TELECOMMUTING: CURRENT STATUS, FUTURE DIRECTION

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ABSTRACT

Telecommuting is a method of work which substitutes telecommunications and technology for the daily journey to, and home from work. Instead of travelling to a central workplace telecommuters work from home or a specially established centre close to their home. The incidence of telecommuting is increasing throughout the world. An extensive search for information on the telecommuting phenomenon reveals that most developed countries in the world have some level of participation in telecommuting. The United States of America certainly leads the way in terms of the numbers of participation and especially the information available.

Information on the Australian situation has been difficult to find. It would appear that not many organizations have formal plans or policies regarding telecommuting. Much of the information available for the Australian situation is concerned with the Rural Telecentres programme that whilst not strictly developed for the purposes of telecommuting does provide facilities which can be used by organizations and telecommuters.

Based on the reports available telecommuting is a popular choice for many workers. Telecommuters report benefits associated with lifestyle choices and increased work productivity due to lowered stress levels and choices about working hours. Telecommuting has also associated problems for telecommuters varying from being able to set aside a suitably equipped environment at home to concerns about isolation and missed career opportunities.

For organizations the benefits also are many including increased productivity, cost savings and worker satisfaction. The problems facing organizations need careful planning to overcome. Organizations have to deal with managerial issues, potential problems associated with insurance and legal exposure, and security concerns. Organizations need to establish formal policy regarding telecommuting in order to address these concerns.

Telecommuting has the potential to impact on travel and transport habits and infrastructures. It has the potential to impact positively on the environment by reducing vehicle emissions. Telecommuting, by making work location independent has the potential to affect suburban and rural communities.

Issues associated with telecommuting need to be further researched in order to have the information to plan and manage this phenomenon effectively. There is difficulty obtaining information on the Australian experience, even though Australia would be ideally suited due to its geographical isolation to take advantage of the possible benefits.

INTRODUCTION

The concept of working from home is not new. Prior to the industrial revolution in England the economy was based largely on home-based or 'cottage' industries. It was the advent of the industrial revolution with its associated advances which brought people into the cities and factories. Recently however there has been renewed interest in a phenomenon called 'telecommuting'. The terms 'teleworking' and 'virtual office/workers' have also been used to describe this concept, of people performing work in a location other than the recognised 'office'.

There is an implied association with the terms 'teleworking' and 'telecommuting' between the work performed and the reliance on telecommunications technology. This is the most significant manifestation of recent times. The cost of enabling technology has dropped dramatically. Consequently there is cheaper and easier access to such items as Personal Computers and modems. Not only have these tools become cheaper but their capabilities have increased markedly. By way of an example, those needing to dial into main computers or office networks from home, over normal phone lines and using high speed modems may no longer experience noticeable delays therefore making work from remote locations much more effective. There is an even greater ability once the remote user has access to more advanced telecommunications links such as ISDN lines. These types of lines make such facilities as video conferencing feasible and whilst still quite expensive in Australia access to them is becoming more widespread.

Telecommuting in recent times is different and brings with it a different set of problems and advantages. It appeals to workers and organizations for differing

reasons. Workers enjoy the benefits to lifestyle through more flexibility, less travel and most report increased productivity. Most telecommuting currently is performed from the home on a part time basis, which undoubtedly contributes to the major problems which telecommuters report. The experience of loneliness and isolation from fellow workers is a commonly reported problem, as is the fear about low visibility affecting their career paths and promotional opportunities.

The benefits from telecommuting available to organizations include savings on office space, equipment, and energy costs. In terms of their staff, organizations may find their potential pool of workers expanded by offering telecommuting as a work option. Organizations may find that they can retain staff who would otherwise choose to leave or relocate due to family or personal reasons. Possibly one of the most attractive reasons encouraging organizations to adopt telecommuting is the possibility of increased productivity from their telecommuting staff. However, organizations must address management, security and legal issues before a telecommuting programme can be seen to be successful. A negative management attitude can be one of the strongest barriers to the adoption of telecommuting within an organizations. To thoroughly prepare and manage a telecommuting plan takes much commitment, cost and time. Organizations which allow telecommuting on an *informal* basis, whilst being quite common, are potentially exposing themselves to some legal and insurance risk, and not addressing the aforementioned organizational concerns.

Telecommuting as a travel option promises potential benefits on a scale which surpasses the interests of individuals or companies. If telecommuting were to

become more widespread this phenomenon has the potential to impact on traffic congestion, air quality, development of urban and rural communities and reduction in energy consumption which has wider affects on the environment. Many of these gains are either in dispute, such as air quality effects and energy reduction. All these potential gains, especially rural revitalization, need careful planning and management to achieve.

Telecommuting becomes a transport strategy taken up by departments such as the Roads and Traffic Authority (RTA) in NSW Australia, or it may become a method by which governments cooperate with local communities and private organizations such as the Telecentres or Telecottages programmes in the United Kingdom and Australia. Governments may provide incentives, such as the programmes in Hawaii in the United States for companies by way of tax incentives, or impose penalties for companies who don't have suitable strategies for minimizing the impacts of commuter traffic such as the Federal Clean Air Act in the United States.

Telecommuting is widespread throughout the world. There are telecommuting conventions, publications, associations, governments discussing the potential benefits and problems, offering strategies and advice, and trying to assess the numbers of current telecommuters and predict future trends. Due to differing definitions and different levels of government and formalized organizational participation however, it is difficult to assess the actual numbers and make accurate conclusions into the future. One organization, Link Resources of New York, often quoted in the literature, regularly surveys the number of telecommuters in

the United States. The figures for 1994 show that 7.6 million people were telecommuting at that time in the United States and that the number is growing by 15% per year (Hecquet M., 1994). Telecommuting in Europe and the United Kingdom has varying degrees of participation. 1993 figures place the incidence of telecommuting in the United Kingdom between 300,000 and 1.5 million. (Meall L., 1993). An estimate of the number of teleworkers in the Netherlands in 1994 was around 4% of the workforce, Germany was 4.9%, and Sweden had 20% of the workforce engaging in some sort of teleworking.(European Industrial Relations Review, May 1996). As in the United States it is expected that the practice of teleworking will increase in the United Kingdom and Europe.

It is difficult to establish a true picture of the status of telecommuting in Australia. This is partly because, Anne Evans(1993) suggests that much of it occurs on an 'informal' basis. It is known however that there is a healthy telecentres programme operating in Australia.

" In 1992 the Department of Primary Industries and Energy commenced the Telecentres Program which aimed to assist rural and remote communities to establish and operate community facilities where all people could gain easy public access to computers and information technology for education training and enterprise purposes. In the four years since the Program commenced 43 groups have received funding and operate some 80 telecentre sites around Australia. State and private organizations have also funded similar facilities.

