1. Introduction

Technology is becoming increasingly sophisticated, with the speed of information exchange enabling many more options for how, when, and where work is conducted (Manoochehri and Pinkerton, 2003). Such changes have resulted in increasingly virtual organizations which are geographically distributed, electronically linked, and functionally/culturally diverse (DeSanctis and Monge, 1999). The impact of technology on individuals and organizations is widespread, and has resulted in the ability to do many jobs from anywhere at any time (Cascio and Shurygailo, 2003). One type of work arrangement that technological advancement has enabled is telework, which is the substitution of communication technology for work-related travel. The importance of studying telework is suggested by its increasing prevalence, its potential economic, environmental and social benefits, and the new set of advantages and challenges that such a work arrangement poses to both organizations and employees.

In an effort to grow the virtual workplace, this book analyses telework from an integrative perspective. An integrative view not only captures the phenomenon from societal, organizational and employee perspectives but also describes how these three levels interact with four identifiable constructs that compose telework. These constructs are derived by unbundling the process into the following four categories: impacts, tracking, implementation, and adoption. Utilizing both the current literature and results from our extensive telework case studies, we explore each of these categories using employee, organizational and societal levels of analysis.

DEFINING TELEWORK AND THE VIRTUAL WORKPLACE

The virtual workplace is a workplace unfettered by traditional limits of time and space, where employees can work from geographically dispersed areas, both within and outside standard business hours. Virtual work is largely synonymous with the concept of telework, and we use these terms interchangeably throughout this book.

Although research on teleworkers\(^1\) is increasing, there is not yet a single agreed-upon definition of telework. One suggested definition is that
telework entails working away from the office one or more days per week, using a computer and/or other communication technologies (Belanger, 1999). Another definition, suggested by a leading telework information website, is: ‘telework, often referred to as telecommuting, occurs when paid workers reduce their commute by carrying out all, or part of, their work away from their normal places of business, usually from home’ (InnoVisions, 2004).

For the purposes of this book, telework will be defined as ‘the substitution of communication technology for work-related travel, which may take place from home, a satellite office, a telework centre, or any other workstation outside of the main office’ (Illegems and Verbeke, 2003). Teleworkers are usually home-based, but may also work from the aforementioned locations (Potter, 2003). This kind of virtual work may range from occasional to full-time, and is typically done on a part-time basis (for example, one or two days per week). It excludes doing extra work, above and beyond a full-time work day, from home during the evenings or weekends. An employee’s telework arrangement may be formal (that is, the employer has a formal telework policy) or informal (that is, arranged on an informal or ad hoc basis with the employee’s supervisor).

Telework is often mistakenly treated as being ‘all or nothing’, thereby comparing teleworkers with non-teleworkers (that is, office workers). The belief that telework needs to be a full-time work arrangement is a common misconception. Many teleworkers remotely participate in their workplace on a part-time basis, spending the rest of their time at the office. This provides an effective balance between time in the office to collaborate with colleagues and attend meetings and time teleworking to complete more focused tasks that do not require face-to-face (FTF) contact. Therefore, telework should be conceived on a continuum ranging from occasional to full-time.

Our definition of telework includes ‘peak shifting’, in which the employee alters her commuting schedule to avoid peak traffic times, teleworking before or after going into the office. Thus, a part of the employee’s regular work is done from home in order to decrease commute time. Although this has been excluded from most definitions of telework, we believe it is an increasing phenomenon that warrants inclusion.

HOW PEOPLE TELEWORK

Teleworkers are able to work virtually by using various information and communication technologies (ICT). These include advanced information technologies such as e-mail, videoconferencing, teleconferencing, discussion
groups, chat rooms, project management software, collaborative design tools, knowledge management systems, and message boards. Along with these more advanced technologies, ICT includes less sophisticated but widely used communication technologies such as the telephone and fax machine (Bell and Kozlowski, 2002). Note that, on our definition of ‘telework’, such technologies need not involve continuous, online communications (Illegems and Verbeke, 2003).

