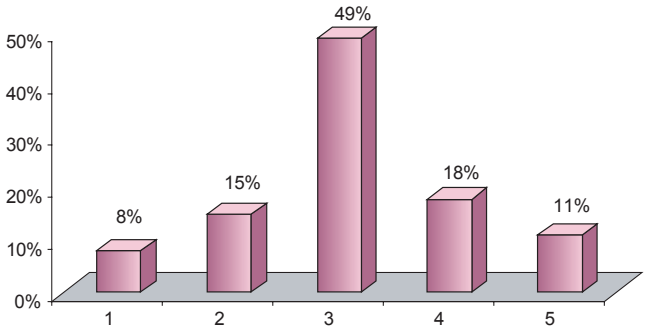
Incidence and Characteristics of Grievance Procedures for Nonunion Employees

Figure 5.1 Grievance Procedure for Nonunion Employees, 2003



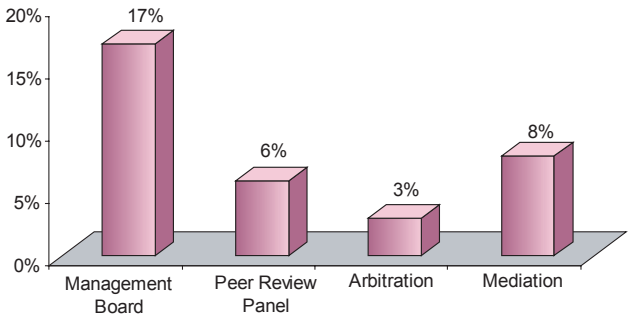
In contrast to the near universality of grievance-arbitration procedures in the unionized workplace, a basic question for nonunion employees is whether or not their establishment has a grievance procedure. We find that in 2003, 72.5% of all nonunion establishments have some type of grievance procedure for employees. Rates of adoption of nonunion grievance procedures are similar for customer service and network technician establishments.

Figure 5.2 Number of Steps in Nonunion Grievance Procedures (percent of establishments), 2003



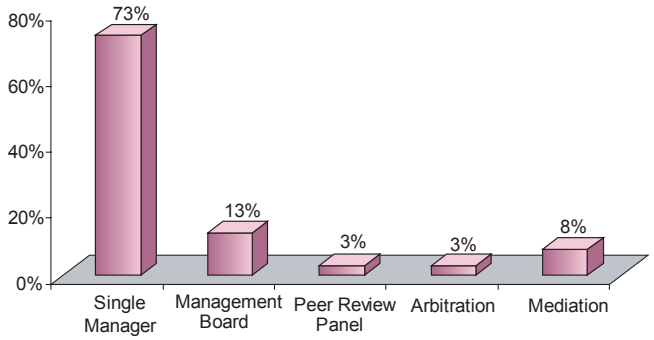
While union grievance procedures tend to follow a standard four-step structure with binding arbitration as the final step, there is greater diversity in the structure of nonunion grievance procedures. Most nonunion procedures are multi-step grievance procedures. The most common type of nonunion procedure is a three-step grievance procedure (48.8% of nonunion procedures).

Figure 5.3 Alternative Elements in Nonunion Grievance Procedures (percent of establishments), 2003



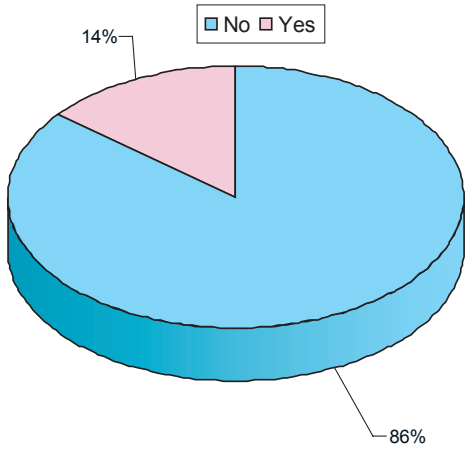
Most nonunion grievance procedures consist of steps in which employees take their complaint to successively higher level managers in the organization. Some organizations, however, include other elements in their procedures. Note, Figure 5.3 reports the percentage of grievance procedures that include alternative elements in at least one step of the procedure.