In total, some 117 sites are now in operation or under development"(Crellin I.,
1996)

These telecentres are not specifically for telecommuting in terms of the

definition used in this paper. They fundamentally provide access to services

which would otherwise not be available. As well as office facilities they provide

suitable facilities for training and some universities use them as part of their

distance education programmes. Some are available for contract work for

companies based in the capital cities. In 1994, in Australia, The Public Sector

and Broadcasting Union (PSU) won a decision from the Industrial Relations

Commission which set forth the terms under which PSU members and their

employers can set up telecommuting arrangements. This is quite a milestone in

terms of the acceptance of telecommuting in Australia. One of the most

thorough investigations into telecommuting in Australia was conducted by the

Roads and Traffic Authority in Sydney, in 1993. Many of the findings of this

programme are discussed later in this paper.

In order to construct a suitable framework for a discussion on telecommuting a

useful definition needs to be established. The following section establishes a

definition and discusses some of the manifestations of telecommuting.

Following the definition is a discussion on the potential and reported benefits

and problems associated with telecommuting. These benefits and problems are

discussed from and individual then organizational perspective. Firstly the

benefits for and the problems that may be encountered by the telecommuters are

discussed. Next are the benefits and problems encountered by organizations

when they allow or actively encourage telecommuting. Lastly there is

discussion on the potential benefits and problems for the environment and

communities as a result of telecommuting.

Much of the literature suggests ways to address the potential problems.

Telecommuting from a telecentre is one way, for example, of addressing loneliness

and isolation which may be experienced by an individual telecommuter, however the

establishment cost to the organization may be greater than a programme which

encourages home based telecommuting. Generally, the discussions in this paper

relate predominantly to this manifestation of telecommuting.

Finally there will be conclusions about the issues raised within the paper. In the

interest of providing balance to the information papers were sought which

concentrated on the more negative factors associated with telecommuting. These

papers were in much shorter supply than those advocating the adoption of

telecommuting. The overwhelming view within the literature is that telecommuting

is a good thing and that the issues and problems that arise should not be barriers to

its adoption, instead, solutions should be found so that the benefits can be fully

realised.

DEFINITION
In determining a definition for 'telecommuting' it is hard to go past that given

by Jack Nilles for its broadness and clarity. Whilst in much of the literature

'telecommuting' and 'teleworking' appear to be interchangeable Nilles makes a clear distinction between the two terms.

"In general, teleworking is the substitution of telecommunications technology for work related travel." (Nilles, J., 1991)

and

"Telecommuting, a subset of teleworking, is the partial or total substitution of telecommunications and/or computer technology for the daily commute to and from work" (Nilles,J.,1991)

The definition which will be used is that of telecommuting as this refers more specifically to a change in behaviour associated with a daily work routine. Whilst teleworking is a broader term it is the telecommuting phenomenon to which most of the discussion in this paper refers. There are in fact some positions and occupations where the only 'telework' possible would be that which substitutes the daily travel to and from work, where work-related travel is just those daily trips.

Bob Steve takes Nilles definition and then places additional explanation:

"Telecommuting is the partial or total substitution of telecommunications technology for the traditional trip to and from the primary workplace, along with necessary changes in policy, organization, management and work structure." (Steve B.,1996)

The above definition alludes to the types of organizational changes that may be required to embrace telecommuting as a work option. This perhaps is more useful than attempting to delineate the types of work that may be suitable for telecommuting. It could be argued that there are a wide range of tasks available for telecommuting, but that some are prohibited due to the organizational or management constraints, rather than the nature of the tasks themselves.

In a pilot project conducted by the California State Department of General Services all types of employees successfully participated from clerical workers to lawyers.(Solomon and Templer, 1993). It has been argued that for some tasks all that is really needed in the way of technology is a home telephone. For many jobs, whether they are jobs normally associated with high technology or not, much of the individual tasks associated with those positions could be done from home or another location away from the primary workplace.

The location from which a worker may telecommute is not described in either of the two previously stated definitions. Nilles states that there are two forms of telecommuting, working from home or at regional office close to home. (Nilles J., 1991).

In some places specific telecommuting centres have been established.

Mokhtarian further divides these centres into *"single employer satellite work centres"* and *"multiple-employer neighbourhood work centres"* (Mokhtarian P. , 1994). These offices have been established either by the one employer or a cooperation between employers to house telecommuters. There are varying reasons for the establishment of these offices but one would be to simulate the normal work environment whilst still overcoming the long daily trips required to the primary office.

Other countries have embraced the non home based concept of telecommuting. Mokhtarian describes the Japanese experience where she suggests that for cultural and physical reasons most telecommuting is from telecommuting centres, unlike the United States where most telecommuting is conducted from home. (Mokhtarian P., 1994).

In the United Kingdom and Europe telecommuting centres have been given the title of 'telecottages'. A telecottage is described by an article in Management Today as:

".. a centre where teleworkers, community groups, individuals and small businesses can use advanced computing and communications technology" (Management Today, 1995).

These cottages provide facilities such as personal computers, photocopiers, laser scanners, PABX, high-quality printers and some have video conferencing

capability. Most of these cottages have not been set up by single or a

cooperative of employers, but with government and community funding. It is

expected that more will develop by private companies for the housing of their

employees. These telecottages have been especially popular in geographically

remote areas such as the highlands of Scotland.

In 1993 the RTA in Sydney Australia conducted a pilot project into

teleworking. This project enabled some employees to work from home instead

of travelling to their normal place of work for some of the working week.

Participation was on a voluntary basis however the final candidates had to meet

certain selection criteria.

For the purposes of their Pilot Project in Teleworking the RTA report defines

teleworking as

".. a flexible work opportunity to work for part of the time at a location away

from the usual work base. This location may be at home, at a satellite office

near home (such as motor registry) , a mobile office (such as a survey vehicle),

or a combination of these alternatives. " (RTA, 1995)

This definition describes the alternative locations available for teleworkers in the

RTA project. This definition mentions the mobile office which for the RTA has

a particular meaning in that there are specific survey vehicles. However the

mobile office may be available as an alternative workplace for other occupations

as well. If the mobile office is the primary workplace then it doesn't fit in with the 'telecommuting' definition in that it is not replacing the daily commute to work.

Few descriptions of telecommuting describe specifically the technology required. A telephone at least seems to be a necessity. In addition it would seem appropriate to have some computer technology - a personal computer and a modem. Other useful facilities include faxes and printers although many modems and software have fax capabilities. Software made available may include e-mail and groupware facilities to aid communication as well as whatever requirements are necessary for the tasks themselves.

"At its most basic, one might even say that a telecommuter needs only a few items such as paper, pencil and telephone." (Dickisson, K., 1997)

The key elements in this paper for determining a workable definition is reference to the daily travel a worker engages in to and from work and the use of some telecommunications facility. There are other manifestations of telecommuting to which reference is made such as the mobile office, and telecentres which are not strictly used for work but provide facilities to a community. The focus is on telecommuting, a work option to which replaces daily commuting, on a full or part time basis.