RATIONALE FOR STUDYING TELEWORK

Telework’s employee, organizational, and societal-level impacts justify further study on this phenomenon. Telework affects multiple stakeholders, including the teleworkers themselves, their families, their organizations, various levels of government, and society at large (Illegems and Verbeke, 2003).

Figure 1.1 displays some of the many stakeholders that are influenced to varying degrees by telework. This is not an exhaustive list of all stakeholders, but identifies those frequently discussed in the literature. As shown in the figure, telework affects individuals (for example, employees and contract workers), small and large groups (for example, families, organizations, cities), and various levels of government. In this book we analyse the telework process from three broad perspectives: societal, organizational, and employee.

The virtual work arrangement has potential economic and non-economic cost savings and can increase efficiencies and productivity. At the same time, telework has potential negative impacts, and many challenges impede telework’s full potential. Further study will measure telework impacts and offer a guide to achieving the optimal benefits of this type of work arrangement.

Beyond the above rationale, the continuing increase of telework adoption highlights the importance of further study into this phenomenon. The Gartner Group predicts that by 2008 there will be over 100 million people worldwide who telework more than eight hours per month (Gartner, 2005). In Canada, approximately 1 million people teleworked at least eight hours per week in 2006, and 1.65 million at least eight hours per month (Gartner, 2005). In the US, the Department of Labor found in 2001 that 19.8 million persons did some work from home as part of their primary job (US Department of Labor, 2001), and by 2004 the Association for Advancing Work from Anywhere reported that 24.1 million US workers teleworked (from home) at least one day per month (ITAC, 2004). In Europe, there are around 20 million teleworkers (Gareis, 2002).
The growth of telework coincides with and is enabled by the growth of technology. Technology has been a major driver of telework, making it possible for many employees to do some or all of their work from outside of the office, typically from home. In particular, the Internet has played an important enabling role; a recent survey found that in 2003 6.7 million Canadian households had Internet access, a 5 per cent increase from 2002 (InnoVisions, 2004). Of these, 4.4 million, or 65 per cent, had a high-speed cable or telephone-line connection, up from 56 per cent a year earlier.

Another recent driver of telework is the increasing awareness and acceptance of such work arrangements. The US Employment Policy Foundation, a non-profit, public policy research and educational foundation based in Washington, DC, that focuses on workplace trends and policies, suggested that roughly 65 per cent of jobs are amenable to teleworking, at least on a

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part-time basis (EPF, 2001). At the same time, people seem to desire the flexibility that telework offers; for example, a survey of both New York and London commuters reported that 77 per cent of respondents would telework if their employer offered that option (Netilla Networks, 2004). The increasing rates of telework, the increased openness of employees toward it, and the many potential local and global impacts of its adoption provide a solid rationale for further study on this type of flexible work arrangement.

THE INTEGRATIVE VALUE PROPOSITION FOR TELEWORK

When we use the concept of value proposition, we mean a concise and specific description of the benefits (value) of a particular course of action to a target audience or stakeholder. For example, a value proposition might describe to a customer why one company’s services are superior to those of its competitors and should therefore be selected by the customer. In this particular case, there are three target audiences: employees, organizations and society at large. We talk about an integrative value proposition to make the point that, on the telework issue, the interests of the three stakeholders above are aligned. We therefore believe it would be a mistake to suggest a separate value proposition for each stakeholder.

Accordingly, we choose to formulate the single, unified, integrative value proposition as follows: employees, organizations and society alike should grow the virtual workplace, as the multiple, tangible benefits of telework for each of these three stakeholders greatly outweigh its costs.

The book unpacks, analyses and defends this integrative value proposition. We conclude that, if telework is implemented properly and where appropriate, then for each stakeholder the benefits of telework will greatly outweigh the costs. A few examples will suffice here to clarify our thesis that the interests of the three stakeholders are aligned.