Figure 5.4 Final Step in Nonunion Grievance Procedures, 2003



The decision-maker in the final step is a particularly important feature of dispute resolution procedures. A single manager is the final step in 73.7% of nonunion grievance procedures. Management boards (12.7%) are the second most common final step.

Figure 5.5 Mandatory Arbitration of Employment Law Cases, 2003

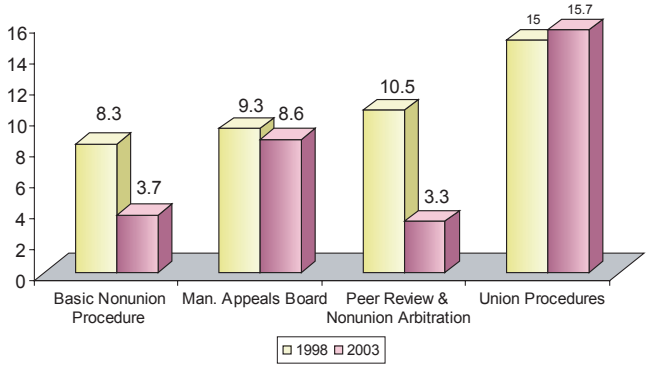


Since the 1991 Supreme Court decision in Gilmer v. Interstate/Johnson Lane, a number of organizations have adopted arbitration procedures for resolving claims by employees based on employment laws. Mandatory arbitration can be adopted as a final step in a multi-step nonunion grievance procedure or it may be adopted as a stand alone procedure for resolving legal claims. Overall, 14.1% of the nonunion establishments in the sample had adopted mandatory arbitration procedures.

Usage of Dispute Resolution Procedures

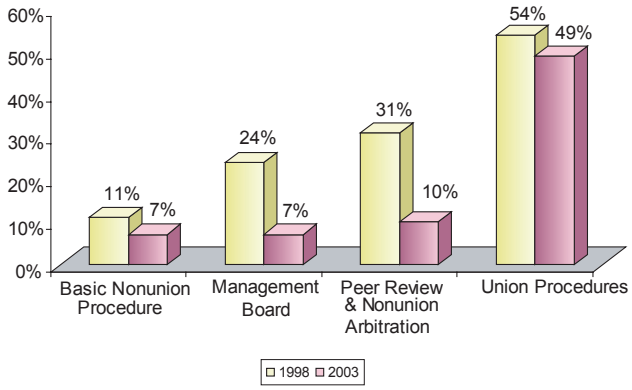
How frequently dispute resolution procedures are actually used provides insights into the effectiveness and role of those procedures.

Figure 5.6 Grievance Rate per 100 Employees by Type of Procedure, 1998 and 2003



Looking between time periods, grievance rates for union procedures are higher for union procedures than for nonunion procedures. Among nonunion procedures, grievance rates are highest for procedures featuring management appeals boards. Looking between time periods, grievance rates for all types of procedures were lower in 2003 than in 1998. A possible explanation for the decline in grievance rates is that the deterioration in the telecommunications industry labor market that followed after the dot.com bubble burst may have led employees to conform more closely to managerial directives and this in turn led to lower grievance rates.

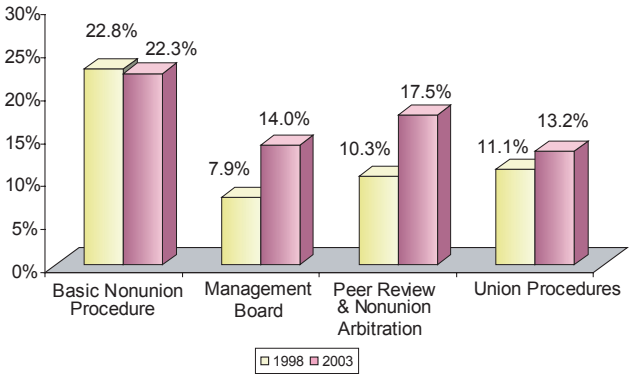
Figure 5.7 Discipline Appeal Rate (%) by Type of Procedure, 1998 and 2003



Grievance rates can be affected by the underlying level of conflict in the workplace and by differences in the types of disputes that can be grieved under the procedure. To provide a more standardized measure of use of grievance procedures, Figure 5.7 reports the percentage of disciplinary decisions appealed under different types of procedures. Discipline appeal rates are much higher under union procedures, where almost half of all disciplinary decisions are grieved, compared to nonunion procedures which have a much lower appeal rate. Whereas disciplinary appeal rates for union procedures were similar in 2003 and 1998, appeal rates were much lower for nonunion procedures in 2003 than in 1998. This drop in appeal rates was true for all categories of nonunion procedures. A possible explanation for this drop could be that with a worsening labor market, employees are less willing to take a risk in challenging discipline decisions through a grievance procedure for fear of losing their job in retaliation for filing the grievance. By contrast, unionized employees may feel greater security in using their grievance procedures no matter what the economic conditions.

