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Applying technology to work: toward a better understanding of telework

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Abstract

Technology is enabling employees to work away from the office as teleworkers, where they experience increased flexibility to manage their work and personal lives. The last several decades have seen telework rapidly expand as a work mode, which offers both new opportunities and challenges for employees and corporations alike. This paper covers a brief overview of telework research and practice, in the hopes of providing a better understanding of this rapidly emerging form of virtual work. The paper first describes its growing popularity and the types of telework being practiced, and then reviews some key findings in prior research by examining alterations in the work–family interface, job satisfaction, and organizational identification. Present-day factors spurring telework’s growth and factors holding it back are then discussed, including issues of technology acceptance, business continuity, and carbon footprint, as well as challenges such as isolation, co-worker resentment, and managerial reluctance. The paper then briefly explores some crucial issues facing telework in the future if it is to remain a successful work practice, including knowledge sharing, individual differences, and the way organizational policies and practices are enacted. Finally, some proscriptive recommendations for managers are offered in the hopes of helping practitioners harness the potential of this form of technology-enabled virtual work.

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Introduction

The work landscape has changed dramatically in recent years, with an increasing number of employees choosing to telework by utilizing technology to work away from the central company office. Already in the 21st century we have seen a dramatic increase in popularity of this work practice, which has fueled the interest of practitioners and researchers alike. This paper is therefore devoted to providing a brief overview of the current state of our knowledge on telework, with the hope of providing insights for those interested in unraveling some of the many complexities inherent in this way of working. Toward this end, after briefly discussing key factors influencing telework’s growth and the forms of telework practiced by employees, a number of fundamental findings from past research will be highlighted. Immediately following this, a brief overview of current research and practices carried out by teleworkers will be covered. Then, after a synopsis of some trends for telework’s future and factors which are spurring as well as



holding back its growth, the article concludes with a discussion of actions managers can undertake to help ensure its successful implementation.

Telework's growth

By all measures, telework has experienced rapid growth over the past several decades. Although statistics vary somewhat based on the study and source, estimates suggest that more than 11% of the US workforce is engaged in telework (World at Work, 2009), and that in Europe, Australia, the US, and other industrialized nations around the world, growth is occurring by upwards of 30% per year (Office of National Statistics, 2005; Mamaghani, 2006; World at Work, 2007). Evidence suggests a number of factors have combined to spur such dramatic growth. First, given the rising number of dual-career and single-parent households, corporations are responding to employee needs for a greater capability to accommodate increased family demands. These employees desire not only to excel in their jobs, but also to remain an essential part of family life. Additionally, employees are also demanding flexibility in how they accomplish their work so that they can engage in leisure activities and work independent of location constraints. Companies, in turn, often look upon telework as a program to help attract and retain employees, so that these employees remain satisfied in their jobs and stay with the company rather than leaving it. Moreover, telework is also looked upon by corporations as a cost savings measure, as employees who do not work full time in the office require less office space, utilities, and other resources. The rapidly decreasing cost and widespread availability of technology are also serving to spur the growth of telework, which provides teleworkers with easily usable software, databases, and remote communication equipment to span geographic separation between employees. Considered altogether, these factors have combined to bring about the dramatic increases in telework that have characterized recent times.

While telework has grown tremendously, it is more common in some jobs and industries than others. Given the separation from co-workers, clients, and managers, and the increased reliance upon technology to interact, some jobs are more conducive to working remotely from the office. For example, telework has grown markedly in high-technology jobs. Individuals who work in computer-related industries and jobs in information technology have seen large increases in the

incidence of telework, as have those engaged in software programming and computer network operations. Conversely, industries like manufacturing and jobs which require a personal presence such as some service positions, have seen very little telework growth. The distinction between these jobs, which enables some to be conducted via telework while others are not, appears to be related to the nature of the job and independencies with others. Jobs which are generally carried out via technology, as well as those jobs involving responsibilities that are largely independent of others, appear to be highly conducive to telework. As discussed more later, for these types of jobs, telework may offer significant benefits to both the employee and corporation.