BENEFITS AND PROBLEMS

The potential and reported benefits and problems from telecommuting can be divided into three areas. Firstly are the benefits which individual telecommuters can enjoy and the problems they may encounter. Secondly are the potential benefits to the organizations where telecommuting is encouraged and the associated organizational problems and issues which need to be addressed. Thirdly, there are potential benefits to the environment

BENEFITS FOR TELECOMMUTERS

Reduction in Travel Distance/Time

The most immediate benefit to telecommuters is the fact that the distance they have to travel on days when they are telecommuting is vastly reduced. This distance may be to a nearby office or in the case of home-based work no distance at all. Most telecommuters welcome the respite from travelling, especially during peak hours.

If work can be done from home then it can save much unproductive time. In addition, depending on the mode of travel, there is the reduction in stress related to dealing with traffic, overcrowded trains and buses and unreliable transport connections. If there are no variables outside the workers control such as traffic delays or late running trains and buses, then there can be the satisfaction of starting work on schedule and in a relaxed frame of mind.

Some key findings of the RTA Pilot Study into teleworking showed that travel

time on teleworking days was reduced by up to two hours and car travel was

reduced by at least 30km.

There were associated benefits with this reduction in travel reported in the

study.

".. the majority of teleworkers reported decreased stress levels due to the

change in travel patterns on teleworking days"(RTA, 1995).

Cost Savings

In addition to this reduction it was reported that there was an average cost

saving of $8.20 a day(RTA, 1995). Aside from the cost of the travel itself there

is the potential to save money on food and wardrobe. Anne Evans mentions the

items of clothing, footwear and meals purchased outside the home. (Evans A.,

1993). There may be savings on parking and petrol.(Turban and Wang, 1995).

Whilst these cost savings may indeed be valid, the ability to realise benefits in

this area is dependent on the requirements of the position and the

telecommuter's habits.

Flexibility

A key feature of telecommuting is the flexibility and working choices it offers

which impacts positively on the worker's lifestyle. Humble and her co-authors

summarise this important aspect well:-

"Telecommuters often report benefiting from telecommuting because it

facilitates combining work with another valued goal".(Humble et al., 1995).

This other goal may be child care related, may be related to care of a sick or

needy relative, or it may be related to personal fulfillment such as study or

fitness objectives. It is important to stress that telecommuting enables the

flexibility to progress towards these goals by reducing the conflict between

work and attaining them. It is hardly likely that a telecommuter could take care

of a child and work effectively, however being close to them whilst ill or being

available to attend school functions, is a product of the worker being at home

during working hours, rather than a long, travelling distance away.

A direct result of the flexibility that can be afforded through telecommuting is

the ability to work outside 'normal' working hours. Teleworkers during the

RTA pilot study reported that they made better use of "productive" or

"creative" times of the day (RTA,1995). If a telecommuter requires part of the

'normal' working day to fulfill other obligations then this time can be made up

during other hours. Some telecommuters find that they may put in longer hours

because their work place is so accessible, working 'normal ' hours and then

extra hours.

It has been suggested that flexibility in working hours assists those leaving and

returning to the workforce. It may assist those easing into retirement and aid

those returning from illness or maternity related leave. A large company in

Sydney, as part of its work policy, only allows telecommuting on a temporary

basis when it is difficult for the employee to attend the normal work location.

When the circumstances which required the worker to work from home are

changed the employee is expected to resume work at the normal location. Most

workers avail themselves of this opportunity when they are recovering from an

illness or an operation.

Home Environment

Those telecommuters who work from home cite the benefits of the home

environment. There is mention of fewer distractions at home. Hecquet quotes

a telecommuter who describes how her focus on work has improved. Factors

extraneous to work, such as choosing a lunch companion, do not impinge on

her time and concentration whilst at home.(Hecquet M., 1994). Telecommuters

can potentially avoid the non-work related distractions, and the general hubbub

of ringing phones and loud discussions, that may be prevalent in the office

environment. The home environment is one that they can control and this may

be of special benefit to workers with other requirements or medical needs.

People with allergies and smokers are two examples given.(Humble et al ,

1995). Overall, workers may feel that their home is the most salubrious

environment in which to spend their working hours.

"Teleworkers felt less stressed and healthier because their diet improved, they

were away from air conditioning, and they were able to spend more time with

their families"(RTA, 1995).

Productivity

It would be expected that these benefits would impact positively on work performed. The literature on telecommuting is littered with reported productivity gains. Hecquet mentions studies that show 16% increase in productivity (Hecquet M., 1994). Humble suggests that the average gain is approximately 30%.(Humble J. et al.., 1995). Turban and Wang suggest that there is little empirical evidence to support claims of productivity increases but cite two studies where gains of 15% and 30% were reported.(Turban and Wang,1995)

As well as reporting productivity gains, workers in the RTA study

"..felt a greater sense of achievement in being able to complete work assignments.." (RTA, 1995).

Here again there were no empirical measurements, the findings were concluded from attitudinal surveys. The report makes this explanation

"The positive outcome of the project in terms of productivity was due largely to the positive attitudes of teleworkers and supervisors to their work and to the level of trust between them and their staff." (RTA, 1995)

It may be less important to identify an actual figure on productivity than to recognise that by reporting these gains telecommuters and in the case of the RTA their supervisors are endorsing telecommuting as a work option. It affects

the way they view their work and themselves in a positive way, and some are surprised to find that not only do they work better but they also work longer hours.

Productivity gains, perceived or measured have the potential to greatly enhance the teleworker's sense of achievement. There is a more obvious element of trust and commitment than with workers in the office environment. If telecommuters respond in a positive manner it has the potential to improve their work satisfaction and self-esteem.

Whilst generally those who have experienced telecommuting have found it a worthwhile experience both in terms of work achieved and its impact on their lifestyle, there are corresponding problems for almost every benefit mentioned.

PROBLEMS FOR TELECOMMUTERS

Home Environment

For many other telecommuters the home environment may not be a suitable workplace. It may be difficult to designate an area of the home for work for many reasons. These reasons may include, lack of space, lack of suitable lighting, exposure to traffic or outside distractions. Even if the home has enough space there may be a requirement for extra equipment. Equipment that may be required could include an additional telephone line, fax machine, personal computer and printer, suitable desks and chairs. There may be problems related to ventilation, cooling and heating which during the course of

normal living are quite acceptable but when confined to a single space, working for long hours are not suitable.

An interesting problem that Mokhtarian describes in Japanese society involves the traditional roles of married partners. This creates a problem in that it is difficult for the male partner to work from home if the female is not in the workforce, as the home is her domain.(Mokhtarian, P.and Sato,K., 1994). These traditional roles are probably less prevalent in the United States and Australia. Mokhtarian cites figures that show over 59% of married women participate in the labour force in the United States.(Mokhtarian, P.and Sato,K., 1994).

Casting aside cultural and social considerations it just may not be practical for a location equipped for domesticity to provide for the dual purposes of a home and an office.

Whilst many telecommuters say that they can escape distractions by working from home, for others the number of distractions may actually increase at home. There may be neighbourhood and family distractions which can not be ignored. It may require reorganization of the family schedule to enable the telecommuter distraction free time to work. Even with the best of intentions and organization it may become easier for the telecommuter to return to the office environment where the work itself is not 'out of place'.

Working from home has the potential to change the worker's experience of the home environment. When work is continued at home it may not feel like a haven from work rather an extension of the stress and problems associated with the office.