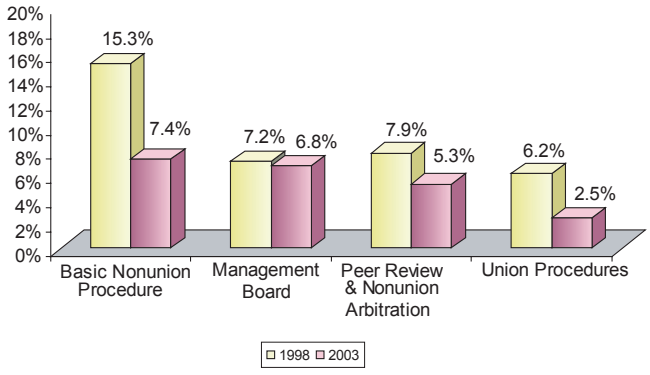
The Influence of Dispute Resolution Procedures on Employment Outcomes

Figure 5.8 Discipline Rate by Type of Procedure, 1998 and 2003



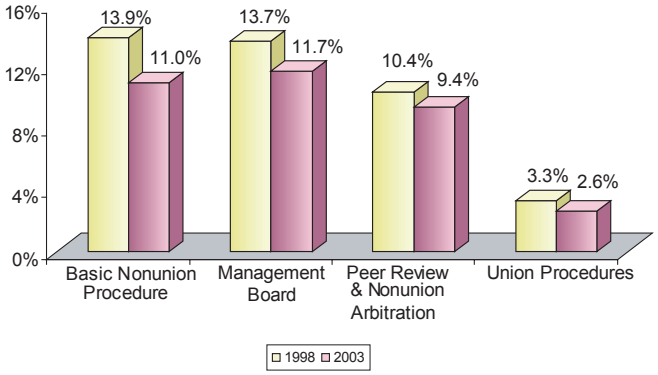
Discipline rates were slightly lower for union establishments than for nonunion establishments in all procedure type categories. Between 1998 and 2003, the largest increases in discipline rates occurred in union establishments and in nonunion establishments with management appeal boards and peer review and nonunion arbitration procedures. In contrast, discipline rates fell only slightly from 1998 to 2003 in establishments with basic nonunion grievance procedures.

Figure 5.9 Termination Rate by Type of Procedure, 1998 and 2003



Termination rates were lower for union than for nonunion establishments in both 2003 and 1998. Across establishments with all types of procedures, termination rates were lower in 2003 than in 1998.

Figure 5.10 Quit Rate by Type of Procedure, 1998 and 2003



Quit rates were substantially lower for union than for nonunion establishments in 2003 and 1998. Across establishments with all types of procedures, quit rates were lower in 2003 than in 1998.

Although it is not possible to make definitive conclusions based on these results, one possible explanation for the pattern of changes between 1998 and 2003 is the shift in the economic environment between these two points in time. Lower termination and quit rates in 2003 may reflect greater employee efforts to hang onto their existing employment in the face of a worsening of external labor market conditions. This might seem contradicted by an increase in discipline rates if this indicates greater levels of employee misbehavior in the workplace. On the other hand, an alternative explanation might be that higher discipline rates reflect greater work pressures and stresses as organizations drive their employees harder to increase productivity in more uncertain economic conditions.

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Appendices

Appendix A: Technical Notes

The sample is a stratified random sample drawn from the Dun and Bradstreet listing of establishments. Establishments were stratified by size (10-99 employees, 100-plus employees) by SIC code (4812, cellular; 4813, wireline; 4841, cable), and by state location. Almost all establishments with more than 100 employees were sampled so that the survey would cover a larger percentage of the industry's workforce. Sampling of the remaining smaller establishments was done so that the total sample reflects the relative proportion of establishments in each segment of the 1998 Dun and Bradstreet industry listing. The sample was also stratified by state location, and all states are represented.

