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Moving Telecommuting Forward: An Examination of Organizational Variables

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16. Abstract

This project examined the experiences of managers of telecommuters to ascertain what changes, if any, had occurred in their managerial behaviors over a range of processes. Twelve managers of telecommuters were interviewed in depth by means of a semi-structured question format. The interviews were content analyzed using QSR NUD*IST, software designed to assist in qualitative data analysis. Results indicated that few changes were obtained since most managers were supervising telecommuters who used the work arrangement part-time. Major findings include the fact that many companies do not track the number of telecommuters and even where they do, there is a great deal of informal or casual telecommuting. The interviewed managers saw little differences in their way of managing telecommuters and non-telecommuters, they relied on performance indicators as the way of appraising productivity, and talked about the premium put on organizational skills - their own and their telecommuting employees'. Moreover, these managers were comfortable using e-mail. The one area of concern to them regarding their telecommuting employees was the impact of long-term, full time telecommuting on career advancement. Teamwork continued even with some employees telecommuting. This was possible because of the part-time nature of telecommuting and the flexibility enabled by phone conferences. Since team members were often geographically dispersed anyway, telecommuting was not seen as a disruption. The managers sampled also often had their own managers working in different geographical locations so they were accustomed to not being in close proximity to their colleagues. These managers, who were supportive of telecommuting work arrangements, characterized their own management style as flexible, trusting of their employees, and wanting to provide work environments that were conducive to accomplishing the work. In the cases of some of their employees, this meant telecommuting.

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Executive Summary

This project examined the experiences of managers of telecommuters to ascertain what changes, if any, had occurred in their managerial behaviors over a range of processes. Twelve managers of telecommuters were interviewed in depth by means of a semi-structured question format. The content of the interviews was analyzed using QSR NUD*IST, software designed to assist in qualitative data analysis. Results indicated that few changes were obtained since most managers were supervising telecommuters who used the work arrangement part-time. Major findings include the fact that many companies do not track the number of telecommuters, and even where they do, there is a great deal of informal or casual telecommuting.

While the interviewed managers saw little differences in their way of managing telecommuters and non-telecommuters, they did rely on performance indicators as the way of appraising productivity. Some talked about the premium put on organizational skills - their own and their telecommuting employees'. Moreover, these managers were comfortable using e-mail as a means of communicating with all employees in addition to using phones and face-to-face interactions. The one area of concern to them regarding their telecommuting employees was the impact of long-term, full time telecommuting on career advancement.

Teamwork continued even with some employees telecommuting. This was possible because of the part-time nature of telecommuting and the flexibility enabled by phone conferences. Since team members were often geographically dispersed anyway, telecommuting was not seen as a disruption. The managers sampled also often had their own managers working in different geographical locations so they were accustomed to not being in close proximity to their colleagues.

These managers, who were supportive of telecommuting work arrangements, characterized their own management style as flexible, trusting of their employees, and wanting to provide work environments that were conducive to accomplishing the work. In the cases of some of their employees, this meant telecommuting.

A number of recommendations were made.

1. To assess the readiness of your organization for telecommuting, conduct an audit to find out how much casual telecommuting already exists. Your organization may be further ahead than you think.

2. Communication: Assess the extent to which your organization is using e-mail, phone conferences and other asynchronous forms of communication. The greater variety in telecommunication modalities used, the more the organization can adapt to telecommuting.

3. Part-time telecommuting does not appear to present much need for change in management style or process. Reassure managers regarding the limited requirements for change. The fact that these managers perceived virtually no change in their behaviors toward part-time telecommuters in comparison to non-telecommuters suggests that future studies should focus on full time telecommuting arrangements. This project will continue to add managers to the database already developed.

4. Management assessment of employee performance needs to be based on outcomes. Most organizations are already using formal appraisal systems and these need to be reviewed. Chances are that, in fact, the current performance appraisal form will work. In this study, even where managers were supervising full-time telecommuters, their current performance appraisal form worked.

5. Where full time telecommuting is contemplated, managers and employees need to go through a "learning curve" as they adjust to a new working arrangement. Both should be prepared to give added effort in communication while "the manager" adapts to not having the employee readily available. Both need to go through some orientation to telecommuting issues. There are several sources and WEB sites that are helpful in giving guidelines for successful telecommuting programs.

6. Equity. The problem here deals with opportunities for promotion while telecommuting full time for an extended duration. While there may be some positions available, in most large organizations this currently does not seem to be a viable alternative. Career counseling should alert employees to maintain visibility. If long-term, full-time telecommuting is a job requirement for an employee, the employee needs to be counseled about ramifications for career progress. One alternative is to seek an organization that is comfortable with telecommuting as a full-time work arrangement. As an example, the CEO of one of the organizations sampled liked telecommuting. Such an organization would accommodate someone who has needs for long-term, full-time telecommuting.

7. Selection. Currently, telecommuting is available at a professional level in the organizations sampled, but not to hourly workers. Those wishing to telecommute can select it as an option but most organizations are not promoting it. This lack of promotion may give the impression that it is a second class work arrangement. If an organization gives the option, then it should publicize the option as an alternative work arrangement through its Human Resource Department or other logical functional area.

8. Teamwork. This way of assigning tasks is disrupted less by telecommuting than one might think. Teamwork with telecommuting places a priority on organizational skills and attention to the details so that participants in teleconferences have available all materials that one would normally have available at a meeting. With e-mail and fax, this should present little difficulty beyond that of getting material out before the meeting begins (as opposed to bringing material to a meeting). Coordination for a teleconference requires efforts similar to coordinating times for a face-to-face meeting.

The additional element to deal with is the technology of the phone conference. Communication in between can be handled by e-mail. With distribution lists, e-mail is often a better manager of communication than the team leader who may forget to relay messages to everyone, may delay in relaying messages, or may distort or relay incomplete messages.

9. Moving towards remote management. An interesting and unexpected trend discerned in this project is the move toward remote management regardless of telecommuting or non-telecommuting. That is, work is becoming distributed over geographical areas and managers are more and more likely to be based at locations that are apart from their subordinates. This portends a change so that managers, in general, will need the same skill set and style found among managers of telecommuters. Those skills place a priority on organization, communication over a variety of modalities, an ability to set specific and unambiguous goals with employees, and the capacity to build trust of subordinates based on their performance.

Table of Contents

Table of Tables and Figures

Moving Telecommuting Forward: An Examination of Organizational Variables

Introduction and Background

The traffic congestion challenge presented to transportation system managers has spurred ideas of substituting telecommunications for transportation (Kugelmass, 1995, Seamen, 1997). Early research focused more on transportation issues than on social issues, with exceptions such as studies by Hiltz and Turoff (1978). Reports from officials (AASHTO, 1988) point out that increasing capacity is not an option for meeting future transportation demands. Growing considerations concerning energy use, traffic congestion, and air quality mitigate against such expansion. Moreover, transportation consumes 63% of all petroleum in the United States and the US continues to rely on oil imports to meet petroleum needs (Goulias & Pendala, 1991). This has obvious economic and foreign relations implications.

Continued reliance on the automobile portends problems with air quality since a substantial chunk of air pollutants come from automobile exhausts (Seamen, 1997). The impact was noted in 1987, when the Environmental Protection Agency found 107 metropolitan areas in the U.S. in violation of health standards for carbon monoxide and ozone emissions (Goulias & Pendala, 1991).

One consequence of this health hazard was the passage of the Clean Air Act Amendments of 1990. This act required organizations with 100 or more employees to develop ways to reduce the use of automobiles for travel to and from work. Typical commute alternatives include ridesharing, vanpooling, public transit, telecommuting, or alternative work schedules. The interest in telecommuting can be seen in New Jersey

company surveys such as those at A.T.& T., where 61% of employees sampled preferred telecommuting to the other alternatives, and Educational Testing Service, where 18% of the professional staff are already telecommuting (Cunnie, 1995). Transportation 2020: the New Jersey Statewide Long Range Transportation Plan (March, 1995) speaks to the need to work with businesses on incentives for telecommuting.

While the Clean Air Act Amendments have been amended to remove penalties for employers that do not meet targets of employee trip reduction, interest in telecommuting continues to grow and the affected areas are still required to meet federal standards for clean air. The continued interest stems from a number of forces; technical, social, and economic. The technical push comes from the advances in telecommunications that make telecommuting all the more easier. Increased availability of PCs and modems at home, personal use of the internet, growth of intranets in the work place, and growth of internet providers all make telecommuting more feasible.

The social push stems from changing demographics of the workforce with increasing entrance of women, demands for more flexibility in work-time, as well as including more workers with disabilities in the workforce.

The economic push comes from the change of manufacturing to a service economy. Unlike manufacturing where the worker has to be onsite, the service sector service does not demand work be done in a fixed location. Moreover, corporate America is eyeing other productivity gains to be realized from telecommuting while public policy planners are looking at alternatives to building more highways.

Scope of Telecommuting in the United States

Trends in telecommuting provided by various surveys highlight the definitional problem of who is a telecommuter (Handy & Mokhtarian, 1996). Handy and Mokhtarian (1996) cite the Annual Link Survey of home workers as being the most reliable indicator. Table 1 denotes that the increase in total telecommuters grew 1.67-fold from 1990 to 1992 . But a larger jump occurs in the conventional workforce where the increase leaps five-fold. Other data (Pratt, 1993), based on the National Longitudinal Survey of the Bureau of Labor Statistics, tell us that the number working at home (including home based businesses) increased from 3.6 million in 1985 to over 5.6 million in 1991.

Westfall (1997) reports that a 1995 national telephone survey resulted in an estimate of 8.1 million or about 6.6 percent of the working population working one or more days per month from home. A more recent telephone survey by Find/SVP (1997) shows a dramatic increase to 11.1 million telecommuters. Given the increase in the total workforce to about 136.5 million in 1997, this represents 8.1 percent of the civilian workforce.

Early predictions, however, remain unattained now. In their vision of the first edition of *Network Nation*, Hiltz and Turoff (1978) foresaw a country whose organizations would be using computerized conferencing in the mid-1990s on a widespread basis. They projected the use of computerized conferencing to be similar to that of the telephone. Their preface to the revised edition (1993) noted their over-optimism at the speed which such communication would be adopted. Conversely, Westfall (1997) citing Alvin Toffler's 1980 projections in his book *The Third Wave* noted a prediction of 10 to

20 percent of the workforce working out their homes in the next 20 to 30 years. The 1998 findings by FIND/SVP suggest Toffler's prediction is still within reach.