"Perhaps the worst effect of teleworking is the feeling that your home is no longer your own".(SPRU 1994).

A related problem with working at home is the potential for over work. The increased inability to 'switch off' may compound the feeling that work is intruding on and distorting family life. Some home based telecommuters may require the self discipline to start work at regular hours and tune out distractions, whilst others may require the discipline to know when to stop.

Alienation/Isolation

Probably the most often cited problem with telecommuting is the potential to feel isolated. There are many aspects to this. Firstly is the issue of social interaction. For many the phone, fax or email is not enough to fulfill their need for social discourse. The interaction with colleagues may form a major part of their job satisfaction which is missing if they are telecommuting.

The other most important aspect of this problem is the professional needs of the telecommuter to receive adequate feedback from work completed. It may be difficult to feel confident that the work they are doing is being recognised and appreciated if there is not regular face to face acknowledgment. Isolated from

a busy office, telecommuters may feel that phone calls or emails are getting ignored for reasons related to the quality of their work or personal reasons rather than the myriad other issues that may be currently occupying the time of their supervisors and colleagues.

Telecommuters who form a part of a team may find it difficult to feel truly a team member if their major form of communication with members is via electronic means. Equally if the rest of the team is located in the office it may be hard for them to embrace a member at a remote location. Resentment from non-telecommuting team members was a finding of the RTA pilot study.(RTA, 1995).

Telecommuters report that they feel isolated in terms of career advancement, too easily overlooked for promotion, because of their lack of physical presence in the office. Telecommuters may have to be better communicators than their non-telecommuting counterparts in order to compensate. They have to express their personality and skill via the phone and by using email more often than their non-telecommuting counterparts. They may have to initiate communication rather than wait for response, and ensure that their time in the office is utilised effectively. .

There is some evidence that the experience of telecommuting - in particular when that work is home-based - is different for different types of workers, and for men and women. One of the most positive aspects of telecommuting is increased autonomy, the ability to control working hours and methods of work,

and increased reliance on own problem solving skills. Studies have been cited which illustrate that professionals gain more autonomy when they telework, whilst other workers such as clerks experience tighter controls from management(Wellman et al. , 1996).

There is argument that for some workers telecommuting may have an exploitative effect. Some telecommuters feel additional pressure working at home

"..it is self-employed workers in low-paid, highly competitive fields like typing and telesales, who are under the most pressure"(S.P.R.U., 1994).

The experience of telecommuting has been shown to be different for men and women. There is argument that

"Telework reinforces the gendered division of household labor because women teleworkers do more family care and household work. "(Wellman et al. 1996).

This is to suggest that women benefit from the flexibility that telework provides in allowing the combination of their multiplicity of duties more readily, yet confirms the responsibility by not removing them from the home.

"One of the clearest messages is that teleworking is not necessarily a liberating factor for women"(S.P.R.U., 1994).

Access to Resources

Telecommuters working from home not only need appropriate furniture and office space, depending on the nature of the tasks they perform, they may require other facilities. Some frustrations that telecommuters may experience may be due to a lack of support facilities. They may find it difficult to function without the use of a photo copier or fax machine. Rohde states that there is a tendency for telecommuters to incur additional fax and copying charges which are then passed on to the company by way of additional expenses.(Rohde D., 1996) Smaller items of stationery which are readily available in the office may require a trip to the shop, or a wait until they are next in the office. Telecommuters may require information from non-telecommuting colleagues who are sympathetic to their situation. Anything that may have to be physically delivered to a third party may require the enlistment of assistance from someone in the office.

Not everything that happens within the office is accessible via electronic means. There may be items of information deemed too sensitive to be transmitted via e-mail or over the phone. Telecommuters need to feel secure that they are not outside the communication loop and any information of importance reaches them just as if they were in the office. In addition to important information, there may be those items of gossip or social interaction which happen spontaneously. Whilst not important directly to the functioning of the office, these pieces of social discourse may form the thread which helps to hold together members of the company.

There may be other physical items which need to be delivered to someone in the

office or sent to the telecommuter at home. A telecommuter may feel

uncomfortable asking a colleague to run an errand for them and a non

telecommuting colleague may feel resentment if asked to assist a telecommuter

who can't physically perform the task.

BENEFITS FOR ORGANIZATIONS

The incidence of telecommuting is increasing. Maureen Minehan (1996) quotes

a 1996 study that shows the 62 per cent of North American companies

encourage telecommuting. This compares to 49 percent in 1995 and 39 per

cent in 1994. Whilst North America leads the way, telecommuting is increasing

throughout the world. Organizations are obviously realising the potential

benefits for introducing telecommuting programmes.

Office Space / Real Estate savings

The cost savings on office space by an organization is one of the tangible

benefits of telecommuting which can be realised and measured. there are

reported savings in real estate leasing cost : $10 million a year for AT&T, 30

percent by the Bank of Montreal, 15-20 percent by Dun and Bradstreet(Turban

and Wang, 1994). It is conceivable that in order to realise true savings there

would have to be a critical number of telecommuters within the organization. It

is unlikely there are going to be huge savings with one or two employees

telecommuting on a part time basis. It is possible to use telecommuting as a

strategy, or a temporary alternative, when expansion is required, or to deal with a current shortage of available office space.

In Australia the Business faculty of The University of Technology Sydney, is considering telecommuting as a work option to deal with restricted office space. All issues are being carefully considered including willingness of employees, management issues, legal and insurance concerns. However if introduced it is to directly address an office space shortage.

There are potential savings to be realised on the associated services of an office. These may include parking for cars, cleaning, lighting and heating.(Evans A., 1993). These savings on costs would be one of the most compelling arguments for an organization to contemplate a telecommuting programme.

Productivity Gains.

There is difficulty in gathering empirical evidence of productivity gains by telecommuting employees, however the perception is overwhelming that there are significant gains in this area. The increase in productivity is so important according to Ann Moffatt (cited in Gordon ,1995) that it is worth an increase of 5 percent in overhead charges to set up the appropriate infrastructure which will adequately support telecommuting. She states that productivity increases can be from 25 percent to 100 percent. This of course argues against the common notion that there are direct cost savings to be had on office space , but is used in this context to illustrate the almost universal belief that telecommuting has the

potential to increase a worker's productivity and that this is the major benefit to the company.

A survey conducted in Canada to determine why companies chose to implement telecommuting found that the most important reasons were to reduce costs and increase productivity.(Solomon and Templer, 1993). This was an attitudinal survey, there was no actual measurement of costs or increased productivity but again the survey emphasises the widely held view that these are benefits to be realised through telecommuting programmes.