One aspect of this emerging form of work that has led to confusion in the media is the varying terminology that has been used interchangeably. Telework, as a form of virtual work, involves working away from the office using computer technology to interact and communicate with others. Although the extent of time that an individual teleworks can vary, it generally involves working from home or another alternate location for a portion of the work week, and spending the remainder of the time in the corporate office. While telework often entails working from home, it also includes working from other remote locations such as a client office, airport, telework center, or hotel. Telecommuting, on the other hand, involves working solely out of the home instead of commuting to the office place. Inherent in telework is the mobility to work from nearly anywhere, enabled by an increased reliance upon technology to conduct work activities. While this technology differs by context, typically it involves computers with job-specific software, phones and other handheld electronic devices, and high-speed remote access to corporate databases.

Past research on telework

Originally, telework started out as a work practice conducted largely by clerical employees who worked on solitary tasks away from the office. These employees worked out of their homes part time and were generally able to be contacted by telephone if needed. As technology has advanced and become more readily available, however, telework has opened up to a much wider range of employees and work tasks. Telework is now practiced not only by clerical employees, but also by professional-level workers, who operate using an



array of advanced communication technologies to remain connected to others and to corporate databases. As telework has become more widespread, a number of important work outcomes have been investigated, and there have been several reviews of existing literature (e.g. Guimaraes and Dallow, 1999; Bailey and Kurland, 2002; Gajendran and Harrison, 2007). Although much of the earlier telework literature was based on case studies or only general surveys, rigor in this body of research is rapidly improving. In the discussion that follows, several key findings in past telework research will be summarized, and while this is by no means a comprehensive look at all that we currently know about telework, it does illustrate the wide range of impacts telework may have on important work outcomes.

Telework shifts the boundary between work and family

One key aspect of telework involves alteration of the boundary between work and family. As teleworkers typically work out of their home for a portion of the work week, this provides a shift in how work-family boundaries are carried out, with important implications for both employee and employer. Whereas employees in traditional work modes are physically separated from home and have less ability to meld their work and family lives, teleworkers are instead provided with greater flexibility. Now, rather than the physical segmentation between their work and family lives, teleworkers often experience both at the same time, which alters how they react to their work as well as how they carry out their family responsibilities. For example, prior research suggests teleworkers report greater flexibility, such as the ability to address occasional but pressing family needs or attend a medical appointment of a family member (Riley and McCloskey, 1997; Guimaraes and Dallow, 1999). Teleworkers also report decreased stress not only from being better able to handle urgent family demands, but also due to the saved commute time that can be applied toward addressing additional family or personal desires (Baruch, 2000). With the reduced strain brought about by avoiding long commutes, traffic delays, and the uncertainty of inclement weather, teleworkers report lower stress than their commuting counterparts.

Telework may change work-family conflict

The alteration in the work-family dynamic brought about by teleworking has spurred investigations

into the nature of this change and what it means for the employee. Research has investigated the impact of telework on the conflict individuals feel between their work and family lives, in order to understand the nature of telework's impacts that are due to collocation. The majority of this research investigates how work impacts an employee's family, finding that telework is associated with decreased conflict between an individual's work and family domains (Hill *et al.*, 1998; Stephens and Szajna, 1998). More recently, research finds that telework may decrease work-to-family conflict, however, it may also increase the impact that an individual's family has on their work (Golden *et al.*, 2006). This impact stems from a number of factors. Since teleworking typically involves working out of the home for a portion of the work week, teleworkers are better able to handle family demands and reduce work-to-family conflict. However, the same collocation of work and family may also serve to increase the family-based interruptions and distractions into work. These additional pressures and expectations for greater family involvement may increase family-to-work conflict, potentially offsetting gains from reduced work-to-family conflict. As this illustrates, these types of complexities within the work-family interface need further unraveling if we are to develop and implement telework programs effectively.