Table 1. US telecommuters as a percent of workforce

	Millions of workers			Annual Growth	
	1990	1991	1992	90-91	91-92
Type 1: Conventional employees - non-moonlighters	0.44	1.41.	2.36	220.5%	67.4%
Type 2: Conventional employees - moonlighters	1.53	1.88	1.83	22.9%	22.9%
Type 3: Contract based employees	1.95	2.22	2.36	1 3.8%	6.3%
Total homeworkers	3.92	5.51	6.55	40.6%	18.9%
Total U.S. workforce	122.70	123.80	125.40	0.9%	1.3%

	Percent of workforce			Annual Growth	
	1990	1991	1992	90-91	91-92
Type 1	0.36%	1.44%	1.88%	217.6%	65.2%
Type 1 + Type 2	1.61%	2.66%	3.34%	65.6%	25.7%

Source Link Resources. Inc., 1992

Despite the growth of telecommuting, other reports continue to focus on its unrealized potential. For example, a report of the National Research Council (1995) noted that telecommuting will be limited in growth without effectively dealing with management issues such as organizational socialization and "remote supervision". Westfall (1997) analyzes the low demand from a perspective that holds that employees are evaluated more on behavior than output. However, the behavioral base for evaluation is not con-

ducive to telecommuting since managers are deprived of direct observation. He also notes that telecommuting as an alternative work arrangement has not been institutionalized and lacks a certain legitimacy for work that is conferred upon performance in the office. That is, workers who telecommute may be stigmatized as "slacking off".

Another article which tries to understand the low demand for telecommuting is Paul Gray's (1997) analysis from an 'integrated workplace strategy." Gray argues that businesses have wrongly approached telecommuting from a supply side; supply the arrangement and it will be utilized. To illustrate his contention, he uses California's experience in the early 1990's when that state provided telework centers for businesses. Despite low rental incentives, these centers were underutilized. This, Gray posits, was because organizations did not understand how telecommuting fit into their business plans or strategy. When organizations view telecommuting as a way to accomplish strategic goals, implementation has a greater chance of success. This assumes that needed resources are made available to employees and that training in the use of information technologies is "mandatory, continuous, and universal".

Defining Telecommuting

Mokhtarian (1991) and other early envisioners (e.g. Hiltz & Turoff, 1978) assumed that telecommuters would be full-time employees and work from home. Hiltz and Turoff also anticipated that the use of telecommuting via computerized conferencing would become applicable to many professions besides computer programmers and data-entry personnel. More recently, however, Mokhtarian (1996) informs us that telecommuters are not necessarily computer users (fax and telephone qualify). By far, most workers telecommute part time, one or two days per week, and telecommuting

from a telecenter is also feasible. For the purposes of this research project, those who own businesses and conduct their business entirely from the home are excluded.

This project uses a transportation-centered definition for telecommuting where the pivotal factor is substituting trips to work with a home-based or telecenter based work-site. Reducing travel to the workplace is the defining element. Even with this definition, obtaining accurate numbers of telecommuters is elusive. This stems from the fact (demonstrated in the survey interviews) that many companies allow telecommuting on an *informal* basis but simply do not track the numbers.

Costs and Benefits to Implementing a Telecommuting Program

In his description of benefits, Kugelmass (1995) details productivity, retention, employee safety, disaster mitigation, and environmental benefits of telecommuting. <u>Productivity</u>. While objective measures of productivity prove elusive in the workplace and in the literature, several pieces of research point to subjective indices of productivity gains. Most data available are anecdotal, and/or subjective. Kugelmass does provide some examples of concrete gains at companies such as Control Data corporation, Aetna Life and Casualty, and International Computer Limited, a British company. Other companies, such as IBM, AT&T, Georgia Power and Light, (Boyd, 1996), and ETS report productivity gains but do not cite specific data. The difficulty seems to stem from lack of good baseline data against which to make comparisons.

One area that is easily documented is the savings that come from reduced real estate costs when telecommuting is implemented. Cheatem (1996) noted that IBM realized approximately $40 million saved by reducing its U.S. real estate costs 40 to 60 percent per site by employing virtual office and hotelling projects. Accrocco and Smith

(1996) reporting on a case study of implementing a virtual office at NCR, indicated a saving of 20% in actual space over the standard office.

The reasons offered for increased productivity typically deal with fewer distractions, greater concentration, and in some instances increased working hours. Kugelmass argues that given the cognitive nature of knowledge work, the office is an inimical space. The ordinary office benefits of easy and fast communication are antithetical to the demands of work which require attention, reasoning, and thinking through. The quick access to co-workers, phone calls, quick questions, spontaneous meetings and other interruptions distract workers from the flow of thought that is essential to the task at hand. Time is lost not only in the "off-task" activities created by the disruption but also in start-up time getting back to "where-you-were".

Absenteeism and Retention. The absenteeism cost to businesses in the U. S. has been estimated to be $30 billion a year (Schultz & Schultz, 1994). Hours lost to absence from work has doubled in the last ten years (Kugelmass, 1996). Whatever reduces absenteeism enhances productivity and telecommuting has demonstrably reduced absenteeism. Assessment of telecommuting projects in California indicate approximately 25% less in sick time for telecommuting employees compared with non-telecommuters. These numbers of course have to be tempered by the fact that telecommuters are specially selected for good organizational skills.

Estimates for executive relocation range from $25,000 to $50,000 per move (Kugelmass, 1996). Since telecommuting reduces the need for relocation, savings can be attained by eliminating relocation costs. Moreover, productivity losses can be avoided when experienced employees are retained through telecommuting.

Employee Safety and Health. Data available on this issue derive from estimates of fewer accidents in the workplace and fewer traffic accidents. Kugelmass (1996) cites a report from Arthur D. Little Associates which estimates that if 12 percent of the work force telecommuted, there would be 1.6 million fewer accidents at work and 1,000 fewer traffic accidents annually. Compared with workers who do not experience daily traffic jams and congestion, workers who drive to work under conditions of high traffic congestion were found to have increased blood pressure and decreased behavioral performance on a proof reading tasks. In addition, their self-reports of moods indicated significantly more hostility and anxiety (Schaeffer, Street, Singer, & Baum, 1988). Telecommuting is one way to reduce these stress effects.

Disaster Mitigation. Reports following both the California earthquakes in 1990 and 1993 and the blizzard in the Northeast in 1996 show that telecommuting mitigated lost time from work due to natural disasters. When employees were unable to travel to work, work could continue using telecommunications from alternate locations, usually home.

Environmental Benefits. The obvious beneficiary of reduced traffic flow is air quality improvement and reduced energy usage. Studies conducted by the U.S. Department of Energy (1994) project that reduced transportation use will result in reductions in emissions that contribute to poor air quality and possibly climate change as well as reduced needs for highway capacity expansion. Since vehicle emissions are primarily responsible for carbon dioxide, these emissions should be directly reduced. Hydrocarbon and carbon monoxide should also be reduced though indirectly. Projections indicate modest benefits over the next decade. If telecommuting were to "catch on", it has the potential

to mitigate the negative effects of urban traffic congestion and improve conditions for those still on the road.

Costs of Telecommuting

Not all jobs and not all employees work well from a remote location. This means that not all employees are equal candidates for telecommuting. The potential difficulties this might cause will be discussed later but inequity in treatment perceived by employees stands as a cost to the organization if it impacts negatively upon performance. Other costs to the organization to be discussed include: isolation of telecommuters, diminution of organizational loyalty, a reduced sense of corporate culture, and the added effort required of both employee and supervisor to make the telecommuting arrangement succeed.

While organizations can realize cost saving by instituting telecommuting programs, there are real costs attached to telecommuting that need to be understood and then factored in. Besides the obvious costs for equipment and perhaps phone lines, the organization should consider technical support staff to assist employees at least initially with technical problems they may encounter in using the PC on-line.

Managerial Issues

A frequently mentioned barrier to successful implementation of telecommuting programming is that of management resistance or lack of employer support. Chaudron (1995) and Kugelmass (1996), citing Jack Nilles (1986), delineate the requisite qualities of managers for successful telecommuting programs. Chaudron writes of moving from the "management of attendance" to the "management of performance." Nilles identifies the need for managers to focus on work activity and performance. Both authors identify

the need for effective communication with workers and planning for the telecommuting work arrangement. Nilles also highlights trust. Kugelmass notes that these are prescriptions for effective management in general. Hiltz and Turoff (1978) discuss the need to switch from a "feudal" leader to one that is participative, facilitating group cohesion and activity.

So while the interaction between manager and subordinates is important in the performance of the organization, and telecommuting changes the nature of this relationship, relatively little empirical attention has been given to the relationship between manager and telecommuter (Reinsch, 1995). The attention to managers in the empirical research literature seems to focus only on their perception of telecommuting (Roderick & Jelley, 1992). Other empirical research deals with employees perceptions of telecommuting (Khalifa & Etezadi, 1997; Spillman & Markham, 1997). Klalifa and Etezadi confirm the belief extant that managerial control emerges as a perceived barrier to telecommuting due substantially to the difficulty of monitoring workers' performance.

<center>**Research Problem**</center>

Given the paucity of research that relates to the managing of telecommuters, the present research seeks to fill some of that void through probing the knowledge gained by the experience of managers of telecommuters. Through semi-structured interviews of these managers, we hope to discern specific changes in their practices and behaviors in regard to telecommuters. Those managerial practices targeted for examination are: (1) managerial control and performance appraisal, (2) managerial planning (3) communication and coordination, (4) employee equity and (5) socialization and teamwork.

Managerial Control and Performance Appraisal

Managers' resistance to telecommuting, according to Kugelmass, stems from their apprehensions about not being able to observe directly what their employees are doing. Given the nature of human capabilities, visual evidence often dominates our perceptual experiences (Posner, Nissin, & Klein, 1976). That is, managers rely on direct observation of employees as a way of gaining information about employee performance in the workplace. However, Feldman (1981) notes that supervisors gather information about their employees in an "informationally noisy environment". By this he means that supervisors have many duties; consequently, information which they obtain by direct observation is fragmented, restricted to an incomplete set of job activities, and minimal. Thus, a good deal of information also comes from indirect sources even within the workplace.

Murphy and Cleveland (1991) report that, in practice, extensive direct observation of employees is relatively rare in most organizations. As reasons, they mention: (1)

the demands on supervisors' time, (2) the fact that subordinates often work at distances from their supervisors, which makes direct observation difficult, and (3) the fact that many jobs are composed of unobservable mental activities. When managers do observe their employees it is frequently for a specific purpose, which in itself can distort the information obtained. Indeed, when employees are aware of being observed, their performance often shifts from what is typical to maximal.

As noted, much of the information that supervisors gather about their subordinates is from indirect sources. Managers hear complaints about employees as well as praise. Managers read reports and make inferences about employee characteristics based on the quality and timeliness of the reports.

Getting information about employees from different modalities affects the quality and the richness of information that is transmitted. In their review of literature comparing performance appraisals based on varying modes of information, Murphy and Cleveland (1991) identify only one direct study by Maier and Thurber (1968). Rather surprisingly, that study, which compared audio and written records of interviews with direct observation, indicated that indirect observation (written and audio records) resulted in greater appraisal accuracy than direct observation.

More recently, using a laboratory simulation, Kulik and Ambrose (1993) compared visual observation with computerized performance monitoring (CPM). CPM, through continuous recording and reporting of computer-driven activity, can provide supervisors with information about attendance, work speed, work completed, and errors. Typically, CPM is limited to quantifiable performance and managers will need to rely on other sources for information relevant to less quantifiable dimensions. In their research,

Kulik and Ambrose manipulated the information subjects received about a secretary so that received CPM data (words typed per minute) was either consistent or inconsistent with visual data (videotapes of the secretary at work). Their results indicated that positive visual information triggered more automatic processing of information than did negative visual information. Slower processing times and more accurate recall of information in the negative visual information condition suggest that more attention was being paid to poor performance. Moreover, in a follow-up study, information gained visually resulted in more negative ratings than that gained via CPM.