One important issue in terms of productivity is the potential lack of time lost due to illness of the telecommuter or a member of a telecommuter's family. Whilst a non telecommuter may be unproductive in terms of work for the organization on such occasions of illness, a telecommuter may in fact be able to work for at least part of the day at home

"Teleworkers reported working productively from home on days that they were ill and would have called in sick if they were not teleworking".(Wilkes et al.,1994)

Illness of workers and their families is not the only cause of absenteeism, or reduced office hours. Public transport problems such as buses and train delays or stoppages due to strikes can make it very difficult for commuters to get to work. Natural disasters such as flooding, and earthquakes can causes companies to lose valuable work time. Telecommuting was used in the United

States after the Los Angeles earthquake in 1994 as a work strategy particularly whilst the highways were impassable. The Atlanta Olympic games of 1996 is another example where telecommuting was used as a strategy to utilize the workforce during a time that the ability for them to move around the city to their normal places of work was severely impaired.

Recruitment and Retention of Workers

In the study described by Solomon and Templer the next important reasons for introducing telecommuting were concerned with quality, flexibility and attracting the right employees.(Solomon and Templer, 1993). Organizations may find themselves in a position whereby they need to become more flexible in order to recruit and retain employees of the right calibre and skill sets. There is some argument that telecommuting adoption may be employee driven, or anticipating the needs of employees, organizations are instituting telecommuting programmes to be proactive and competitive in this area.

"With heightened global competition, companies must consider new ways to recruit and retain motivated employees, who will become more selective in seeking companies that meet their needs. companies that support flexibility , such as telecommuting, send a message that they trust and empower their employees. "(Dickisson K., 1997)

In describing why and how an employee was retained through telecommuting even though her family commitments dictated that she move interstate a company president is quoted as saying:

".. was my belief that the employee's knowledge is the most valuable thing for a company like ours-and probably for most business,"(Hotch R., 1993)

In this instance the woman whose services were retained benefited by keeping a job she enjoyed, at which she was skilled, and the company retained a valued and respected employee.

In a study reported on by Wilkes et al. it was found that the ability to telecommute reduced employee turnover.

"Specific cases were identified where the teleworkers would have left the employ of the company if not for the telework program."(Wilkes et al.,1994)

With respect to staff turnover Wilkes et al. state that :-

"Employee turnover has also been found to be reduced due to their recognition of several factors they perceive to be beneficial including: work schedule flexibility, elimination of commute time, reduced gasoline costs, and the ability to remain with an organization without geographic restrictions on their residence."(Wilkes et al., 1994)

Solomon and Templer cite a survey of the American Society of Training and Development which found that -

"... not only were business strategies becoming more dependent on the quality and versatility of the human resource, but a change in the psychological contract meant that merit was replacing loyalty and that organizations were increasingly having to 'earn the right' to win their employees' relevant skills. "(Solomon and Templer, 1993).

With acceptance of telecommuting as a viable work option geographical boundaries may become meaningless when recruiting staff. In reality there may be language or cultural barriers as well as organizational commitment in addition to the physical problems of distance, time and technology. To some extent companies already recruit labour from other parts of the world. Whilst it is not always the case that this use of labour could be referred to as telecommuting in the strictest sense of the definition given earlier, it is worth noting that many companies use labour in countries where it is cheaper. Some examples of this are given in Humble et al. Countries such as India, Sri Lanka Taiwan, Hong Kong are used for their availability of cheap labour(Humble et al, 1995).

Different surveys both informal and structured show that employees both enjoy telecommuting or if not already telecommuting are willing to try it.(Evans, A.,

1993)(AT&T survey in 1994)(RTA, 1995). Whilst this is perhaps not a compelling reason for organizations to adopt telecommuting as a work option, it is clear that organizations would indeed be responding to a stated preference of their workers if they did.

A survey conducted by a phone company in the United States eight months after the Los Angeles earthquake in 1994 showed that nine out of ten workers who had taken advantage of a deal which enabled telecommuting were still telecommuting even though the initial reasons that started them telecommuting were no longer viable.(Hecquet,M., 1994)

Whilst there are not yet buildings of vacant office space due to the number of telecommuters, there is a steadily growing number of organizations around the world encouraging this as a work option. Telecommuting for organizations does not come without some problems.

PROBLEMS FOR ORGANIZATIONS

The issues for organizations embarking on telecommuting programmes, or at least in the initial stages of considering such programmes are varied and far reaching. The fact that telecommuting raises critical issues for organizations is probably the major reason that telecommuting is not more widespread and has not reached some of the estimates.

Many companies allow telecommuting on an informal basis which in part

avoids some of the issues which arise from telecommuting. Probably almost

every IT department has at some point or another allowed an employee to dial

in to complete unfinished work, or to run system operations, or to check on

batch processing and the like. This arrangement might be between the employee

and the direct supervisor, or a supervisor informing her subordinates that she is

working from home today. Informal arrangements may bypass the issues that

arise when policies are formulated. Farrah quotes a survey, which reported that

eighty percent of all organizations surveyed , found that telecommuting was

performed on an informal basis with arrangements between individuals without

input from senior management or human resources.(Farrah B., 1993)

The prevalence and importance of some issues raised by telecommuting would

appear to suggest that companies which don't explore these issues and address

them pose concern for the organization, not the least of these problems being

the potential legal risk.

Issues facing organizations include cost and decisions regarding technological

support, management of telecommuters, managers as telecommuters, workers

compensation, insurance and occupational health and safety issues. There are

concerns about who telecommutes and whether it is, or should be, a work

option available to all. Organizations need to examine whether the concept of

telecommuting fits into their structure and philosophy, or to the changes needed

to be made to accommodate this option, or to not encourage it at all and thence face whatever risks to staffing and competitiveness which might ensue.

There is some suggestion that the pressure on organizations for change and the increasing competitive nature means that organizations cannot ignore what is a valuable and popular work option for its human resource. However adoption of telecommuting does pose challenges to management and the organization.

"The traditional concept of employees joining and developing within a central setting in the company of colleagues will need to be replaced by models focusing on telecommuting individuals who may only work at the central office one or two days a week...... Organizations which place a high value on an overriding integrative culture into which all successful employees are expected to assimilate may be concerned that this will not occur for employees not physically present."(Solomon and Templer, 1993)

There will be some organizations and managers within those organizations to which the concept of telecommuting is mostly an extension of how they currently operate. One of the most basic components of this is the management style which is a requirement for a successful telecommuting arrangement.

Management
The attitude of managers in particular has been cited as a significant barrier to the adoption of telecommuting. It is argued that there is a sense of what can't

be seen cannot be controlled. There may be the feeling that telecommuters at

home may be pursuing their own goals which may not be compatible with those

of the organization employing them, or that simply workers are taking holidays

on those days they are not seen to be at work. There may also be a sense that

working from home is not perceived by colleagues or indeed clients, to be *real*

work.

"Research is moving from technological determinism to studying the interplay

between telework and work organization. Several analysts have shown that

managerial inertia and organizational lethargy to be barriers to telework."

(Wellman et al. , 1996)

Telecommuting as a work arrangement will never succeed with a manager who

has to see those reporting to him at work in order to feel secure. Much of the

literature advocates that the most successful managerial arrangement is that of

Management by Results(MBR).(Humble J., 1995)(Dickisson K., 1997)(Turban

and Wang, 1995). In this the focus is on the outcome and the process by which

this occurs is largely the responsibility of the worker.