Employees, especially highly skilled ones, usually value flexibility and autonomy when performing their jobs. However, they also care about their organizations’ costs and productivity, if for no other reason than to increase the likelihood of their continued employment. Furthermore, employees are often concerned about societal-level challenges such as the impact of business on air pollution and greenhouse gas (GHG) emissions, as they are also citizens affected by such impacts.

Organizations (meaning manager-owners or senior management representing the employer) know that employee recruitment and retention are key to their own survival and performance, and they realize that providing telework options can contribute to these organizational objectives.
However, they often also genuinely care about employee job flexibility and satisfaction per se. Furthermore, they realize that the organization’s environmental and social responsibility objectives can be served by telework. In this case, therefore, organizational objectives overlap to a large extent with societal objectives.

Societal decision-makers (such as politicians and public administrators) face challenges in the realms of competitiveness, community health and ecological footprint per capita. Often these decision-makers realize that performance at the national, regional or municipal level ultimately results from micro-level parameters, including organizational costs and productivity, as well as employee job flexibility and satisfaction, all of which can be served by increased telework adoption.

Thus, each of the three stakeholders not only derives net benefits from the practice of telework but also cares about the perspectives of – and outcomes for – the other two.

THE EOS INTEGRATIVE TELEWORK FRAMEWORK

The potential and realized impacts of telework suggest the need for a conceptual framework that offers an integrative and robust method for both analysing and conveying current information on the telework phenomenon. Thus, in this book we develop a conceptual framework that encompasses multiple components of the telework implementation process, while also analysing these from various perspectives. Borrowing from classic strategic management frameworks, we categorize the process into four broad constructs: telework adoption, implementation, tracking and impacts. Figure 1.2 incorporates these constructs into a generalized strategic management process framework (note that the strategic management constructs are included in parentheses).

In the traditional model, the telework adoption construct centres on the decision to adopt or not adopt telework with particular attention paid to the characteristics that predict the direction of this decision. In classical strategic process models, the adoption (strategy formulation) construct is influenced by goals, internal resources, and the external environment.

The telework implementation construct revolves around the activities that move the decision to adopt telework to a realized process. Implementation, by its very nature, is usually process driven and often suggests operational or functional protocols to achieve the successful realization of a strategic choice.

The telework tracking construct centres on the process of capturing, analysing and providing feedback on the consequences or impacts stemming
Telework tracking (measurement/feedback) → Telework adoption (strategy formation) → Telework implementation (strategy implementation) → Telework impacts (performance)

**Figure 1.2 Traditional telework strategic management model**

From telework adoption and implementation. As depicted in Figure 1.2, there is a feedback loop in the model. All the constructs are linked together through this loop by the telework tracking construct. Thus, telework tracking acts as the linchpin for the telework process model, providing bidirectional connections between telework adoption, implementation and impacts. While often neglected by academia and practitioners alike, tracking is integral to telework adoption and implementation as it provides a mechanism for ongoing feedback to the various stakeholders. Tracking is also critical in providing an objective measure of impacts or consequences. Telework impacts do not directly come from telework tracking, but the ability to quantify such impacts through tracking may influence subsequent telework adoption and implementation, thus further influencing telework impacts.

The impact construct, much like the performance variable in strategic management models, captures the consequences of increases or decreases in telework adoption, as well as the effectiveness of the telework implementation.

While the above traditional model adequately captures the constructs involved in the telework process, an attempt to grow the virtual workplace requires a new model with a different focus. In the traditional model described above, telework impact is the final objective or dependent measure in the telework process. It is our contention, however, that to grow
the virtual workplace the traditional model must be inverted in order to shift the focus toward increasing telework adoption. Thus, represented linearly, the old model took the form:

**Adoption → Implementation → Tracking → Impact**

The new model, however, shifts the focus to growing the virtual workplace and focuses on the influence that each construct has on increasing or decreasing telework adoption. Thus, represented linearly the new model takes the form:

**Impact → Tracking → Implementation → Adoption**

While the newly conceived framework shifts the focus to the growth of the virtual workplace, we also contend that a truly integrative framework must also incorporate the perspectives of key telework stakeholders. As previously described, these stakeholders can be categorized into three broad groups or levels: employee, organizational, and societal. Incorporating these three stakeholders and the four constructs from the telework process framework produces the EOS integrative telework framework, depicted graphically in Figure 1.3.