Telework changes an individual's job satisfaction

Another key insight from existing research involves changes in the job satisfaction of teleworkers. As telework offers increased flexibility and greater control over work tasks, some telework literature suggests that the enhanced freedom and discretion are apt to increase an individual's job satisfaction (Dubrin, 1991; Feldman and Gainey, 1997). This literature suggests the increase in job satisfaction is likely due to the enhanced psychological state associated with feelings of autonomy in one's job, and the consequent enhancement of job contentedness and satisfaction (Hackman and Oldham, 1980). According to this literature, this autonomy to adjust work tasks to meet individual needs and desires is what drives the associated increases in job satisfaction. Other telework literature, however, suggests that telework may lead to decreased job satisfaction, stemming from the physical separation from others and the difficulty in transcending the distance between the telework location and the work organization (Bailey and Kurland, 2002). According to this opposing research, decreased

satisfaction is said to result from teleworkers feeling separated from others and from important office activities (Cooper and Kurland, 2002); they report feeling less connected to the organization as well (Wiesenfeld *et al.*, 1999). Additionally, teleworkers have reported feeling “out of the loop” in important office events and frustrated over their inability to remain integral with office activities (Gainey *et al.*, 1999). This research also notes teleworkers may feel limited in their ability to communicate easily with others in the office, or frustrated over the limitations of communication media available to them (Yap and Tng, 1990; Cooper and Kurland, 2002). Based on these conflicting findings, more recent research has proposed and found a curvilinear relationship between telework and job satisfaction, indicating that successful telework may involve finding the right balance to achieve optimal outcomes (Golden and Veiga, 2005; Golden, 2006b). This research suggests that a mix of in-office time and time spent teleworking may offer the best combination of work modes when considering job satisfaction, with perhaps around 15 hours or so per week offering an optimal amount of telework for some employees.

Telework may change an employee’s identification with the organization

As a final example of a key insight we have gained from existing research, literature suggests that telework may alter how employees feel about their work organization, and change the nature of their identification with it. This research suggests that telework alters the social and psychological ties that bind employees with the organization, and therefore the nature of the affiliation that employees feel toward the organization (Wiesenfeld *et al.*, 1999, 2001; Thatcher and Zhu, 2006). Given the geographic separation of the teleworker from the organization’s building, and the concomitant lack of physical reminders such as offices, emblems, or other physical reminders of the employee’s belonging to the organization, teleworkers may feel less a part of the organization and be reminded less of their belonging to it. Similarly, given the geographic separation, teleworkers are apt to experience a greater sense of independence from the organization and from others, feel less connected to them, and generally feel less affinity toward their work organization (Wiesenfeld *et al.*, 1999, 2001; Thatcher and Zhu, 2006). Teleworkers may also have additional challenges with electronic communication, considering the more ambiguous and less

rich interaction that often typify such electronic methods of communicating (Daft and Lengel, 1986). As this research suggests, teleworkers may therefore experience fewer socio-emotional cues during interactions with others in the work organization, and combined with few physical reminders of their belonging to the organization have organizational identification that is weaker than those in a traditional employee work mode (Wiesenfeld *et al.*, 1999). While more research is needed, these findings exemplify some of the many implications of telework suggested in existing literature that managers need to consider when implementing this new work mode.

Telework today

While we have learned a great deal from past telework research, there are currently a variety of factors helping to shape telework practice and research. These factors appear to be both spurring and holding back growth, as well as changing the way we view this work practice. A few of these emerging factors that are shaping the current telework landscape are briefly discussed below.

Factors spurring growth

Currently, telework continues to be a much-practiced, discussed, and researched alternative work mode, and the appetite for telework that many employees and corporations have presently is being spurred by both individual and corporate motivations. From the individual employee perspective, employees are continuing to demand flexibility in their work to accommodate increasingly demanding and complex family situations. With the sharp rise in single parent households, blended families, and dual-career relationships, employees are demanding work options that help them succeed in their jobs while also carrying out their family roles. The increasing stress and conflict between work and family roles is causing many employees to try telework as a means for alleviating some of these conflicting demands. In response, many corporations are instituting telework policies, such as those utilized by AT&T, Cisco, and others, in order to avoid misunderstandings and ensure successful implementation. These policies lay out agreements and procedures between the individual employee and their manager, such as work hours, the primary means of communication, and how separate child-care and eldercare arrangements are to be handled. By ensuring explicit agreement on a set of mutual expectations, managerial transparency is helping to



ease the transition to telework and providing much needed standardization. This shift away from telework being an informal program implemented on an *ad hoc* basis to one in which formal telework programs are widely implemented across multinational corporations, is institutionalizing telework as an accepted work practice.