These findings suggest that visual information is more influential in determining evaluations than CPM data. This could well reflect the experimental design which gave CPM data only about typing performance but visual data was provided for a range of secretarial behaviors. Nonetheless, Kulik and Ambrose's results run contrary to employee concerns about using CPM. Grant (1988) documents employee fears that supervisors will emphasize the readily obtained and documentable quantitative aspects of work over the qualitative facets.

The literature on observation of employees points to managers using both visual and non-visual sources of information to keep informed of employee work progress and to make judgments about employee performance. However, findings by Kulik and Ambrose (1993) suggest that managers continue to put more credence in the information received via direct observation of employees rather than from indirect sources.

Managing telecommuters deprives managers of the ability to keep an eye on workers and thus deprives them of their visual source of information. This work arrangement suggests that managers will need to shift their information source about

employees to non-visually based information such as audio and written reports and work output.

<u>Research Issues of Managerial Control</u>

1. How do managers of telecommuters gather information pertaining to their work?

2. How is productivity measured for telecommuters? Does this differ in any way from non-telecommuters?

Performance Appraisal. Performance appraisal is a process used by management to evaluate and influence (i.e. control) the employee in the workplace. As previously cited, Westfall (1997) noted that appraisal is typically based on direct observation and tele-commuting diminishes opportunities for direct observation.

Performance appraisal also presents another situation for inequity. Suppose the image of the telecommuter is marked by characteristics of being well-organized, trust-worthy, reliable in work and attendance, able to work independently, flexible, coopera-tive, able to separate home and family life from work schedule, problem-solver, takes initiative, has thorough knowledge of job, and is self-disciplined. These traits were taken from the *Telecommuting Implementation Manual* of the Midwest Institute of Tele-commuting Education (1994) and are promulgated in the workshops that they run. Such traits make the telecommuter better than the typical employee and closer to the ideal employee. If managers select telecommuters from among the superior perform-ers, then we can expect that their performance appraisals will benefit from being placed in the category of "best employee."

Situational factors also affect the appraisal process and make certain features more salient. If the person being appraised is the only telecommuter in the group, then

behavior which is irrelevant to telecommuting may be attributed to the telecommuting status. Given that the work-away-from-the-job-site allows for fewer interruptions, supervisors may judge some tasks as easier to complete than if done at the work-site. Working alone could easily make the category of independent worker more salient regardless of the accuracy of that judgment. On the other hand, it could decrease the saliency of a team-player. These issues need to be clarified as more employees engage in telecommuting. To the extent that telecommuters are selected from among the best employees, they could derive advantage from their managers' benefit-of-doubt. This element should be monitored.

Research Issues Concerning Performance

1. Has telecommuting affected the performance appraisal process?

2. Is the current appraisal process appropriate for telecommuters?

Managerial Planning

A basic managerial function is that of planning. Given that success in telecommuting programs depends, in part, on management practices that support it, then management practices will need some change. Planning is one function that will need enhanced emphasis regarding work assignments, coordination of work tasks and communication with employees about work progress and problems. Planning often involves two aspects of work: goal setting and its companion piece, feedback, to evaluate goal accomplishment. The ability of managers to change has often been linked to their style. Previously (page 17), it was reported that a participative style of management is more congenial to a telework arrangement than that characterized by "command and control."

Research Issues Regarding Planning

1. How does telecommuting affect the way goals are set for employees?

2. How does telecommuting affect the way feedback is given to employees?

3. How has telecommuting affected the techniques of management?

4. How do managers of telecommuters characterize their managerial style?

Communication and Coordination

Essential to success in telecommuting is good communication between managers and employees. Gabarrro (1990) has identified that mature relationships not only use more modes of communication (verbal and non-verbal) but also can more easily substitute one for another. An element of successful telecommuting relationships may be the comfort in substituting e-mail and telephone communications for face-to-face discussions.

Interestingly, Reinsch (1995) found that the quality of the relationship between managers and telecommuters was curvilinear. That is, the relationship was judged to be significantly poorer during months 7-12 than previously and poorer than in relationships lasting 13 or more months. This suggests that particular attention needs to be paid to the quality and quantity of communication between manager and telecommuter as the relationship matures.

The employees' communication of work progress is only half of the equation: managerial communication with employees is the other component. A disadvantage frequently mentioned is the feeling that telecommuters are left out of office communications (e.g. Kugelmass, 1995; Reinsch, 1995). So while employees have to deal with their manager's needs to be informed of work progress, in turn, managers should be

sensitive to telecommuters' needs. Nilles (1997) posits that where telecommuting pro-grams are successful, both telecommuters and their non-telecommuting counterparts become more effective communicators. This occurs because both groups learn to use e-mail and other asynchronous (i.e., not real-time) forms of communication as well as video and phone conferences.

There is a major advantage to this. Reliance on face to face communication in an organization can mean that some members are included and some are not. But general distribution via e-mail and other telecommunication technologies extends the boundaries of the physical space and has the effect of catching all employees.

Informal communication in organizations is particularly important in socialization and maintenance of organizational culture. Traditionally, it occurs on an ad-hoc basis and between workers in close physical proximity. Nevertheless, a comparison of re-mote workers with traditional workers yielded no difference in satisfaction with ability to get help from co-workers, social opportunities or ability to keep up with office politics and gossip (Fritz, Narasimhan, & Rhee, 1996).

So while anecdotal evidence tends to reinforce the ideas that telecommuters do suffer from feelings of isolation, the empirical evidence suggests that telecommuters are not suffering in a great way. However, Fritz, Narasimhan, & Rhee (1996) derived their data from those telecommuting part-time.

Research Issues Concerning Communication and Coordination

1. What forms of media are used to communicate general organizational information such as memos and reports?

2. In what ways is informal communication affected by telecommuting?

3. What is the level of satisfaction with the quality of communication with telecommuters and non-telecommuters?

Employee Equity

The importance of being treated fairly by the organization is the underpinning of a major theory of work motivation, as well as procedural justice policies in workplace. To the extent that telecommuting opens the possibility of experiencing a sense of inequity, then management needs to be sensitive to its implementation. Three areas stand out as being sources of inequity perceptions: work distribution and selection of workers for telecommuting. Performance appraisal, previously discussed under the rubric of managerial control, also stands as a potential source of perceived inequity.

Work Distribution. Of concern here is the fact the non-telecommuters may acquire additional tasks on those days that telecommuters work from home. The Washington State Energy Office study (Heifetz, 1990) reported varied worker reaction to this. Some colleagues valued the increased responsibility from assuming tasks while others felt put-upon.

Employee Selection. Kugelmass (1995) discusses inequitable opportunities to telecommute. In some organizations telecommuting may be limited to professional job categories where there already is a good deal of autonomy. In contrast, clerical workers who telecommute may be subject to computer performance monitoring. These arrangements would result in more discretion over time for professional workers and less for non-professional workers.

Research Issues Concerning Equity

1. How are work assignments made among telecommuters and non-telecommuters?

2. Does telecommuting in any way affect promotion and/or compensation?

3. Does telecommuting in any way affect allocation of informal rewards?

4. How are telecommuters selected?

Socialization & Teamwork

The issue of isolation and diminution of a strong corporate culture among tele-commuters seems not to have materialized among part-time telecommuters (Kugel-mass, 1995). Full-time telecommuters may be more susceptible to this problem but more evidence is needed. The issue is not telecommuting, per se, but rather communi-cation. For example, instituting a virtual office at NCR necessitated some need for worker socialization (Accrocco & Smith, 1996). To deal with the need to socialize work-ers during the initial employment phase, telecommuting may be unavailable to workers for the first six months of employment. This would allow initiation into the corporate culture and permit assessment as to the suitability of the individual for telecommuting.

The idea of telecommuting and teamwork would seem at first to be contradictory. If teamwork requires task interdependence, continual adjustment, and accessibility of colleagues to complete projects, then having members of the team dispersed would detract from team effectiveness. Nilles (1997) argues that as organizations are be-coming more dispersed, information technologies permit many kinds of work to become location independent.

Research Issues Regarding Socialization and Teamwork

1. Do organizations use some introductory period to socialize new employees before

   allowing them to telecommute?

2. How has telecommuting affected teamwork?

3. How do members of the team communicate when telecommuters are participants?

4. What types of conflicts tend to occur and how are they resolved?

5. How does telecommuting affect the support team members give each other?

Summary of Research Questions

A. Structural Issues Regarding Telecommuting

    1. How formal is the telecommuting program?

    2. How many telecommute? How frequently?

    3. What unit is responsible for coordinating telecommuting arrangements?

    4. Which units employee telecommuters?

B. Managerial Control and Performance Appraisal

    1. How do managers of telecommuters gather information pertaining to their

    work?

    2. How is productivity measured for telecommuters? Does this differ in any way

    from non-telecommuters

    3. Has telecommuting affected the performance appraisal process?

    4. Is the current appraisal process appropriate for telecommuters?

Research Issues Regarding Managerial Planning.

    1. How does telecommuting affect the way goals are set for employees?

    2. How does telecommuting affect the way feedback is given to employees?

    3. How has telecommuting affected the way you manage?

    4. How do you characterize your managerial style?

Research Issues Concerning Communication and Coordination

1. What types of media are used to communicate general organizational information such as memos and reports?

2. In what ways is informal communication affected by telecommuting?

3. What is the level of satisfaction with the quality of communication with telecommuters and non-telecommuters?

Research Issues Concerning Equity

1. How are assignments made among telecommuters and non-telecommuters?

2. Does telecommuting in any way affect promotion and/or compensation?

3. Does telecommuting in any way affect allocation of informal rewards?

4. How are telecommuters selected?

Research Issues Regarding Socialization and Teamwork

1. How has telecommuting affected teamwork?

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5. How does telecommuting affect the support team members give each other?

Method

The technique employed in this study to gather data is that of a structured interview of managers. The structured interview schedule was developed from two sources. Common organizational variables included were derived from organizational questionnaires that are widely used such as the Survey of Organizations (Taylor & Bowers, 1972) developed by the Institute for Survey Research. The second source of questions came from reviews of telecommuting and relevant management literature. In addition, questions were included that stemmed from interviews conducted of TMA personnel in New Jersey in a previous study. (Rotter, 1998)

The Structured Interview Schedule

The interview schedule (see Appendix) was pre-tested for clarity of questions and for reasonableness of length of the interview (about one hour) and revised accordingly. Major segments of the schedule are:

1. Organizational information (type of organization and/or business unit, location, size, etc.)

2. Telecommuting information (numbers of telecommuters, their job titles, number of days telecommuting)

3. Organizational structure for telecommuting (unit responsible for coordinating, technical issues pertaining to telecommuting such as agreements, insurance, equipment, etc.)

4. Managerial issues (control, communication, equity, & teamwork).

The majority of the interview time was devoted to managerial issues.