The EOS integrative framework places telework adoption at the centre of the figure with subsequent concentric rings representing each of the other constructs. Telework adoption is the central ring not only because it is the focus of the new framework (used to grow the virtual workplace) but also because it is the decision (to telework or not to telework) that ripples out through implementation, tracking, and ultimately telework impacts.

While telework adoption is the centre of the EOS integrative framework, the framework is unified: each ring or construct relies on and influences the other rings or constructs within the framework. Finally, the integrative telework framework includes employee, organizational, and societal perspectives. As depicted in Figure 1.3, these three perspectives intersect all four constructs of the telework process, indicating that each construct can be viewed from each stakeholder perspective. The three perspectives are also given equal weighting in the integrative framework, as each perspective interacts with, affects, and relies on the other two stakeholder perspectives.

**OVERVIEW OF THE BOOK**

While the EOS integrative telework framework provides a holistic view of the telework phenomenon, it also provides a mechanism to unbundle
telework research into a number of manageable categories. Essentially the framework’s three stakeholder levels and four process constructs produce a $3 \times 4$ matrix (12 components) into which telework research can be organized. The framework matrix is displayed in Table 1.1, which indicates the chapter in this book that covers each topic.

As depicted in the table, this book is divided into four parts that align with the four constructs from the telework process model. Following the EOS integrative framework, the first part of the book focuses on telework impacts from the three stakeholder perspectives. Thus, in Chapter 2 we review the impacts of telework from the employee’s perspective by grouping positive, negative, and neutral impacts into the following five categories: telework’s impacts on (1) the organization, (2) operations, (3) organizational efficiency, (4) external stakeholders and (5) other aspects of employees’ lives.

In Chapter 3 we review the organizational level telework impacts and group these impacts into the following four categories: impacts on (1) strategic human resource (HR) issues, (2) operational HR issues, (3) organizational efficiency, and (4) external stakeholders. Finally, in Chapter 4 we explore societal-level telework impacts. These impacts largely come from
telework-induced commute reductions, which can in turn influence air pollution, road congestion, noise pollution, road accidents, energy consumption, road maintenance, new road construction and usage of mass transit. Beyond commute trip reductions, cities and regions are also affected by non-commute-related telework impacts such as economic impacts, new job opportunities, community development and safety, environmental impacts beyond emission reductions, and operational continuity.

Part II of the book transitions from telework impacts to telework tracking. In this part we note that, while often neglected, the tracking of this workplace trend is integral to telework adoption and implementation as it provides a mechanism for ongoing feedback to the teleworker, the organization, and government policymakers. Essentially we argue that one cannot quantify these impacts or grow the virtual workplace without a mechanism for tracking and measuring telework adoption. Although there are many tracking options at the employee, organizational, and societal levels, they are rarely used. In Chapters 5 and 6 we review a number of telework tracking options for employees and organizations, respectively. For illustrative purposes we then provide a more detailed description of the Teletrips tracking tool. In Chapter 7 we provide societal-level tools, in the form of economic models and standard coefficients, to assist in quantifying telework penetration and the associated spillover effects.

In Part III of this book we turn our focus to telework implementation. We note that the discussion surrounding implementation becomes progressively more complex as one moves from the employee level to the organizational level and finally to the societal perspective. Thus, Chapter 8 of this book reviews basic employee-level guidelines. These fall into the categories of self-assessment, home office design, and telework policies and procedures (for example, time management, work/life balance, communication and socialization). In Chapter 9, the discussion shifts to organizational

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implementation of telework. Implementation procedures at this level fall within the categories of telework job selection, telework employee selection, the design of the telework program, evaluation concerns, and the management of virtual teams.