Individual employees are also becoming much more comfortable and versatile with the use of technology, which aids the interaction between teleworkers and non-teleworkers. A large amount of research on information technology is addressing the degree to which individuals have comfort or fear of new technologies, and how prone they are to use new technologies when they are presented with them (e.g. Davis *et al.*, 1992; Venkatesh and Speier, 2000). This is important not only for teleworkers themselves, but also for those who must utilize technology to interact with teleworkers. Although an individual's comfort with, acceptance, and use of new technology tends to differ by age and other considerations, the chasm between techno-savvy employees and others in the corporation may be diminishing somewhat. Teleworkers are therefore experiencing greater ease in communicating with non-teleworkers in their work unit partly because their co-workers are more likely to use web-based tools to carry out work tasks, such as video-conferencing or shared on-line databases. With the advent of ever-more powerful software and on-line tools, the geographic separation between teleworkers and their non-teleworking colleagues may be diminishing from a psychologically perspective as well. This naturally has consequences for how teleworkers are viewed by others in their work unit, and thus for the teleworker's ability to accomplish work tasks effectively. As comfort with the use of technology proliferates throughout the workforce, telework therefore seems likely to grow in widespread acceptance.

Corporations and the federal government are also recently expressing interest in telework to help achieve business continuity during natural and man-made disasters. Given recent and growing concerns over flu pandemics and other widespread communicable diseases, telework offers a way to continue corporate operations while protecting employee health. The ability of geographically dispersed teleworkers to remain fully connected to others in the organization despite their remote location offers a desirable option for organizations seeking to operate during times of public health concerns. Moreover, following the tragic and

horrifying terrorist attacks of recent times, telework provides a means for corporations to maintain operations for short or extended periods of time until public confidence and municipal services can be reinstated. By enabling employees from widely scattered geographic locations to work effectively together, telework is being increasingly viewed as essential in business continuity planning (Office of Personnel Management, 2009). As these two examples illustrate, such corporate motivations to develop and implement telework programs to overcome unplanned interruptions to business are adding to the continued interest and growth in telework.

The above-noted individual and corporate motivations spurring telework may also be in part due to the growing desire to "go green" and reduce "carbon footprints." While hardly a day goes by without front-page headlines about "green" business initiatives (e.g. Bustillo, 2009), corporate focus on ways to cut energy consumption and reduce pollutants is providing an added impetus for telework programs. Rather than employees commuting to the central corporate office each day, teleworkers instead are able to work out of their home or another remote location. This reduces fuel consumption, auto emissions, and traffic congestion, and thereby helps decrease carbon footprints for the individual employee as well as overall employee averages. Given that teleworking was originally advocated as a means to conserve fuel and meet automotive emission standards in urban areas (Handy and Mokhtarian, 1995), this recent corporate focus on green initiatives builds from telework's roots and continues to spur its growth.

Not only does telework reduce auto emissions, but corporations also save heating and cooling costs as well as lighting and other utilities, which helps not only to reduce the overall average resources consumed per employee, but also aids cost reductions as well. As exemplified by the well-publicized actions of several large corporations like IBM, with large-scale telework programs corporations can eliminate office space, occupying less square footage of office space or even eliminating some office buildings altogether. As "green" initiatives gain popularity amidst continued pressures to reduce overhead costs, these types of cost savings associated with telework programs that also contribute toward corporate and individual "green" goals may continue to spur telework's growth. In this way the current environmental-friendly motivations of corporations are closely aligned with business objectives, which seem likely to drive

telework programs toward the forefront of corporate strategic planning efforts.