The Sample of Interviewees

The data consists of twelve inter ews done with managers of telecommuters or employees who were instrumental in developing organizational policy on telecommuting. Table 2 presents descriptive information about the interviewees. Of the twelve interviewees, seven were women and five were men. The average job tenure in their present managerial position was 4.3 years although most of those interviewed had been with the current company significantly longer.

The Organizations

All organizations, except one, have offices in New Jersey. The one exception was a Minneapolis organization. Table 3 presents information on the organizations. The organizations reflect seven different sectors of the United States economy and all were national in scope. Half of the interviews (six) came from the telecommunications sector which utilizes telecommuting both formally and informally more frequently than the other sectors reflected in the interviews in the sample. Of the six interviews in telecommunications, five came from one company, although difference areas of the company were included. Four of the five interviewed came from the Business Markets Division. Within the division, three were involved with business analysis applications and one in pricing support. The fifth was a sales manager. All were in different New Jersey locations.

Table 2. Description of the Sample of Interviewees

Gender	Females = 7, Males =5
Average Job Tenure	4.3 years
Job Titles	Human Resources Manager
	Staff Manager
	Product Manager
	Sales Manager
	Director of Systems Integration
	District Manager
	District Manager
	District Manager
	Human Resource Director
	Global Director of Marketing
	Director of Administration
	Project Manager

Table 3. Description of Organizations

Sector	Scope
Telecommunication	
Company A	International
Company B	International
Industrial Printing	National
Insurance & Finance	International
Technology (Software)	National
Pharmaceutical	National
Retail	International
Fold Manufacturing	National

Procedure

All interviews were conducted by the principal investigator, either on-site or by telephone. Interviewees were assured that their individual responses would not be for attribution and that results would be grouped. All were asked permission for taping and eleven of twelve granted taping of the interview. The interviewer also took notes during

the interview. Each interview lasted between 45 minutes and 90 minutes. Typically an

interview would last about 60 minutes.

Results

All interviews were transcribed and coded with QSR NUD-IST software (1997).
A review of the literature pertaining to the use of QSR NUD-IST reveals it is used most frequently in analysis of clinical data (e.g. Davis & Davis, 1997). Another area where it has been used is education (e.g., Rouse & Dick, 1994).

This program assists in qualitative data analysis when the data to be entered are transcribed interviews. The researcher decides what becomes a meaningful section of text for coding by entering hard returns into the document. Then each text unit can be coded using either a researcher created code or using the program to uncover themes within the interviews. This research used coding categories determined by the structure of the interview in combination with the pattern of responses given to interview questions. The coding tree is presented in Figures 1-3. Using these codes, the interviews were then subjected to content analysis. QSR- NUD-IST also provides counts of responses in various categories thus enabling frequency analysis and further permits the "asking of questions" or generating counts of intersecting codes.

Major Code Categories

- Demographics
  - Organization
  - Interviewee
    - Size
    - Location
      - NJ
      - Reg
      - Nat
      - Inter
    - Purpose
- Telecommuting Basics
  - Job Tenure
  - Jobtitle
  - Gender
    - F
    - M
  - Number Telecom
    - Growth
  - Formality
    - Full time
      - Problem
    - Part time
    - Both
    - Formal program
    - Informal program
    - Both
  - Frequency Telecom
  - Coordinating Unit
  - Job Titles
  - Areas Non-telecom
  - Selection base
    - Work Experience
- Management Issues
  - Next page
- Benefits of Telecommuting
  - Increased Productivity
    - Less Interference
    - Focused Attention
    - Fewer needs For breaks
    - Efficiency
- Employee Issues
  - Employee Satisfaction
  - Promotion Opportunity
    - Affected
    - Not Affected
    - Reward System
      - Informal
      - Parameter
    - Process
    - Obstacles
- Organizational Support
  - Supportive
  - Non-Supportive
  - Ambivalence

Figure 1 : Major Code and Sub Code Categories
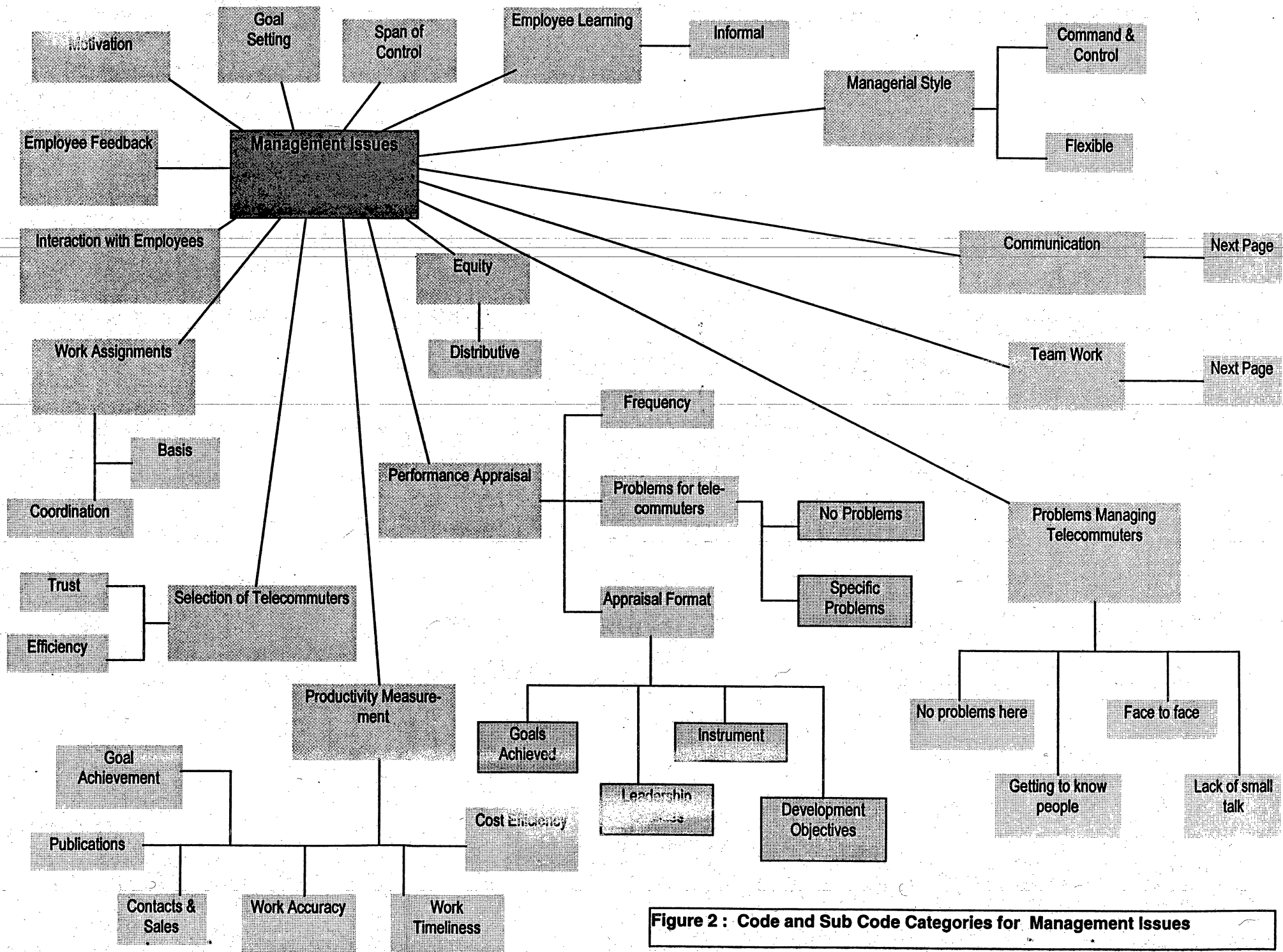
Figure 2 : Code and Sub Code Categories for Management Issues
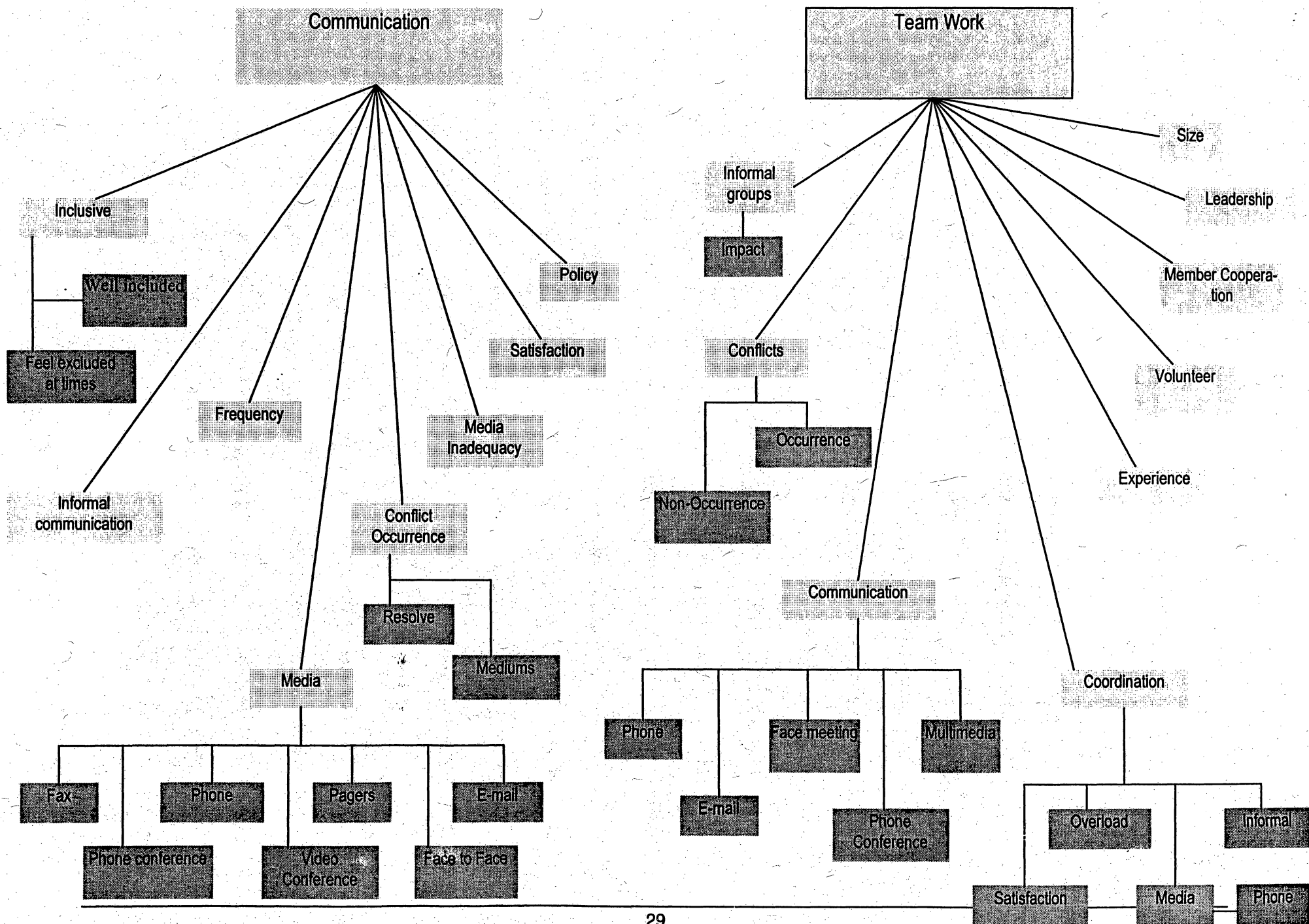
Figure 3 : Code and Subcode Categories for Communication & Teamwork

Telecommuting Basics

Tables 4 through 7 illustrate some basic information about the extent of tele-commuting at the companies of the various interviewees. As seen in Table 4, five of the twelve interviewed reported no formal telecommuting program within their business unit or company. That is, the telecommunication company did indeed have a formal tele-commuting program but in several sections of the company it was not utilized even though there was systematic telecommuting. Telecommuting was present in a variety of industrial sectors but the food manufacturing company had the least and had not established any systematic program.