The telephone survey was administered in mid-2003 by the Survey Research Institute at the Industrial and Labor Relations School, Cornell University. The telephone interview averaged 35 minutes, and yielded a 54.8% response rate with 479 usable surveys. Respondents were asked to answer questions as they pertain to the "core" workforce in their establishment -- the largest group of employees who carry out the primary work activity at that location. Using this information, we divided the survey into two groups: customer service and sales operations and network operations. The office operations include operator services, customer services, collections, sales, and marketing in 242 establishments. Of the 237 network surveys, one-third are from central office operations and two-thirds are from field operations.

To identify customer segmentation strategies, respondents were asked whether they targeted a particular customer segment or not. Establishments were then categorized into five groups: operator services, residential target, small business target, large business target, or universal centers (those serving multiple segments). The large business segment primarily includes regional businesses because national and global account executives frequently work on their own, or are based in small offices inside larger office complexes that were not accessible through the Dun and Bradstreet listing.

Appendix B: The Organization of Customer Service Work

Dimensions of Work	Residential & Small Business		Large Business
	Union	Non-union	Non-union
Direct Customer-Employee Interaction			
Customers per employee per day	135.4	118.4	69.1
Avg. length of call per customer	8.6	5.0	10.9
% completed transactions on-line	71.2	74.0	37.5
Technology Use			
% calls completed by VRU	10.4	8.7	4.5
% time electronically monitored	56.7	49.8	31.1
% time on computer & phone	76.3	75.6	53.6
% call centers using fax	87.5	87.6	97.5
% call centers using e-mail	70.8	82.0	100.0
% call centers using web-enablement	40.9	45.0	67.5
% call centers using computer-telephony integration	52.2	44.0	45.0
% call centers w/ Elect. Cust. Rel. Mgmt	13.0	39.9	47.4
% call centers using interactive voice recognition	37.5	32.3	20.0
% call centers using voice over IP	20.8	24.5	40.0
Customer Characteristics			
Customer base	1,849,861	804,194	34,165
# of customers per employee	9,831.3	5,369.8	595.2
% whose market is national	10.5	23.6	41.7
Selection and Staffing			
% that use systematic selection	80.1	33.8	28.8
% of applicants who are hired	28.7	24.4	21.1
% of workforce: female	78.5	66.7	46.7
% of centers with 'exempt staffing'	27.3	20.4	68.6
% of workforce: some college	50.0	44.7	25.0
% of workforce: 4 yr. Degree	8.3	13.0	69.4
% of workforce: some college or 4 yr. degree	58.3	57.7	94.4
% workforce: temporary	0.7	3.0	0.4
% workforce: part-time	3.1	9.0	2.5
% workforce: permanent & fulltime	96.2	88.1	97.0

Dimensions of Work	Residential & Small Business		Large Business
	Union	Non-union	Non-union
Training			
Weeks of initial training	7.1	3.7	3.8
Weeks to become qualified	36.7	21.1	24.0
Weeks of on-going training/year	1.9	2.2	2.0
Work Design			
% with flex working arrangements	25.8	33.4	55.5
% with flex job descriptions	5.8	18.7	15.8
Discretion Over Work Methods %			
Daily tasks & assignments*	25.0	29.2	51.4
Tools & procedures*	4.2	27.3	32.2
Pace & speed at work*	20.8	32.5	62.3
Setting lunch & rest breaks*	8.3	30.0	73.0
Discretion in Handling Customers %			
Handling additional requests*	50.0	57.1	81.1
Settling customer complaints*	50.0	61.6	72.2
How many customers to serve*	21.8	28.5	61.1
Participation in Teams			
% who use "offline" problem-solving	91.7	89.5	97.5
% penetration in offline teams	32.8	41.1	58.1
% who use self-managed teams	12.5	34.8	50.0
% penetration of self-managed teams	8.8	23.3	30.4
Average Compensation of Typical (Median) Worker**			
Annual pay	38,838	30,547	62,649
Annual overtime pay	2,178	1,546	910
Benefits as a % of annual pay	35.6	26.6	27.6
Total compensation	53,124	40,554	86,090
% of pay that is commission	12.4	12.5	24.1
% pay that is performance-based	14.4	16.7	30.4
% who receive a pension plan	91.7	42.4	62.5
Ratio of pay: 90th/10th percentile	1.4	1.7	2.1