Some argue that telecommuting presupposes this management style(Humble,

1995) whilst others suggest that telecommuting on a large scale can be seen as

"reengineering corporations" by placing the emphasis on managing outputs

rather than managing inputs.(Turban and Wang, 1995). In addition it is

suggested that telecommuting may increase the disintegration of middle

management and therefore quite reasonably there would be resistance from this level of management.(Turban and Wang, 1995).

Whilst it would seem that telecommuting is more likely to succeed in an organization which values autonomy and already encourages compatible management styles, there are ways to implement a telecommuting programme to address these issues. A formal organizational telecommuting policy with input from Human Resources and IT(Farrah B., 1993) helps to address some of the managerial issues. Farrah gives an outline on how such a policy should be developed and what it should contain. She also argues that the process by which the policy is developed is as important as the content.

"The process you set up for developing your organization's telecommuting policy will have a profound impact on both the kind of program you establish and the ultimate success of that program "(Farrah B., 1993).

She cites examples from several different organizations whose policies were developed by interdepartmental teams. The message is that telecommuting is not a simple issue to address and that a broad representation is required to ensure that all issues are identified and that the policy has widespread support.

Critical to the content of successful policies is a definition of telecommuting in an introduction which describes the benefit of telecommuting to the company. Whilst the actual definition, will vary from company to company it should use

the elements of location, frequency, hours and technology to describe the

company's own definition of telecommuting

Farrah describes several areas that should be included in the main body of the

policy. These are issues related to telecommuting and should reflect the

company's attitude to these issues. They include: benefits and compensation,

liability and insurance, taxes, local zoning regulations, overtime, equipment

supplies, expenses, security and safety.

The company's position on all these factors should be clearly stated. As an

example with respect to equipment, the equipment required, who provides it

and is responsible for it should be included in the policy. Similarly with the

other areas, any areas of potential misunderstanding should be clarified.

"The more issues you cover in your policy, and the more clearly you state your

company's position and expectations, the less chance for misunderstandings

and problems once the program is implemented and the greater the success

you will see" (Farrah B., 1993)

In addition to company policy there needs to be agreements between

telecommuters and their supervisors as this aids in the management by results

programme.(Farrah B., 1993)(Dickisson K., 1997).

"The telecommuters' agreement states exactly what is expected of both

employee and supervisor, thus helping to decrease confusion and uncertainty.

The agreement covers such items as frequency of communication; insurance

that performance will meet the organization's mission statement, and

performance standards"(Dickisson K., 1997).

Sometimes there may be union involvement in establishing the guidelines under

which telecommuting operates. As mentioned previously the Public Sector and

Broadcasting Union won an award which sets out some guidelines. The main

provisions of the award as a result of this victory for the union are:

"1. Home based work is not an entitlement or a fight, nor an obligation and

may only be entered into by agreement between the Secretary [employer] and

an employee.

2. A home based work arrangement is not a substitute for dependent care.

3. Where a home based work arrangement is proposed by an employee, the

Secretary has the right to refuse to consent to a home-based work

arrangement. Similarly, where a home-based work arrangement is proposed

by the Secretary the employee may withhold his or her agreement.

4. Unless otherwise agreed the employee will spend at least two fifths of the

usual weekly scheduled hours in the office.

5. Home based employees shall have the same opportunities for career

development as office-based employees. "

(Gil Gordon & Associates, 1994)

Even with conducive management styles, company policy and union

involvement there may be some workers for whom telecommuting is not

suitable due to the nature of the work, the home situation of the worker or even

the worker's personality. This raises the issue of equity within the organization.

There may be some resentment from non telecommuters if they feel that this

work option is not available to them(RTA 1995). Some way of overcoming this

issue is that of training of both workers and their supervisors. Some companies

have embarked on pilot programmes to explore some of the organizational

issues arising from telecommuting. An example is the RTA, whose programme

included a thorough investigation of the issues surrounding telecommuting. In

the pilot programme not everyone could participate and the criteria for selection

included characteristics of both the teleworker and the work. All teleworkers in

this programme received training and there was a presentation to other

household members regarding teleworking. Overall the study included in its

findings that the selection procedure was successful(RTA 1995).

Whilst many writers feel that more jobs than expected lend themselves to the

possibility of telecommuting others feel that some jobs are more suitable than

others and the characteristics of the jobs themselves need to be identified.

Wilkes et al. state job factors which affect their suitability include:

"..job content, the resources required to perform the work, required security

of the data created/used, and the nature and extent of required interaction with

other people"(Wilkes et al.,1994).

Sibley describes categories of jobs used by Sociology Professor Jane Salaff.

Jobs are described as 'hot' or 'cold', with hot jobs being the least suitable for

telecommuting.

"hot jobs... are those that are mostly unstructured, do not involve using

databases, require direct, real-time management and which deal with process

as well as outcome"

"cold jobs .. involve structured work requiring little direct supervision..."

(Sibley K., 1997).

There is much written about the necessary characteristics of a successful

telecommuter. The RTA pilot programme also examined the characteristics of

the supervisors which were seen to be as equally important for the success of a

teleworking arrangement.

Wilkes et al. describe some of the factors for selection of suitable candidates for

telecommuting. These include -

"..their existing productivity, their motivation, attitude, and personality'

geographic location in relation to the work site, and handicap status."(Wilkes

et al., 1994)

Of particular importance according to Sibley is their desire to telecommute.

She states that some companies are sending whole departments home to

telecommute without paying enough attention to whether workers are suitable

candidates and whether they actually want to telecommute.(Sibley K., 1997)

One of the key factors associated with any telecommuting arrangement is that

of communication. This is important with respect to the telecommuter's ability

to communicate effectively, the frequency and quality of the communication

between telecommuter and supervisor and telecommuter and co-workers. It is

important that the organization has a suitable infrastructure to facilitate this

communication. The importance of communication in the telecommuting

scenario is discussed below.

Communication

One of the problems associated with telecommuting is that of isolation. One of

the contributing factors to the sense of isolation is the effectiveness and

frequency of communication. There is some argument that telecommuters have

to be better communicators because they must convey much of their personality

and competence electronically without the usual visual cues. Furthermore

because of their lack of physical presence in the office they must be able to

initiate communication (Pape W., 1996) as there isn't the opportunity to run into someone accidentally or just pop into someone's office on the way past..

Meetings become increasingly important for telecommuters as *"structure replaces spontaneity"* (Cole J., 1996) and therefore telecommuters and their supervisors need to conduct effective meetings for which they are well prepared.

A recent paper suggests that telecommuting appeals mostly to introverts as they have lesser social needs.(Underwood and Wilson, 1995). Because telecommuting involves giving up the social support of the office, introverts are more likely to make that decision. As technologies improve and more complicated and extensive tasks are supported then the more extroverted personality may be attracted to telecommuting.

Whilst the introverted personality may be attracted to the working environment afforded by telecommuting, in terms of communication this type of worker would not be the most suitable candidate. Because of their reduced social presence, telecommuters, may need to initiate communication, to make greater efforts to ensure that their work and role is recognised. This then provides a contradiction that those most desiring to telecommute may not have the personality characteristics to make the arrangement a success.