Table 5 reveals that very few organizations had full time telecommuters except those that had a large sales contingent. The sales units tended to be virtual office. Most had employees who telecommuted anywhere from one to three days per week. The job titles or areas where telecommuters could more frequently be found (Table 6) were sales and marketing management, customer support, and more technical job titles like developers, project managers, programmers, and application trainers. Job areas unlikely to have telecommuters were clerical staff and unionized personnel at one end of the status continuum and finance professionals and R & D professionals at the other end. However, the interviewee from a company that employed a large number of R & D professionals also noted that they are flagrant users of informal or casual telecommut-ing. Units responsible for coordinating telecommuting varied widely (Table 7). Most often a technical division was responsible but often the unit to which the telecommuter reported handled the situation.

Table 4. Number of Telecommuters in Unit or Division of the Manager Interviewed

Organization	Formally Telecommuting	Informally Telecommuting
Telecommunication		
Company A	4,600	15,000 (approx.)
Company B		
Unit 1	0	12-14
Unit 2	0	3 regularly, 19 occasionally
Unit 3	0	2-3 regularly, 18 occasion-ally
Unit 4	8	
Unit 5	30	
		Not known
Industrial Printing	30	75-100
Insurance & Finance	50	700 (approx.)
Technology (Software)	0	8-12
Pharmaceutical	Not known	Not known
Retail	16	Not known
Food Manufacturing	0	2

*Organization-wide

Table 5. Frequency of Telecommuting

Organization	Number of days
Telecommunication	
Company A*	2-3 Days, Satellite office for sales
Company B	
Unit 1	1-2 Days
Unit 2	1 Day
Unit 3	1 Day
Unit 4	50% full time, 50% part time
Unit 5	2 Days
Industrial Printing	Full time for virtual office workers
Insurance & Finance	1 Day
Technology (Software)	Virtually full time (report a couple of days a month to an office
Pharmaceutical	1 Day
Retail	3 Days
Food Manufacturing	Full time

*Organization-wide

Table 6. Areas of Telecommuting and Non-Telecommuting

Telecommuting Job Areas	Non-Telecommuting Job Areas
Developers	Second level managers
Sales and sales management	Finance
Marketing management	R&D
Account Representatives	Technical Support
Customer Support	Call center personnel
Project Managers	Service representatives
Technical types	Clerical staff
Application trainers	Manufacturing
Programmers	Unionized personnel

Table 7. Organizational Unit Responsible for Coordinating Telecommuting

Corporate Human Resources (only for collection of information)

Connectivity Division

Information Systems

CIO Organization

Management Information Systems

Local Business Unit

Managerial Control and Performance Appraisal

<u>How managers of telecommuters gather information pertaining to their work.</u>

A review of coding for the various modes of communication used by managers show that they most frequently use e-mail followed by phone calls. Table 8 illustrates frequency of coding of communication media by interview.

Table 8. Frequency of Coding of Communication Media by Interview

Organization	Face to Face	Phone	E-mail	Fax	Phone Conf.	Video Conf	Pagers
		Communication Media					
Telecommunications							
Company A	5	4	6	0	1	0	0
Company B	5	4	6	0	1	0	0
Unit 1	0	1	1	0	0	0	0
Unit 2	3	4	7	0	0	0	2
Unit 3	0	1	2	0	0	0	2
Unit 4	6	3	6	1	3	1	0
Unit 5	5	1	10	0	0	0	2
Industrial Printing	3	11	14	2	6	6	0
Insurance & Finance	0	5	6	0	2	0	0
Technology (software)	0	1	1	1	0	0	4
Pharmaceutical	1	1	5	0	0	0	0
Retail	0	1	5	1	0	0	0
Food Manufacturing	5	8	6	1	4	1	0
Total	28	41	69	6	16	2	8

A perusal of the interview logs indicates that e-mail functions both for messages and for the transmission of files. Phones are important in managers being able to obtain immediate feedback to questions.

Supplied to telecommuters were: computers, printers, and at least one phone line, frequently two lines - one for voice, the other for data. Since most managers were supervising part-time telecommuters, there was ample opportunity for face-to-face communication. Five of the managers reported use of phone conferences. They also indicated that phone conferences were one of the ways that employees at remote locations could still function as a team.

How is productivity measured for telecommuters? Does this differ in any way from non-telecommuters?

Table 9 reviews coding frequencies for techniques of productivity measurement. In all instances these managers of telecommuters, who also managed non-telecommuters, reported that productivity measurement was similar for both. The table reveals that goal achievement was mentioned most frequently, followed by work timeliness, contract and sales, work accuracy, cost efficiency, and in one instance, publications. What is notable about all of these measures is that they focus on work outcomes and not on work process. There were a few mentions in the area of sales that customer satisfaction is being factored in. In three instances, there are no entrees in the table. These managers did not elaborate on productivity measurement beyond performance appraisal. Comments follow regarding productivity measurement:

> *Well certainly meeting the objectives of one's job, doing well against the metrics established core performance in a given position.*

They are all working on a very defined set of objectives. We really don't micromanage. Where I care what they are doing on an annual basis, it is more like here's your annual objectives. Get them done, if you get them done in July, you can have the rest of the year off for all I care. If you want to get ahead for next year, and we all do, then keep plugging away.

I am a proponent of it, strongly recommend that managers shift from the mind-set of looking at how many hours someone puts in compared to what they produce at home. So I because you know as well as I do someone could work twelve hours a day, but if someone else is more efficient they might work eight hours a day and produce a lot more. So I like to focus on results.

Basically we were told and we have to write a paper, that's our objective, on what we are going to do. We review it halfway through the year to see if it is ok and then the performance is based on how well you have completed those objectives.

Considering the fact that we are a knowledge community, it is do we fulfill our clients' requests for whatever that may be, are we reachable, do we deliver what we say we are going to deliver, do we meet our objectives, do we exceed them. Those are the measures we focus on. In October we did a self assessment on how do you feel as far as productivity goes. Do you think you are more productive when you're telecommuting, with a scale. Everyone felt that they were much more productive, but again this kind of thing is hard to measure when you are not in a factory type situation. But as far as meeting and exceeding the objectives, that is a little more measurable, people do have deliverables in various jobs-commitments, do they meet their commitments on time. I would say telecommuting aids meeting the commitments on time.

There is overlap between these the issues of productivity measurement and performance appraisal. Table 10 presents the frequency of coding for performance appraisal. The most frequently mentioned aspect regarding performance appraisal has to do with goal achievement, followed by development. Development refers to employee development or some indicator of growth in terms of advancing in job knowledge and skills. A majority of the interviewees also discussed the appraisal format.

Table 9. Text Units Coded for Type of Productivity Measure

Organization			Measures of Productivity			
	Goal Achievement	Publications	Contract & Sales	Work Timeliness	Work Accuracy	Cost Efficiency
Telecommunications						
Company A	4	0	1	2	1	2
Company B						
Unit 1	3	0	0	0	0	0
Unit 2	0	0	0	0	0	0
Unit 3	1	0	1	1	1	0
Unit 4	0	0	3	0	0	3
Unit 5	1	0	0	1	1	0
Industrial Printing	7	0	4	4	2	0
Insurance & Finance	0	0	0	0	0	0
Technology (software)	4	1	1	0	0	0
Pharmaceutical	0	0	0	0	0	0
Retail	1	0	0	5	0	1
Food Manufacturing	2	0	0	3	3	0
Total	23	1	10	16	7	6

Table 10. Frequency of Coding for Performance Appraisal

Organization	Goal Achievement	Leadership	Development	Instrument
Telecommunications				
Company A	1	0	0	2
Company B				
Unit 1	1	0	0	0
Unit 2	1	1	1	0
Unit 3	2	1	1	0
Unit 4	0	0	0	0
Unit 5	2	0	2	2
Industrial Printing	1	0	1	5
Insurance & Finance	0	0	1	5
Technology (software)	1	0	0	1
Pharmaceutical	2	0	2	3
Retail	0	0	0	1
Food Manufacturing	0	0	0	1
Total	9	1	7	17

An area of particular concern regarding performance appraisal was the appropriateness of its use and format for telecommuters. In response to the question concerning problems performance appraisal might hold for judging the work of telecommuters, all interviewed reported that generally there were no problems using the current performance appraisal format. It was appropriate for both telecommuter and non-telecommuter alike. However, six of twelve did mention certain problems that might occur. The responses referred more to feedback from performance appraisal. That is,

with telecommuters a performance appraisal interview might be difficult to set up in a timely fashion. To deliver information to an employee, a less personal form such as e-mail or a phone call might be used.

The other issue regarded visibility. While one manager voiced no personal difficulty appraising telecommuting employees, she voiced some thoughts about other managers needing to see employees. However, there were no specific incidents.

Managerial Planning

<u>Goal Setting and Feedback</u>. A review of the interview logs for goal setting indicated that managers did not perceive any changes in the way goals were set for employees as a result of their telecommuting. Goals are still driven by business objectives regardless of where an individual is working and goal specification is still results-oriented. Two interviewees did mention some change in how goals were set. One referred to employees taking on more responsibility in setting their goals, another mentioned becoming more detailed and specific when engaging in goal setting with telecommuters. Some responses follow:

> *A...changed the way goals are set? If anything it shifted more responsibility to the employees to set their goals, but it hasn't significantly changed things. It's still the same results we're looking for.*

> *Not so much goals, I think the goals were still the same, but I found myself being a little bit more, how should I say, descriptive, in deliverables.*

> *...they are driven from the business side with a series of goals and objectives at the executive VP level and they get translated down to overall business market divisions.*

Similar to goal setting, no major change was seen in giving feedback to employees as a result of telecommuting. The most frequently mentioned change was giving feed back by way of e-mail or by telephone if the employee was not on-site that day and some immediate feedback was needed. In that sense, there is less of a personal touch. One manager, who had two full time telecommuters, did mention that at first he felt uncomfortable not being able to go down the hall to find his employee, but after a few months he adapted to the situation and did not have as much need to be in contact with his employees.

Change in management style. While no major changes in techniques of managing or management style as a result of managing telecommuters were revealed, some themes did occur in response to the item about problems managing telecommuters. Two managers mentioned the sense of not knowing what their people were doing, while one was concerned that telecommuters might be overlooked by higher levels of management. Several mentioned frustrations of both managers and employees due to technical problems that would occur. Four mentioned the demands on both manager and telecommuter for being more organized. For example, this took the form of making sure conference call lines were set up and working, getting out agendas, setting up time frames for tasks.