Factors holding back growth

Although there are a number of factors currently spurring telework growth, there also appear to be several that may be holding it back from expanding further. Some recent media reports indicate that corporations may be curtailing telework programs (e.g. Bednarz, 2007). While reasons for this are somewhat unclear, it may be due to a number of the challenges that occur with telework, some of which have been noted in recent literature. For example, a number of research studies have noted that telework may be associated with social and professional isolation (Cooper and Kurland, 2002; Kurland and Cooper, 2002; Golden *et al.*, 2008). As teleworkers are separated from the office and others with whom they work, individuals who telework report feeling “out of the loop” in office communication and cut off from others, as mentioned earlier (Baruch and Nicholson, 1997; Vega and Brennan, 2000; Shellenbarger, 2006). These individuals feel less a part of regular office communication, and the physical separation may imbue a psychological separation from others as well. Since teleworker isolation has been linked to lower job performance (Golden *et al.*, 2008), individuals who feel professionally isolated may perform less well, and face additional challenges to successfully completing job tasks. Thus, continued expansion of telework may be restricted by employees’ reluctance to begin telework for fear of being cut off from office communication, or they may want to discontinue telework to avoid becoming isolated from others or suffering lower job performance.

Recent findings also indicate that telework may have unintended negative consequences for non-teleworking counterparts, and this may be holding back telework’s growth as well. Non-teleworking co-workers indicate that sometimes teleworkers are not present when needed, noting they are “not there and we’ve got a group of people gathered” when attempting to solve “a key part of the project” (Cooper and Kurland, 2002: 522). Moreover, some practitioners have remarked how managers need to “deal with the tensions that can arise between employees at the workplace and those working remotely” (US Environmental Protection Agency, 2005: 12). There is also some indication that non-teleworkers who work with teleworkers may experience greater work–family conflict (Lautsch *et al.*, 2009). Additionally, another

recent academic study suggests that the prevalence of teleworkers in a work unit may be associated with decreased co-worker satisfaction on the part of non-teleworking colleagues, as well as increased turnover intentions (Golden, 2007). As these recent studies suggest, telework may adversely impact non-teleworkers in the office. The negative impact on co-workers may be due to the decreased flexibility that non-teleworkers experience, since they sometimes experience greater restrictions when coordinating and adjusting their own tasks and schedules to match those of the teleworker (Ruppel and Harrington, 1995; Allen and Renn, 2003). Non-teleworking co-workers may also assume additional responsibilities which might otherwise be handled by a teleworker but which are not due to the teleworker’s absence (Kugelmass, 1995; Reinsch, 1997; Gordon, 2005). These types of considerations may therefore be causing managers and practitioners involved with telework to hesitate to implement or expand telework programs, and may explain why telework has not expanded even more widely thus far.

Finally, the apparent recent pull-back from some teleworking arrangements could also be the result of a resurgent managerial reluctance to manage physically separated workers. While this hesitation to “manage those that can’t be seen” has been ongoing since telework’s inception, recent economic woes may have re-kindled such traditional managerial beliefs. Media reports that teleworkers may be the “first to fall under the budget ax” (Shellenbarger, 2008) indicate that at least some managers view teleworkers as somehow less central or dedicated to the corporate mission. While teleworking is still rapidly growing, such sentiments on the part of managers appear to be siphoning off at least some of the wind from telework’s sails. They also highlight the need for greater future research, so that any potential pitfalls in telework implementation may be identified and resolved.

The future of telework

While there appear to be factors that both spur and hinder telework’s growth, telework has become an accepted work mode that is likely to continue to expand in popularity despite factors holding it back. This continuing growth of telework seems likely considering unceasing volatility in fuel prices (MSNBC, 2008; *New York Times*, 2008), increasing pressures to reduce work–family conflict (Raghuram and Wiesenfeld, 2004), rising demands on corporations to reduce fixed costs (Conlin, 2009), and



ongoing corporate, government, and individual concerns over business continuity due to flu pandemics and terrorist attacks (Office of Personnel Management, 2009). So what, then, appear to be some of the key issues for telework going forward, and what do we yet need to understand about this work mode?