A way of addressing some of the issues concerned with communication is to set

up the appropriate infrastructure both from a social or organizational

perspective within suitable managerial and technological contexts.

Telecommuters need to be provided with the appropriate tools with which to

communicate. The technological resources available vary widely and address

different communication needs.

There are some technological issues that confront organizations when they

encourage telecommuting. There are decisions about the type of network

access required, what equipment is required and who should provide this

equipment. Depending on the nature of the work, the technological philosophy

and maturity of the organization equipment may only be a telephone and this

would still constitute telecommuting. However there are more sophisticated

tools available which support telecommuting that may be employed. In a

technologically mature company any of these facilities may already be available.

It is then a question of whether they can be accessed using a Personal Computer

at home over a telephone line. Whilst there may be security risks associated

with some types of access e.g. remote control access there may then be

performance limitations associated with other types of access e.g. 'remote

node'(Acuri G., 1996).

There are many electronic products available which support communication

between individuals and groups. Typically e-mail is a common text based

asynchronous form of communication widely used. It would almost be a

prerequisite that telecommuters should be able to access their e-mail from home

as this is such an accepted form of communication. Many telecommuters may

in fact have their own e-mail facilities at home which would mean that these can

be utilised independently of any provided by the organization.

Some companies may seek to enhance group process by installing Group

Support systems (GSS).

"GSS's are intended to assist a group of decision makers who are working with

a certain task to make a decision or better decision(s) regardless of their

physical location."(Bidgoli H., 1996).

These systems vary in the nature of their abilities and hardware and software

requirements. Bigdoli classifies these systems in terms of the level of support

they provide for a group.

Level one support GSS's are those concerned primarily with enhancing

communication within a group. In addition to communication support, level

two systems provide modelling and planning facilities. Level three support

systems utilize artificial intelligence technologies to adapt to the meeting

environment, and can actually control elements of the group

interaction.(Bigdoli, H., 1996).

A type of GSS of particular relevance to telecommuting is the Electronic Meeting System. The products available under this category vary in technological sophistication. The newest versions provide desktop video conferencing capability. Unfortunately, due to communications limitations, these would probably not be practical for the telecommuter using a normal phone line.(Mehta and Dunn, 1995)

Organizations need to match the group task and group composition with the appropriate technology. The fact that some members of a group may be telecommuters would be only one aspect in the process of selecting the right technological support. Whilst an organization introducing a telecommuting programme, would not necessarily need a sophisticated GSS to provide an adequate communications infrastructure for their telecommuting staff, it is imperative that an appropriate communications system be in place.

A study into Computer Supported Social Networks (CSSN) illuminates some of the issues associated with relationships which are maintained via computer networks. Of particular relevance are the following points:-

"Despite their limited social presence, CSSNs successfully maintain strong, supportive ties with work and community as well as increase the number and diversity of weak ties".(Wellman et al., 1996).

This is to say that the relationships of work colleagues with each other,

members of a group working together on a project, or members of a

community can be adequately supported via electronic means. The number of

relationships between others which are not so well defined, who have weaker

ties with each other can be increased. People can establish relationships with

others via internet chat sites, for example, with whom they would normally have

very little in common.

This is good news for telecommuters and organizations who are introducing

telecommuting. Effective relationships can be maintained electronically.

Telecommuters need not necessarily suffer alienation if the appropriate

communication tools are provided and telecommuters have the knowledge and

motivation to use them.

"Although many relationships function off-line as well as on-line, CSSNs are

developing norms and structures of their own"(Wellman et al., 1996)

This would suggest that the way workers communicate via CSSNs may well be

different from colleagues who are less reliant on electronic forms of

communication. CSSNs define the framework of the communication and there

may be standards and rules applied which are appropriate to these forms which

are not acceptable in other contexts. A very basic example of this might well be

the form and standard of language acceptable within an e-mail message as

opposed to an office memo, or official, written submission.

Wellman and co-authors cite studies that show the nature of communication is

different for telecommuters even though the *frequency* of on-line

communication may be the same.

"..teleworking leads to a more structured and formalized communication with

supervisors and to a lesser extent with coworkers. "(Wellman et al., 1996).

Other studies examine the *informal* communication by telecommuters.

Some studies according to Wellman and colleagues show that informal

relationships deteriorate and others show that they increase. (Wellman et al.,

1996)

"The nature of informal communications by teleworkers appears to depend on

the employees' social status, their previous relationships and the support of the

organizations"(Wellman et al., 1996).

Telecommuting may highlight and increase the isolation of some workers whilst

others, professional workers especially, are able to enrich their social and work

contact through CSSNs.

The limited social presence of CSSNs allows for different relationships to

develop which may not develop in a conventional social setting. They allow

individuals to move between relationships.

"At the same time, their more individualistic behaviour means the weakening

of the solidarity that comes from working in large groups"(Wellman et al.1996)

If this is the case then maybe company and group loyalty may be harder to

achieve and maintain. It can be seen that more work needs to be done in this

area to bring together some of the conflicting information which impacts on

organizations and communities. For organizations implementing telecommuting

it is clear that managers need to be aware of some of these issues and

incorporate them into their policy development.

Access to the internet increases the ability for easy communication with

workers of common interest, irrespective of where they are physically located

or for whom they work CSSNs may link organizations by providing the ability

for electronic interorganizational cooperation in joint projects or

negotiations.(Wellman et al., 1996)

Having the appropriate technological infrastructure in place for some does not

address the isolation or alienation issues. There is an intrinsic belief that

relationships which are maintained by electronic means are not effective

substitutes for face to face human contact. Whilst the nature of relationships

and communication may undergo changes when heavily reliant on electronic

methods of communication, the information described above provides some

evidence to suggest that relationships maintained this way can still be

meaningful and supportive.

Security

Much like the issue of management style, security may be more or less an issue depending on the measures currently in place within the organization. There may be the issue of who comes to the home and therefore who has potential access to data or documents in the home whereas in the office environment there may be more stringent security measures such as security cards, name tags.

The working method of the teleworker needs to be sufficient and efficient to guard against accidents. Whilst the company data from a technological perspective may not be any more at risk than if the worker accessing it is located in the office or dialling in from home, a keyboard is not at risk from the interference of little fingers if located at the office. The worker at home needs to secure equipment against the intrusion of children and visitors.

There are security concerns regarding network access. Remote node access is said to be more secure than remote control access.(Acuri G., 1996). There may be added responsibility which falls on those responsible for data security, equipment safety and network access as more workers require remote access. In the United States organizations can employ third party vendors to ensure security for their remote workers.

Costs

Whilst much of the literature tends to suggest that the benefits, in particular that the increased productivity from workers outweigh the cost of telecommuting,

there are real costs to be considered. Most of this sections addresses the situation where the telecommuter is working from home. There are quite different issues involved in a telecommuting centre e.g. whether the company treats these as branch offices in term of equipment, and whether the cost of providing office space and equipment is shared amongst different organizations.