Table 11 presents codes for problems that managers saw emerging when dealing with telecommuters. The code categories show that managers often thought in terms of difficulties the employees would encounter: lack of small talk, not getting to

know other employees. Most (n=10) perceived no substantial problems managing tele-

commuters.

Table 11. Frequency of Coding for Problems Managing Telecommuters

Organization	Lack of Small Talk	Not Getting to Know Employees	No problems
Telecommunications			
Company A	1	0	0
Company B			
Unit 1	0	0	0
Unit 2	0	1	1
Unit 3	0	0	3
Unit 4	0	0	3
Unit 5	1	0	2
Industrial Printing	2	4	0
Insurance & Finance	1	0	0
Technology (software)	1	1	1
Pharmaceutical	1	0	2
Retail	1	0	1
Food Manufacturing	1	3	3
Total	9	7	16

The multiple codes that appear in the table reflect the fact that while problems

might have occurred in the early stages of telecommuting, problems had been resolved

at the time of the interview. Another explanation of the multiple codes is that overall

there are no major problems experienced in managing telecommuters but some smaller

ones do occur.

Management style. In response to the question about management style, the majority

responded that theirs was one of flexibility. Moreover, they believed that a "command

and control" style of management was not conducive to managing telecommuters. They believed that managers who required a great deal of control would feel uneasy about the fact that they could not have instant access to the employee.

Communication and Coordination

<u>What types of media are used to communicate general organizational information such as memos and reports?</u>

As Table 8 (p. 41) displays, the most frequently mentioned form of communication is that of e-mail. Questions concerning satisfaction with the quality of communication show that 12 out of 12 managers were satisfied and moreover found that the varieties of media served them well. While a few modalities were inadequate for specific purposes, overall, satisfaction prevailed.

The matrix of coding frequencies for communication media shown in Table 12, is a reflection of the intersection of coding categories. That is, over all the interviews, how likely is that an interviewee who mentions use of one type of medium also mentions another. Clearly the cell with the highest frequency (ignoring a cell that relates to itself) is e-mail with phone. That is, managers were likely to be using both phones and e-mail as communication modes.

Table 12. Matrix of Coding Frequencies for Communication Media

Media	Communication Media						
	Face to Face	Phone	E-mail	Fax	Phone Conf.	Video Conf	Pagers
Face to face	28	4	9	1	4	0	0
Phone	4	41	27	3	1	1	0
E-mail	9	27	69	3	2	0	0
Fax	1	3	3	6	0	0	0
Phone Conf.	4	1	2	0	16	1	0
Video Conf.	0	1	0	0	1	2	0
Pagers	0	0	0	0	0	0	8

Another area of concern is that of informal communication and the extent that it might decline due to telecommuting. A review of comments regarding informal communication shows no concern among managers about it deteriorating. It needs to be kept in mind that most were managing part-time telecommuters. Two interviewees also reported that their electronic communications systems had an electronic grapevine to accommodate that need. A few examples of comments follow.

> There is an electronic grapevine in the database. So if anything else is going on, it is communicated on the grapevine. I noticed that more time is spent at the end of communications dealing with informal stuff.

> I think because people are not out of the office all the time, I haven't seen any problems. We clearly have problems like every organization, but I wouldn't attribute them to telecommuting.

> We have an electronic grapevine, a...actually that was in one of our databases. And that's a challenge too. We have even mentioned to people that when you're in a plant you have a lot of informal networks that's how you get some information sometimes. Sometime it's good to know what's going on with the company, also sometimes it's to know about your job. And you have to make sure you establish ties and keep ties in the plant so you keep those lines open. And when you call the plant, make sure you know people, anything else going on. So things don't slip through the crack. You know in some cases it might be just things they announce at a floor meeting in the plant that you may have heard if you were physically there. And you don't know.

A major concern regarding informal communication and telecommuting is that certain individuals might feel excluded. Table 14 presents that information. In eight of twelve interviews there was mention of feeling included in the organization or group. However there was some mention, six out of twelve, of exclusion as well. In reviewing comments, the gist was either recommendations that employees needed to work at staying plugged into things or that there was an initial feeling of not being in the loop.

That, however, dissipated over time. The one exception related to the Retail organization where a problem does seem to exist. Another aspect worth noting is the apparent contradiction between "no difficulty with informal communication" and the appearance of "feeling excluded". While there are more reports of feeling of inclusion than exclusion, there does reside some sense of exclusion and it needs monitoring. It also reflects that an answer to a general question can elicit a different response than that to a specific one.

Table 13. Frequency of Coding for Communication Issues in Teamwork

| | | Issues | |
Organization	Satisfaction	Overload	Informal Commun.	Media
Telecommunications				
Company A	0	1	0	0
Company B				
Unit 1	0	0	2	0
Unit 2	0	0	0	0
Unit 3	0	0	0	1
Unit 4	1	0	0	0
Unit 5	0	1	0	0
Industrial Printing	1	2	1	0
Insurance & Finance	0	1	0	0
Technology (software)	3	17	0	0
Pharmaceutical	2	0	0	1
Retail	0	0	0	0
Food Manufacturing	0	4	0	0
Total	7	26	3	2

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> know what's going on with the company, also sometimes it's to know about your job. And you have to make sure you establish ties and keep ties in the plant so you keep those lines open. And when you call the plant, make sure you know people, anything else going on. So things don't slip through the crack. You know in some cases it might be just things they announce at a floor meeting in the plant that you may have heard if you were physically there. And you don't know.

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tion where a problem does seem to exist. Another aspect worth noting is the apparent contradiction between "no difficulty with informal communication" and the appearance of "feeling excluded". While there are more reports of feeling of inclusion than exclusion, there does reside some sense of exclusion and it needs monitoring. It also reflects that an answer to a general question can elicit a different response than that to a specific one.

Table 14. Frequency of Coding for Feeling Included or Excluded

Organization	Feel Included	Feel Excluded
Telecommunications		
Company A	0	0
Company B		
Unit 1	1	0
Unit 2	0	0
Unit 3	0	2
Unit 4	2	2
Unit 5	1	1
Industrial Printing	2	0
Insurance	1	1
Technology	3	0
Pharmaceutical	3	0
Retail	0	4
Food Manufacturing	2	0
Total	15	12

Equity

<u>How are assignments made among telecommuters and non-telecommuters?</u>

The managers interviewed generally did not have a problem with equity in terms of work assignments, except in one situation. The first comment describes the sense of

inequity in obtaining "good projects". The other comments are typical of the sense of

equity in work distribution and assignments.

> *I've heard about complaints that non-telecommuters feel at time that they are burdened. While telecommuters feel that they don't get good projects. If a manager needs a project today, it will go to a non-telecommuter over the telecommuter.*

> *No, but there were occasions when the assignment required the person be on-site and so it could not go to a telecommuter. But the employees understood that.*

> *No it is the same. We are driven by objectives, in our small group, if one of us is working on an analysis, we have a team approach. I have too many, can I give you this one to work on. Everyone will step up to help someone if needed, but work is evenly distributed.*

Does telecommuting in any way affect promotion and/or compensation?

Table 15 reveals that managers did see promotional opportunities being affected

by telecommuting. Although six of the managers reported that telecommuting did not

affect promotional opportunities in two of those instances the response was ambiguous.

Some comments follow:

> *It's as if, if you don't see the employee how can you know the employee is working. There would be a glass ceiling or barrier to advancement. Upper management does not understand how you can manage people if you can't see them.*

> *No I haven't, I would say though it is important to be visible. I think it would possible be difficult for people other than in sales where it is a different kind of metric if they were not on the scene as well as telecommuting at times. So in other words I would not advise people who are interested in upward mobility to work off site all the time. Clearly, being visible, having an opportunity to network, and to get exposure to upper management. For example, all the people in my organization and in other parts of our division get a chance to have sessions with our division, our director etc. You can't do that if you are not on site part of the time*

Table 15. Frequency of Coding for Promotional Opportunities

Organization	Not affected	Affected	Obstacles
Telecommunications			
Company A	0	2	1
Company B			
Unit 1	0	0	2
Unit 2	0	1	0
Unit 3	1	0	0
Unit 4	1	1	7
Unit 5	0	4	0
Industrial Printing	2	4	1
Insurance	4	0	0
Technology	1	0	0
Pharmaceutical	2	1	0
Retail	1	1	0
Food Manufacturing	0	3	2
Total	12	16	12

Managers were more positive when it came to assessing the affect of telecommuting on compensation. Their response typically was that pay was tied to performance not location.

Does telecommuting in any way affect allocation of informal rewards?

Managers were uncertain in this area. Some responded definitively "no", others saw some diminution of informal rewards for telecommuters, and in one other instance both gaining and losing. Comments follow:

No and in terms of giving them opportunities, I make no distinctions because I think that is not appropriate.

Well with telecommuting, you don't get a chance to spend time with superiors a layer or two above. It's difficult to do this on a phone.

There are informal rewards for telecommuting like the flexibility of taking time off during the day. It does affect some informal chit-chat and small talk on the personal side.

This is taking a guess, perhaps non telecommuters get more of a pat on the back in the sense that if you are dropping by someone's office, it is a by the way type thing. By the way you did a great job. I think you may see more of that for non telecommuters.

How are telecommuters selected?

In most organizations, selection was mostly a matter of self-selection. There were, however, a few organizations that insisted employees spend some time within the organization before telecommuting. Those that requested telecommuting were high performers and management wanted to accommodate their needs. A selected comment exemplifies this:

I would say maybe 2 or 3 in that category. It is primarily if someone needs to be home to have maintenance, they would say do you mind if I work from home, and most people have the capability to do all their work from home. It is no major thing. The advantage is that people tend to work more when they are at home because they are not interrupted by phone calls or people stopping by to chat or taking a longer lunch.

The trait mentioned frequently was that of trust. Five managers noted that it was important to trust the telecommuting employee. One expressed the idea that *if there's a performance issue we don't want you to working at home, by yourself.....*

Teamwork

How has telecommuting affected teamwork?

Managers reported that work was assigned on both an individual and a team basis. Since most telecommuters weren't telecommuting full-time, there was little impact of telecommuting on teamwork and teams often consisted of workers from various loca-

tions anyway. Even where the employee was full time, use of telecommunications enabled the team to function effectively.

> *I mean she was running teleconferences with 10, 15 people on the line at the same time, in different locations.*

How do members of the team communicate when telecommuters are participants?

Managers reported that the media used for communications among teams when telecommuting takes place is that of phone conferencing, followed by e-mail, followed by individual phone calls. Multi-media or video conferencing is not yet in use with any frequency. This suggests that for teams to communicate there needs to be synchronous communication. When location prohibits face-to-face meeting, the substitute is phone conference.

What types of conflicts tend to occur and how are they resolved?