Dimensions of Work	Residential & Small Business		Large Business
	Union	Non-union	Non-union
Promotion, Tenure, and Turnover			
% promoted from within	19.1	22.2	35.7
% with < 1 year of tenure	6.8	24.6	16.4
% with 1-10 years of tenure	58.5	61.8	55.7
% with > 10 years of tenure	34.7	13.6	27.9
% annual quits	4.9	12.6	11.8
% promoted outside location	1.5	3.6	3.4
% dismissed	5.2	9.1	9.6
% retired/ voluntary buyout	3.3	0.8	1.8
% laid-off	1.7	2.3	3.7
% core to retire in 5 yrs	12.5	3.2	10.3
Managers of call centers			
Managers as % of workforce	12.8	14.9	20.8
Managers annual pay	70,950	58,176	82,889
% Manager pay that is performance-based	21.0	18.5	27.8
Frontline supervisors annual pay	58,375	45,770	78,727
Sample	24	162	37

* % of workers with discretion: 4 or 5 on 5-point scale

** Compensation definitions: Annual pay is the average for all workplaces of the gross annual pay for the typical, or median worker. By typical or median worker, we mean that 50% of workers at a worksite are paid more and 50% are paid less. Annual pay excludes overtime pay but includes commissions and bonuses. Total compensation includes median pay, overtime pay, and the cost of benefits.

Appendix C: Earnings and Work Practices of Office and Field Technicians

	All Technicians	Office Technicians	Field Technicians
Average Compensation of Typical (Median) Worker**			
Annual pay	$44,970	$45,038	$44,950
Annual pay & annual overtime pay	$49,330	$46,533	$50,197
Annual overtime pay	$3,822	$1,502	$4,575
% of pay that is performance-based	14.0%	9.0%	15.6%
% of pay that is commission	6.5%	0.6%	8.3%
% of pay that is individual bonuses	3.6%	7.1%	2.6%
% of pay that is group bonuses	4.8%	1.5%	8.8%
Benefits as % of median pay	35.7%	39.3%	34.6%
Union, Management & Exempt Status			
% Union	64.4%	55.8%	67.1%
% Management	25.4%	35.5%	22.6%
% Exempt	12.6%	32.3%	6.4%
Education & Training			
% High school only	60.7%	31.7%	69.7%
% Some college	32.6%	45.9%	28.5%
% College graduate	5.4%	21.1%	0.6%
% Graduate school	1.2%	1.3%	1.1%
Annual hours of qualifying training	73.7	51.1	80.7
Networks (% of workforce in)			
Wireless	4.2%	10.8%	2.1%
Long distance	1.7%	4.3%	0.8%
Cable television	18.4%	4.4%	22.8%
Local exchange carriers	66.2%	60.3%	68.0%
Customer premise equipment	2.2%	3.2%	1.9%
Internet service provider	2.0%	6.1%	0.7%
Other communications services	5.2%	10.8%	3.5%
Digital network	52.5%	73.3%	46.1%
Work and Workforce			
% Female	13.5%	43.6%	4.3%
Average age of typical worker	36.7	34.6	37.3
% with less than 10 years tenure	44.1%	63.4%	38.2%
Hours per week	43.5	41.6	44.1

	All Technicians	Office Technicians	Field Technicians
% employees disciplined	8.3%	4.6%	9.4%
% with satisfactory or better performance	86.6%	90.5%	85.4%
% absent	3.3%	3.7%	3.4%
% laidoff	2.6%	5.7%	3.2%
Percent of sample		23.7%	76.3%
Total technicians	17,080	4,041	13,039

** Compensation definitions: Annual pay is the average for all workplaces of the gross annual pay for the typical, or median worker. By typical or median worker, we mean that 50% of workers at a worksite are paid more and 50% are paid less. Annual pay excludes overtime pay but includes commissions and bonuses. Total compensation includes median pay, overtime pay, and the cost of benefits.