Given the increasingly crucial role of knowledge sharing for organizations designing new products and services (Nahapiet and Ghoshal, 1998; Hansen *et al.*, 2005), one important future aspect of telework appears to be its implications for the ability of employees to share knowledge with each other. Knowledge sharing involves the exchange between individuals of ideas, information, and understandings. Although not much research exists investigating how knowledge sharing is altered for teleworkers, it is prone to be much more complex than for individuals in a traditional work mode. As teleworkers are separated from co-workers and have increased reliance upon technology to interact with others in their work unit, relationships may be impacted (Golden, 2006a), and this may have important implications for the ability of teleworkers to exchange ideas and subtle understandings. Knowledge sharing is highly relational and often context dependent, and therefore the telework environment may make the sharing of interpretations that are necessary for exchanging complex information especially difficult (Cramton, 2001; Sole and Edmondson, 2002; Baba *et al.*, 2004). Emerging research has begun to address the challenges associated with knowledge sharing among teleworkers, by investigating the role of teleworker trust, interpersonal bond, and commitment (Golden and Raghuram, forthcoming). This research suggests that not only may the exchange of information and ideas by teleworkers be impacted by these types of interpersonal considerations, but also that this impact depends on the degree of technology support, use of electronic tools, and amount of face-to-face interactions. Clearly, given the growing importance of knowledge sharing for many sectors of the economy, further research into this potential impact is much needed.

Another crucial issue for telework going forward pertains to the individual teleworker's personality characteristics, as well as the nature of the teleworker's job and types of tasks. As with most occupations and positions, there is the likelihood that some individuals and types of positions may be better suited to telework than others. Research into these types of considerations have historical

roots in studies that address how people fit with their jobs (Edwards *et al.*, 1991) and the characteristics of different jobs (Hackman and Oldham, 1980), which need to be applied to teleworkers as well. Some individuals may not prefer, or may not function well within work situations in which they have limited face-to-face contact with co-workers or others in the work environment, and therefore may not do well teleworking. Conversely, it may be that some individuals thrive on the comparative solitude of working from home or another remote location, and are therefore well suited to this work mode. While some research has begun to look at the way teleworkers think (Workman *et al.*, 2003) and factors that are associated with the adjustment to telework (Raghuram *et al.*, 2001), much more remains to be done. Similarly, the amount of interdependence teleworkers have with others during the course of conducting their job activities has received some research and practitioner attention (Mokhtarian *et al.*, 1998; Raghuram *et al.*, 2001; Golden and Veiga, 2005; Shellenbarger, 2006), although this too has only begun to unravel the complex exchanges and interrelationships between job functions and individuals.

A vital issue that has received some attention from practitioners and researchers and which promises to shape telework outcomes involves the extent or number of hours per week that individuals telework. The extent to which individuals engage in this work practice may alter how well they communicate with others (Wiesenfeld *et al.*, 1999), the nature of their relationships (Golden, 2006a), and the effectiveness of their interactions (Golden and Raghuram, forthcoming). While existing research has linked the extent of telework to an individual's job outcomes such as job satisfaction (Golden and Veiga, 2005; Golden, 2006b), and work-family conflict (Golden *et al.*, 2006), and identified the extent of telework as a fundamental consideration in telework practice (Gajendran and Harrison, 2007), it remains poorly understood. As the extent of telework is a fundamental consideration for anyone exploring telework arrangements, including the potential teleworker, their co-workers, and their managers, understanding the potential impact of the extent to which telework is practiced promises to be a continuing vital concern.

As organizations become increasingly dispersed geographically yet functionally intertwined, telework and other forms of virtual work are apt to have important implications for the way organizations are structured, as well as for the formation

and sustainment of the organization's culture. While such virtual organizational forms are nascent and only at their early stage of evolution and development, a number of considerations are especially noteworthy. For example, should organizations refrain from hiring employees as virtual workers and instead require them to work in the office until they become acculturated? Arguments advocating this position revolve around the need to establish trust and interpersonal ties, which are more easily accomplished face to face, and the need to learn from and observe others so that routines and procedures can be successfully carried out (Guimaraes and Dallow, 1999). Alternatively, it may be that creating an effective training environment could avoid obstacles that might otherwise plague individuals who immediately become teleworkers upon their hire (Venkatesh and Speier, 2000). At the least, the acculturation and onboarding of new teleworking employees presents additional challenges for managers seeking to institute virtual work. Other challenges include modifying performance appraisal systems (Guimaraes and Dallow, 1999), providing networking opportunities (Cooper and Kurland, 2002), overcoming barriers that might otherwise build social or professional isolation (Golden *et al.*, 2008), and instituting conflict resolution strategies in the virtual environment (Faraj and Sproull, 2000). As these examples illustrate, researchers and practitioners have much to learn to ensure the successful implementation of telework. While the outlook appears bright, telework's growing popularity and importance within the business community demands that we understand its ramifications more completely so that informed managerial decisions can be made.