Four of the twelve interviewed indicated they saw no evidence of conflicts due to telecommuting. The others relayed conflicts due to miscommunication of e-mails or scheduling problems. One mentioned some sense that those who are not telecommuting may take telecommuters less seriously. Some examples of comments:

> *They almost don't take you seriously*

> *There doesn't seem like there are too many conflicts with the telecommuters beside the usual stuff. We don't have a lot of issues.*

> *Misunderstanding e-mail (laughter). That has happened, because it is one way communication you know your intent is one thing and the perception is something else. And we've had some misunderstandings because of that.*

> *There are misunderstandings of e-mails. So there is more communication . People talk to you about it.*

Certainly, there's conflict whether or not we can get the person online in scheduling a meeting.

Conflicts regarding communication resolve themselves with more communication as do scheduling problems. The conflicts that could occur between telecommuters and non-telecommuters have no simple solution and also require communication at a managerial level to minimize or prevent them. However, conflicts were largely manageable.

<u>How does telecommuting affect the support team members give each other?</u>

Managers were very positive on this account. Either they believed that telecommuting did not affect team member cooperation in any negative way or they saw positives. Comments add to this:

Members help each other by sharing expertise if it is not available on a team. There is a lot of good communication and cooperation among people. Telecommuting has had no impact on cooperation.

Based on the situation, I have gotten phone calls saying hey what do you know about this, can you bail me out I am writing something, let me bounce something off of you, by phone. I get e-mails all day can you look at this and tell me what your thoughts are. The usual mediums.

Um...I'd say made it more of a challenge. Because when you e-mail you tend to more business or voice mail is strictly or most times business related. Yet I've had other people I worked with that probably had it not been for email I'd lost touch with. But we tend to stay in touch from a personal standpoint through email. You know they'll send me a message through email. When I get a chance it might be a week, it might be a month then I'll respond to them. And the same thing with them.

Within teams, everybody has a pretty good idea of what everybody else's job is so there is a lot of heads up calling. That is probably why they are on the phone with each other all the time, just so everyone is aware of what happened, particularly if someone is telecommuting that day. Or I am the boss, I call and say is so and so around today. A few

minutes later so and so calls me. They look out for each other along with keeping each other abreast.

Other research questions

Two other areas were examined: benefits of telecommuting and organizational support of telecommuting. Benefits of telecommuting were explored from the perspective of the organization. Managers reported most frequently that it is cost effective and that it encourages focused attention of employees.

Table 16 presents the frequencies for organizational support.

Table 16. Frequency of Coding for Organizational Support

Organization	Supportive	Non-Supportive
Telecommunications		
Company A	1	2
Company B		
Unit 1	1	0
Unit 2	5	0
Unit 3	1	0
Unit 4	6	0
Unit 5	2	4
Industrial Printing	1	1
Insurance	2	0
Technology	6	0
Pharmaceutical	9	1
Retail	1	2
Food Manufacturing	2	4
Total	37	14

Although support from the organization clearly is more prevalent than non-support, there are indications of non-support. For some organizations, there is support in some areas and lack of it in others. Comments indicate that there is resource support in terms of equipment and phone lines. Insurance is somewhat more muddled. There is coverage under workmen's compensation but telecommuters are often told to

check with their own homeowner's policy. Comments regarding non-support stem from lack of technical support to lack of managerial support. See the following examples.

> *A lack of technical support. The call centers are a growing area to tele-commuting. These are areas that need training.*

> *We read about telecommuting and how it would grow but that hasn't happened. Management is not interested in seeing it grow.*

> *Management has a 1950s, manufacturing mentality that if you can't see it doesn't get done. But the questions have been answered for telecommuting.*

Many of the comments revealed complicated beliefs.

> *I know they support it. How do they feel about it? We are very structured here, the guy above me, I am not sure his feelings, he is more interested in making the numbers or I'll kill you and doing the things you need to. If you want to telecommute its OK as long as you make your numbers. A good sales person is someone who is going to find a way to do a good job.*

> *Same thing, its not a 100%, some bought into it, and think its great, others are finding it a challenge. I think overall, as time goes on they are more accepting of it. That this is a way of life, it's a different way of doing things.*

> *For a corporate perspective, it's very supportive. We have not educated or sold the business case for as well as we could have for the overall population, that's really the next phase of what we need to do.*

> *I wouldn't say encouraging, acceptance. Our CEO does it, it is kinda hard not to let anyone else.*

> *The main reason for telecommuting is business. It gives people what they wanted. It is good for the business unit. And there is general satisfaction. But I am concerned that the rate of telecommuting has slowed down. It's not promoted as much as it was. The company is more cost conscious.*

> *Top level management is embracing it; it is middle management, unless they have a real reason organizationally to support it, they are not.*

Discussion

This project has been concerned with changes in managerial behavior and process that may have occurred as a result of telecommuting. In general, few changes were reported. Areas that were examined in-depth included: (1) managerial control and performance appraisal, (2) managerial planning (3) communication and coordination, (4) employee equity and (5) socialization and teamwork. Two other areas were explored: benefits of telecommuting and organizational support.

The sample of managers represented several sectors of the economy but half came from the telecommunications sector. The full-time workers they supervised used telecommuting, most frequently, on a part time basis although two managers had full-time commuters. Most interesting was the widespread use of informal telecommuting arrangements. While agreements were signed for loaned equipment, formal telecommuting agreements were not frequently signed. Many managers (and presumably employees) did not want to bother with the effort of signing a detailed agreement but did want the flexibility of being able to work at home on a regular basis. Even where there were signed agreements, a number of organizations did not keep records in a central location as to the number of telecommuters. This makes any attempt to get an accurate count almost impossible and suggests that surveys are underestimates of the numbers telecommuting. It also suggests that reports of the unrealized potential of telecommuting may be more pessimistic than is warranted.

Regarding managerial control, performance appraisal, and managerial planning, few changes were reported. This could be due to the fact these telecommuters were

telecommuting part-time. At most, they were telecommuting two days a week. However, some things need noting.

Managers of telecommuters focused on measurable work outcomes as an indicator of their productivity. This did not differ for on-site workers. All were assessed in terms of their ability to achieve goals, meet objectives, perform work in a timely and accurate way, etc. When the focus turns to these criteria, then hours on the job become irrelevant to understanding work effectiveness. With regard to appraising their performance, managers reported that current appraisal systems are adequate for both telecommuter and non-telecommuters. The one area that might need adjustment is the performance appraisal feedback interview. One manager did indicate that where there is substantial telecommuting, giving feedback in a timely and personal way may suffer.

The techniques managers use to gain control of information for telecommuters are primarily e-mail, followed by phone. The increased use of e-mail for both commuters and non-telecommuters has the side consequence of information overload but managers were not aware of any of their telecommuting employees feeling excluded. Interestingly, informal communication was also not seen to deteriorate for telecommuters. Comments did reveal a need for employees to be proactive in staying connected. While the on-site employee comes by information passively, just by being there, the telecommuter needs to plug into bulletin boards and ask questions to stay fully informed.

When queried about problems managing telecommuters, the sampled managers reported that no particular problem emerged, except for technical ones. While some

thought that other managers might be troubled by not having visual access to employees, these interviewed managers were comfortable on telecommuting days that their employees were being productive. Again, managers were not typically dealing with full-time telecommuters. Managers reported their own style of management as being flexible and open. This style reflects remarks by Kuglemass (1995) and Nilles (1986) in their recommendations concerning leadership for a telecommuting work arrangement.

Regarding communication and coordination, managers reported using e-mail with great frequency in conjunction with the telephone. There was little sense of feeling bereft of information on days when telecommuters were working at home. In part, this may stem from the fact that these managers were not working in close proximity to their own managers. Thus they have grown used to not seeing their supervisors and to communicating upwards with e-mails and phone calls. There was some concern about coordinating meetings when there are telecommuters but again the availability of phone conferences permitted the needed communication. All of the organizations had sophisticated telecommunications available and some had informal communications in the way of an electronic grapevine. The consequence of this was to keep telecommuting employees interconnected from the perspective of their managers.

The issue of equity centers on two areas, equity in terms of work distribution and equity in terms work outcomes. In the first case, managers were not aware of any problems among their subordinates regarding work assignments, except in one organization. That is workers on-site did not feel burdened by picking up the slack on days when telecommuters were working at home. There were, in fact, instances where as-

signments went to those on site but according to managers, this was seen as being within the boundaries of collegiality. One organization did report that there were some complaints on the part of telecommuters that they were getting less desirable work assignments. And the organization was looking into the issue.

Equity of work outcomes presented problems for promotional opportunities but not for compensation. A number of managers believed that full-time telecommuting would be detrimental to an employee's career by reducing opportunities for promotion. While they would be willing to manage a full-time telecommuter they would not recommend that the employee remain a full-time telecommuter for an extended duration. The one exception to this may be in sales where several organizations had instituted the virtual office. Even in that case, a sales manager recommended that his staff come into the office periodically. The reasoning behind this may be twofold. The first is the detrimental effects of not being visible over an extended duration. Managers expressed concerns that some amount of being seen is still important to others knowing who you are and what you are doing. The second has to do with support of upper layers of management. Here some believed that while there is top level support for telecommuting, it is shakier at middle management levels. This was especially so for the manager from the food manufacturing sector. A final area of possible inequity is that of selection of telecommuters. For the group of managers interviewed, telecommuters self-selected into that working arrangement. In all instances, managers were supportive of the arrangement and some saw it as a motivational device. That is, telecommuting is available to those employees who are trusted employees and known for producing high

quality work. The work arrangement provides needed time flexibility or a working environment that is conducive to higher levels of concentration when needed.

Regarding socialization and teamwork, some managers reported a requirement that employees work for the organization for six months before telecommuting but others reported hiring directly into telecommuting jobs. For a new hire with little experience, some time with the organization seems to be advantageous for immersing the individual in the organizational culture. However, if an individual comes with experience, then the experience can substitute for learning the various professional norms. In sales, virtual office is popular and sales personnel are rarely in the office in any circumstance.

Teamwork may seem inconsistent with a telecommuting work arrangement but all managers interviewed reported work being assigned on both an individual and a team basis. Again, since most were telecommuting only part time, team projects did not suffer because some of the team members were not on location. Managers reported that some of the team projects involved individuals in remote locations without telecommuting so that use of e-mail and particularly phone conferencing was an important way of getting individuals together across spatial differences. E-mail works asynchronously and provides even more flexibility in communication. There was more support reported among team members than conflict. Support came in the form of sharing expertise and picking up for each other if one member got swamped with work. The members seem to stay in close communication to keep track of where other individuals are in their part of the project.

Benefits of telecommuting were examined from the perspective of the organization. Telecommuting was seen as benefiting the organization through enhanced productivity. The increase took place through anyone of four mechanisms: focused attention, fewer interruptions, fewer needs for breaks and enhanced cost efficiency. The most frequent selection regarded cost efficiency but most of the managers reported more than one tactic for increased productivity.

Organizational support was two pronged: resource support and managerial encouragement. All of the organizations gave resource support, at least by picking up the cost of telephone lines and in many instances by supplying equipment. Equipment consisted most often of a computer (notebooks in sales), printer, and sometimes a fax, and occasionally a pager. Two phone lines, one for data, the other for voice were also the case for several organizations. Insurance coverage was a gray area with most companies not discussing it with employees. Some frustration was expressed regarding inadequate technical support.