Appendix D: Work Characteristics by Industry Segment

	Technical Workforce			Call Center Workforce*		
Dimensions of Employment and Work Systems	**Local Wireline**	**Wireless**	**Cable TV**	**Wireline**	**Wireless**	**CATV**
Tenure, Absenteeism, and Turnover						
Tenure						
% of workforce with less than 1 year tenure	4%	8%	16%	21%	22%	22%
% of workforce with more than 10 years tenure	63%	33%	39%	21%	10%	19%
Turnover						
% of workforce that quit	2%	6%	12%	9%	14%	11%
% of workforce transferred or promoted to higher position	7%	19%	17%	7%	13%	15%
% of workforce fired	1%	4%	6%	7%	8%	10%
% of workforce that retired	5%	1%	0%	1%	1%	1%
% of workforce laid off	2%	10%	3%	2%	3%	1%
Total turnover at the company level	10%	21%	21%	19%	26%	23%
Absenteeism						
% of workforce absent on a normal work day	4%	7%	6%	5%	4%	4%
Typical # of days absent per employee per year	4.4	4.1	5.2	7.1	7.9	6.5
Days eligible for paid absence	30.1	20.8	13.0	18.1	11.7	15.8
Compensation for typical (median) worker **						
Annual pay	$43,214	$41,182	$35,513	$36,066	$30,700	$26,224
Annual pay comparison	100%	95%	82%	100%	85%	73%
Annual overtime pay	$4,825	$6,045	$3,683	$1,588	$2,102	$2,080
Annual pay + overtime pay	$48,039	$47,227	$39,195	$37,856	$32,713	$28,364
Annual pay + OT pay comparison	100%	98%	82%	100%	86%	75%
% of pay that is variable or performance based:						
% of annual pay that is commission pay	1%	2%	13%	11%	18%	10%
% of annual pay that is individual bonuses	3%	6%	6%	4%	6%	3%

	Technical Workforce			Call Center Workforce*		
Dimensions of Employment and Work Systems	**Local Wireline**	**Wireless**	**Cable TV**	**Wireline**	**Wireless**	**CATV**
% of annual pay that is group bonuses	3%	9%	1%	3%	3%	2%
% of annual pay that is performance-based	6%	14%	19%	15%	23%	12%
Benefits						
Benefits as a % of annual pay	35%	35%	28%	29%	26%	30%
$ value of benefits	$15,304	$14,477	$9,894	$9,945	$8,773	$7,768
Total annual compensation	$63,343	$61,704	$49,089	$47,260	$40,081	$35,990
Annual total compensation comparison	100%	97%	77%	100%	85%	76%
Wage inequality within worksites						
Annual pay for workers in the top 90th percentile	$51,019	$67,308	$47,895	$47,208	$41,011	$34,773
Annual pay for workers in the bottom 10th percentile	$35,882	$35,292	$26,038	$28,502	$24,797	$22,165
Wage inequality at worksite: 90/10 ratio	1.4	1.9	1.8	1.7	1.7	1.6
Organizational Characteristics						
Size of typical workplace	122	988	77	164	104	260
Years of education of the typical employee	12.8	14.4	12.9	13.2	13.5	12.5
Weekly work hours of typical employee	42.7	46.6	45.3	40.6	41.2	40.8
% of workforce female	13%	11%	8%	66%	63%	69%
Managers as a % of all employees	32%	28%	21%	17%	11%	14%
% employees exempt from wage & hour laws	17%	19%	17%	28%	19%	14%
% of employees in problem-solving groups	40%	55%	32%	44%	50%	36%
% of employees with disciplinary action in personel file	8%	8%	15%	17%	16%	21%
# of calls per employee per day				92	146	146

	Technical Workforce			Call Center Workforce*		
Dimensions of Employment and Work Systems	**Local Wireline**	**Wireless**	**Cable TV**	**Wireline**	**Wireless**	**CATV**
Unionization: % of work-sites with unions	63%	13%	12%	20%	5%	5%
Sample size	108	13	42	96	40	44

The comparisons in this table include only worksites that serve comparable customer markets

* Note: The call center sample includes those centers serving the mass market and/or small businesses.

** Compensation definitions: Annual pay is the average for all workplaces of the gross annual pay for the typical, or median worker. By typical or median worker, we mean that 50% of workers at a worksite are paid more and 50% are paid less. Annual pay excludes overtime pay but includes commissions and bonuses. Total compensation includes median pay, overtime pay, and the cost of benefits.