Given these successes and challenges for telework and its growth, how is telework apt to change in the coming decade? While predicting with certainty is always fraught with pitfalls, it seems likely that telework will continue to appeal to individuals and corporations seeking to harness its many benefits. These include the earlier noted advantages such as increased employee flexibility, work-family balance, and enhanced job satisfaction, as well as corporate cost savings, talent retention, and telework's contribution to "green" initiatives. The growth in telework is therefore likely to continue, aided by advances in technology that provide a greater ease in interacting with others while separated by geographic distance. What may be key though is the development and implementation of managerial techniques that facilitate remote supervision

and the appropriate relationship management between the teleworkers and others in the work context. While admittedly difficult to implement effectively, the refinement of appropriate managerial techniques, and the corresponding change in the corporate culture needed to support these new managerial styles, appears to be at the fulcrum for how quickly telework may continue to grow.

Managerial actions

What should managers do to ensure telework is successfully implemented in their organization? Traditional methods of coordinating and controlling employees are apt to work poorly and may even be dysfunctional in telework environments (Piskurich, 1998; Wiesenfeld *et al.*, 1999); therefore managers of telework need to take fresh approaches. Although in the limited space below it is not possible to provide a comprehensive proscriptive approach to ensuring successful implementation, some suggestions are offered in the hopes of helping managers avoid mere speculation as they begin virtual management.

First, managers need to shift their perspective so as to manage by objectives rather than oversight. Old paradigms driven by the desire to manage by walking around and seeing work done need to be discarded for new ones that stress accountability and dedication to agreed upon milestones.

Second, managers should institutionalize formal telework agreements, so that a set of shared and mutual expectations are developed and commonly understood by both the teleworker and manager, as well as other organizational members. This will help prevent misunderstandings and jealousy from developing. Being explicit about reporting procedures, means and methods to contact individuals, and conflict resolution procedures would help.

Third, managers need to incentivize desirable behaviors through redesigned compensation systems and policies. These can be modeled after senior executive compensation packages, whereby incentives linked to individual and unit performance drive behaviors.

Fourth, managers need to institute regular training and sensitization programs for all employees so that an appreciation for the perspectives of teleworkers and non-teleworkers alike can be fully grasped. Managers should pay attention to non-teleworking co-workers as well as the teleworkers, to ensure fairness perceptions and other organizational justice considerations are being fully addressed.

Fifth, managers need to take steps to avoid the social and professionally isolating impact of telework by institutionalizing regular face-to-face social and informal



activities. This will help build trust, camaraderie, and effective working relationships so that work tasks can be better accomplished.

Sixth and finally, managers need to be ready to be flexible, and to adapt as changing circumstances dictate. Managers must throw out the old managerial glasses, and replace them with new ones. As the old adage says, be ready to expect the unexpected.

Conclusion

Although far from comprehensive, this overview of telework is meant to help researchers and practitioners gain a better understanding of this rapidly emerging virtual work mode. Since the early days of telework carried out largely unaided by technology, telework has come a long way, as advances in computing and communication technologies have enabled greater ease in working from widely dispersed geographic locations. What seems clear is that telework is here to stay, and that its popularity is likely to continue. The increasing pervasiveness of technology in work organizations

and the acceptance of technology by expanding segments of the general population bode well for telework's continued growth. What is less clear is how to most effectively harness the technology while considering all its potential impacts and ramifications for the way in which individuals work together and how work needs to be accomplished. Managers need to remain keenly aware of how technology is changing the way work is carried out, and therefore, how they need to adapt the way in which they manage their organizations. While it is often too easy for each of us to become complacent in our comfort with existing technologies and their capabilities, management practices and corporate policies need to evolve to meet the ever-changing demands of modern work. Clearly, practitioners and researchers have more work to do to facilitate the successful implementation of telework and other technology-enabled work practices. Through continued research and practitioner discussions such as this, technology's true potential may be better harnessed.

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