The managers' attitudes toward higher level managerial support indicated some feelings of ambivalence. That is, there is tolerance but not active encouragement. Some expressed utilization of telecommuting as good business but were disappointed that the case had not been made at higher levels of the organization. On the other hand, there was a sense of optimism about the future for telecommuting in that these managers believed that is a way of life and will not disappear.

Summary and Recommendations

This project examined the experiences of managers of telecommuter to ascertain what changes, if any, had occurred in their managerial behaviors over a range of processes. Twelve managers of telecommuters were interviewed in depth by means of a semi-structured question format. The content of the interviews was analyzed using QSR NUD*IST, software designed to assist in qualitative data analysis. Results indicated that few changes were obtained since most were managing part-time telecommuters. Major findings include the fact that many companies do not track the number of telecommuters and even where they do, there is a great deal of informal or casual telecommuting.

While these managers saw few differences in their way of managing telecommuters and non-telecommuters, they did rely on performance indicators as the way of appraising productivity. Some talked about the premium put on organizational skills - their own and their telecommuting employees. Moreover, these managers were comfortable using e-mail as a means of communicating with all employees in addition to using phones and face-to-face interactions. The one area of concern to them regarding their telecommuting employees was the impact of long-term, full time telecommuting on career advancement.

Teamwork continued even with some employees telecommuting. This was possible because of the part-time nature of telecommuting and the flexibility enabled by phone conferences. Since team members were often geographically dispersed anyway, telecommuting was not seen as a disruption. The managers sampled also often

had their own managers working in different geographical locations so they were accustomed to not being in close proximity to their colleagues.

These managers, who were supportive of telecommuting work arrangements, characterized their own management style as flexible, trusting of their employees, and wanting to provide work environments that were conducive to accomplishing the work. In the case of some of their employees, this meant telecommuting.

Recommendations

1. To assess the readiness of your organization for telecommuting, conduct an audit to find out how much casual telecommuting already exists. Your organization may be further ahead than you think.

2. Communication: Assess the extent to which your organization is using e-mail, phone conferences and other asynchronous forms of communication. The greater variety in telecommunication modalities used, the more the organization can adapt to telecommuting.

3. Part-time telecommuting does not appear to present much need for change in management style or process. Reassure managers regarding the limited requirements for change. The fact that these managers perceived virtually no change in their behavior toward part-time telecommuters in comparison to non-telecommuters suggests that future studies should focus on full time telecommuting arrangements. This project will continue to add managers to the database already developed.

4. Management assessment of employee performance needs to be based on outcomes. Most organizations are already using formal appraisal systems and these

need to be reviewed. Chances are that, in fact, the current performance appraisal form will work. In this study, even where managers were supervising full-time tele-commuters, their current performance appraisal form worked.

5. Where full time telecommuting is contemplated, managers and employees need to go through a "learning curve" as they adjust to a new working arrangement. Both should be prepared to give added effort in communication while "the manager" adapts to not having the employee readily available. Both need to go through some orientation to telecommuting issues. There are several sources and WEB sites that are helpful in giving guidelines for successful telecommuting programs.

6. Equity. The problem here deals with opportunities for promotion with telecommuting full time for an extended duration. While there may be some positions available, in most large organizations this currently does not seem to be a viable alternative. Ca-reer counseling should alert employees to maintain visibility. If long-term, full-time telecommuting is a job requirement for an employee, the employee needs to be counseled about ramifications for career progress. One alternative is to seek an or-ganization that is comfortable with telecommuting as a full-time work arrangement. As an example, the CEO of one of the organizations sampled liked telecommuting. Such an organization would accommodate someone who has needs for long-term, full-time telecommuting.

7. Selection. Currently telecommuting is available at a professional level in the organi-zations sampled, but not to hourly workers. Those wishing to telecommute can select it as an option but most organizations are not promoting it. This lack of promotion

may give the impression that it is a second class work arrangement. If an organization gives the option, then it should publicize the option as an alternative work arrangement through its Human Resource Department or other logical functional area.

8. Teamwork. This way of assigning tasks is disrupted less by telecommuting than one might think. Teamwork with telecommuting places a priority on organizational skills and attention to the details so that participants in teleconferences have available all materials that one would normally have available at a meeting. With e-mail and fax, this should present little difficulty beyond that of getting material out before the meeting begins (as opposed to bringing material to a meeting). Coordination for a teleconference requires efforts similar to coordinating times for a face-to-face meeting. The additional element to deal with is the technology of the phone conference. Communication in between can be handled by e-mail. With distribution lists, e-mail is often a better manager of communication than the team leader who may forget to relay messages to everyone, may delay in relaying messages, or may distort or relay incomplete messages.

9. Moving towards remote management. An interesting and unexpected trend discerned in this project is the move towards remote management regardless of telecommuting or non-telecommuting. That is, work is becoming distributed over geographical areas, and managers are more and more likely to be based at locations which are apart from their subordinates. This portends a change so that managers, in general, will need the same skill set and style found among managers of telecommuters. Those skills place a priority on organization, communication over a variety of

modalities, an ability to set specific and unambiguous goals with employees, and the capacity to build trust of subordinates based on their performance.

10. Future Research: This research suggests paths of future studies regarding organizational variables. An issue that begs attention is the technique of performance measurement. Claims that telecommuting enhances productivity need to be documented with reliable measures of performance, not self-reports. Those interested in the issue of absenteeism might look at rates of absenteeism in relation to job design. Recent research suggests that flexibility in work arrangements not only decreases problems of absenteeism but enhances productivity. Telecommuting is one of the arrangements that permits such flexibility.

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Selected Telecommuting WEB Sites

1. The Telecommuting Knowledge Center (TKC) is a online sourcebook and information center for telecommuting technologies. TKC participants have access to an extensive resource of telecommuting literature, vendors, consultants, products, services and events. All of these items have been categorized to make it easy to research specific telecommuting topics.
URL: **http://www.telecommuting.org/**

2. Gil Gordon Associates consolidates a wide variety of information on products/business/general/telecommuting/from around the world, and from many different perspectives, on the subjects of telecommuting, teleworking, the virtual office, and related topics.
URL: **http://www.gilgordon.com/**

3. Pacific Bell Telecommuting Home Page offers a telecommuting guide for start-up of a telecommuting program.
URL: http://www.pacbell.com/products/business/general/telecommuting/

4. GSA Intragency Telecommuting Program is run by the United States Government Service Agency and provides information on telecommuting over a range of topics including implementation and provides links to other sites on telecommuting.
URL: **http://www.gsa.gov/pbs/owi/telecomm.htm**

5. A.T. & T. Telework Guide is a site that was developed to help companies on their telework journey. Gathered from AT&T's extensive internal experience with telework arrangements, the site highlights the benefits of telework and shares tips and tools to help you get started. Topics such as assessing organizational readiness, implementing a pilot program and drafting a telework policy are included.
URL: **http://www.att.com/telework/**

6. The Arizona Telecommuting Program offers an overview of their program, questions and answers, and information on selecting telecommuters, program evaluation and links to other sites.
URL: http://www.telecommuting.state.az.us/

7. The California Telework site is comprehensive in its information. Topics include program description, research reports, and links to other sites. A separate site for California gives information about implementing a telecommuting program.
URL: **http://www.dpa.ca.gov/jobsnpay/telework/telemain.htm**

8. Telecommuting resources. This site is a gateway link to sites in many states.
URL: **http://www.state.ky.us/kirm/telecomm.htm**

9. JALA Homepage is the site of an international group of management consultants. Their mission is to help organizations make effective use of information technology—telecommunications and JALA's activities are in four main areas: telework, applied futures research, technology assessment, and regional telecommunications planning.
URL: http://www.jala.com/

10. The International Teleworking Association and Council Homepage is the site for an international association relating to telework. The organization sponsors conferences on teleworking and offers links to other sites internationally. The links are organized by organizations, guides, consultants, telecenters, and miscellaneous information.
URL: http://www.telecommute.org/

Appendix

Moving Telecommuting Forward: Examination of the Intra-Organizational Activities
Interview Schedule

Person Interviewed_____   Organization_____

Title _____   Tenure_____

Date _____

I.   Organizational Information

    A.   Type of organization (manufacturing sector, service, etc.)

    B.   Location

    C.   Size

    D.   Structural dimensions (departmentation, formalization, centralization, hierarchy)

        1.   Organizational chart available

        2.   How formalized is the organization? (e.g. policy and procedure manuals)

        3.   How centralized is decision-making?

        4.   How many layers of hierarchy?

    E.   Main purposes of the organization?

II.   Telecommuting Information

    A.   How many telecommuters? Formal _____ Informal _____

    B.   What units have telecommuters?

    C.   What units have no telecommuters?

    D.   Zip codes of telecommuters if possible

    E.   What job titles have telecommuters?

    F.   What is the average number of days telecommuting per week for the typical telecommuter?

III.. Organizational Structure for Telecommuting

   A. What unit is responsible for coordinating technical issues pertaining to telecommuting such as agreements, insurance, equipment, etc.?

IV. Managerial Issues

   A. What techniques are used to measure productivity of workers in telecommuting job titles?

   B. Have there been any attempts to assess the effects of telecommuting on productivity?

   C. Appraisal measures

      1. How often are workers appraised?

      2. What type of instrument is used?

      3. Has telecommuting presented appraisal problems for managers?

      4. Is the appraisal system a fair one? Is it appropriate for telecommuters?

   D. How does the manager coordinate work assignments among telecommuters and non-telecommuters?

   E. Has telecommuting changed the way goals are set for employees?

   F. Has telecommuting changed the way feedback is given to employees?

   G. What are some typical problems faced in a unit when telecommuting is introduced?

   H. How would you characterize your managerial style?

   I. Has telecommuting made managing easier or more difficult?

V. Communication & Coordination

   A. How are announcements of meetings, memos, reports, etc. communicated to telecommuters?

   B. Does this differ for on-site employees?

C. Does informal communication suffer in any way with telecommuters? In what ways?

D. What are the most frequently used mediums (face-to-face, phone, e-mail)?

E. In what ways are any of the mediums inadequate for you?

F. How satisfied are you with the quality of communication with your employees? Does this differ at all for telecommuters? How does it differ?

VI. Equity

A. Are there any difficulties distributing or assigning work among telecommuters and non-telecommuters? Are there complaints regarding work distribution among telecommuters or non-telecommuters?

B. Are compensation and promotion affected in any way by telecommuting?

C. Does telecommuting affect informal rewards such as committee assignments or tine spent with superiors on an informal basis?

D. How are organizational resource allotted such as equipment and training?

E. How are telecommuters selected?

VII. Teamwork

A. Describe how work is assigned in the unit you supervise, on an individual or team basis?

B. Are you aware of informal work groups?

C. How has telecommuting affected the working of teams and informal groups?

D. How well do members of your unit get along? How has telecommuting affected this?

E. How effectively do members communicate with each other? How essential is unit communication to completing tasks? How has telecommuting affected this?

F. What kinds of conflicts tend to occur? How are such conflicts resolved?

G. In what ways do unit members help each other? How has telecommuting affected this?

VIII. Conclusion

Is there anything else you would like to add to this interview?