In Chapter 10 we cover telework implementation at the societal level, which is highly complex owing to the numerous stakeholders, objectives, and intervening variables inherent to this level of analysis. In this chapter we equate much of societal telework implementation with public policy, and within the telework context we review the influence of the following six policies: moral support, disseminating information, leading by example, supporting enabling infrastructure, regulations and tax codes, and incentives and disincentives.

The final part of this book, Part IV, focuses on the telework adoption decision that lies at the core of the telework process. At the employee and organizational levels we rely heavily on our primary data (employee and organization survey results) to explore the telework adoption decision. In Chapter 11 we analyse our employee-level data, which suggest that employees with more ‘experience’ (be it age, organization tenure, or work experience) or more children at home are more likely to adopt telework. Telework adopters also rated potential telework impacts significantly higher (more positive) than non-telework adopters. Not surprisingly, one of the most salient predictors of employee telework adoption was support for telework from the employee’s organization.

Acknowledging that organizational perceptions of telework greatly influence employee-level adoption decisions, we turn our attention to the organizational telework adoption decision in Chapter 12. At the organizational level strategic HR factors were perceived as the most positive telework impact, while operational HR issues were the most negatively rated impacts. This suggests that managers believe that, while telework may have positive impacts on retaining, developing and attracting employees, it makes the operational functioning of employees less effective.

Finally, in Chapter 13 we turn our attention to societal-level telework adoption, which is simply the aggregation of the data from all of a society’s teleworkers and organizations engaged in telework. These adoption rates vary across cultures and countries. At the societal level we also offer our analysis of the future of telework, including the saturation point and future drivers of growing the virtual workplace. We believe that, with advances in ICT, the virtual workplace will continue to grow, and we forecast an increasing societal awareness and acceptance of telework. In this chapter we also identify five significant factors that will continue to encourage future virtual workplace growth. We categorize these into the five ‘C’s of climate change mitigation, continuity planning, congestion avoidance,
competing for employees, and communication advances. We conclude Chapter 13, and the book, with a summary of the overall findings from the four parts of the book, particularly focusing on the relationship between these findings and growing the virtual workplace.

**READERSHIP OF THIS BOOK**

This book will be of interest to several groups either directly or indirectly impacted by telework. While we build an integrative framework that will be of interest in its entirety to most audiences, the organization of the book around the components of the EOS integrative framework allows for quick reference to chapters of particular interest to different stakeholders. These include:

1. Senior and mid-level managers/HR managers of small to large organizations in both the private and public sectors who may currently have teleworkers or be considering telework as an option. In particular, these managers will be interested in the organizational perspective on telework as outlined in Chapters 3, 6, 9 and 12.
2. Employees of small to large, public or private organizations who currently telework or may be considering telework as an option. Employees will be particularly interested in the analysis from the employee's perspective found in Chapters 2, 5, 8 and 11.
3. Policymakers such as mayors, city councillors and municipal administrators who may be interested in assessing telework’s impacts (as telework may influence regional development policy, transport policy, environmental policy, urban planning policy and labour policy (Huws et al., 1999)). These policymakers will find the chapters from the societal perspective (4, 7, 10 and 13) most applicable to their interests.
4. Academic experts on telecommuting and the virtual workplace, such as transport economists and management scholars. This audience will be particularly interested in the societal-level telework tracking templates overviewed in Chapter 7 and the primary data analysis of employee- and organizational-level telework adoption found in Chapters 11 and 12.

**NOTE**

1. Teleworkers are also referred to as ‘telecommuters’ in the literature. ‘Telecommuter’ refers specifically to substituting only the daily commute to and from work, whereas ‘telework’ is a broader term encompassing the substitution of communication technology for any work-related travel (Illegems and Verbeke, 2003).