In the instance of home based telecommuting start up costs are obvious and measurable, such as the cost of providing appropriate furniture and equipment. Most of this sections refers to the situation where the telecommuter is working from home. Included in these start up costs may be communications connections. The issue facing organizations here is whether the organization should pay all or part of these costs. It would appear that in the case of full time telecommuters the expectation is that the company does pay. This decision may vary according to the equipment already owned by the worker and whether the worker is an employee or a self employed contractor. An example given in Computerworld describes a company which pays for all their telecommuters equipment including the phone connection whether it be a normal phone line, ISDN or frame relay, with the telecommuter paying for furniture.(Girard K., 1997).

Picking up the bill for the ongoing communication charges may be a more difficult area to control. There is a least some suggestion that as telecommuters move further away from the city the cost of long distance charges increase without proper controls and attention.(Rohde D., 1996). This

This is of more concern in the United States where the charging structure is different and where long distance charging is more obvious.

A further cost in providing furniture and equipment for telecommuters is the fact that many if not most telecommuters are located in the office for part of the week. This means that in fact the company may be providing duplicate resources for these employees. This cost may be offset by "hot seating" whereby different employees share the same office space and equipment and different times.(Wilkes et al.,1994).

The additional equipment may incur additional insurance and maintenance costs depending on the arrangement with insurance companies and service providers(Wilkes et al.,1994). There may be some dispute about insurance and whether it is covered by the worker's own household insurance. This may in fact may be more prone to accounting problems if the worker then requires reimbursement for extra insurance or maintenance costs.

The issue of accounting for telecommuters may be in itself a difficult issue for the company to address, especially when it is understood that most telecommuters are part time telecommuters or as Rohde describes "weekend warriors"(Rohde D., 1996)

In an organization which plans and manages their telecommuting programme as they would any other project there may be other organizational costs involved.

These may include training for participants and their supervisors. This training

may range from particular training in equipment or technology usage to

management issues. If there is a pilot programme this may have costs

associated with its initial implementation such as planning and managerial costs.

In addition to these measurable costs there is the potential for those costs to

which a dollar figure cannot easily be assigned. Cost such as "*..performance

degradation of data applications over phone lines..*"(Rohde D., 1996). In this

same article it is suggested that some applications may not perform well over

Wide Area Network connections to telecommuters. Such issues may result in

additional time and management costs for network managers in ensuring the

reliability and security of the network.

Finally there are the costs that cannot be seen or measured from the

organization's point of view. They involve the interaction of employees

together and the conduct of employees when they are not in the office. These

are best summarized by Patricia Mokhtarian :-

*"What is the cost of losing instant on-site access to an employee? Of reducing

the potential for serendipitous face-to-face encounters? And if management's

fears are realized, what is the cost of reduced productivity once an employee is

out of sight?"*(Mokhtarian P., 1991)

LEGAL AND OCCUPATIONAL HEALTH

Some of the most often cited barriers to the adoption of telecommuting within an organization are concerns that organizations have about exposing themselves to legal and insurance risk. An organization may feel that the environment in which work is conducted if the telecommuter works from home, cannot be adequately controlled and therefore leaves the company at risk of exposure if anything does happen. It would appear that whilst there are no legal cases, and no reported incidents of injuries occurring whilst a telecommuter is working in the home, based on the current law and relevant common law precedents this could be a fear with some foundation for employers. This fear has been expressed both here and in other countries. The three areas of law which are of relevance here in Australia are as follows:

1. Employer and Employee responsibilities under the Occupational Health and Safety Act.

2. Employer and Employee responsibilities and insurance in relation to the Workers Compensation Act

3. Relevance of the Common Law tort of Negligence if an injury does occur.

Occupational Health and Safety and Workers Compensations Acts differ from state to state in Australia although similar in application. Recently in Victoria the government prohibited the right to use any common law remedy in the instance of work related injuries. What follows is a discussion of the NSW situation with relation to home based work.

Occupational Health and Safety

The NSW Occupational Health and Safety Act was introduced in 1983 at a time

when other acts were in existence. There are still acts that operate

independently.

The most significant of these other acts are the Factory Shops and Industry Act,

1962, the Construction Safety Act 1912, the Coal Mines Regulation Act, 1982

and the Dangerous Goods Act, 1975. (Anicich and Feather, 1996). These other

acts are more specific to different industries and circumstances. It is clearly the

intention that the Occupational Health and Safety Act is to provide as far as

possible a consolidation of regulations and safety laws. It is this act that is of

most concern to this discussion.

"It places an onus on all employers to ensure the health, safety and welfare at

work of their employees and others at the employer's workplace"(Anicich and

Feather, 1996).

The responsibility of employers under this Act, especially sections 15 and 16

have been interpreted as imposing an *absolute* liability. It is significant to note

that there is no separate section relating to home based work. It could be

interpreted that the employer's absolute responsibility extends to home-based

work.

There is provision in the Act under section 19 for the employee to cooperate

and to share in the responsibility of the safety of the workplace. Whilst this

section obviously recognizes obligations by the employee by its terminology it imposes a lesser duty than that imposed on the employer.

Amendments introduced to the Act in 1996 reflect the attitude of the current government and the political climate. An example is the doubling of penalties for breaches of the Act, and increasing the powers of inspection of Workcover Inspectors, Police and Union Officials.

"Part of the reason for the amendments is no doubt the need to focus more carefully on improved safety in the workplace as a means of reducing the high cost of workers compensation premiums"(Anicich and Feather, 1996).

There is good reason then for employers to be nervous about allowing employees to work in an environment over which their control is limited. It would appear that the employers liability would easily extend to the home in the case of telecommuters. It would suggest that at the very least the employer should inspect the telecommuters premises and advise on Health and Safety issues. It would suggest that it would probably reduce the exposure of the employer if the organization were to provide appropriate furniture and equipment, advise on lighting and ventilation and then it is also but not equally the employee's responsibility to follow the recommendations of the employer.

Workers Compensation

The Workers Compensation Act of 1987 gives workers the right to sue for compensation for injury or illness which occur as a result of or whilst engaging in their employment. There is no special provision within the act for home-based employment, thus the liabilities of the employer easily extends to the home. Section 9 (A) does state that the employment must be a substantial contributing factor and paragraph two of this section does state that the time and place of the injury needs to be taken into account.

For both these aspects of law, that of Occupational Health and Safety and Workers Compensation with respect to home-based telecommuting, there are particular issues which may arise. Some examples are as follows.

* In the case of home based work, was the worker actually at work when the injury occurred and therefore is it reasonable to expect the employer to be liable.

* If the injury results from a circumstance of the premises which is not owned by the employer, is it the employer, the employee or in the case of leased premises the landlord who is responsible.

* If the worker is actually a self-employed contractor does the responsibility of the employer extend to that worker.

Whilst there are no known cases in Australia, or for that matter in the literature

for the USA or England involving home based work, there are some recent

cases in Australia which may shed some light on the possible scenario should a

case arise involving a telecommuter working from home.

It is suggested that telecommuters agreements about hours of work might go

some way to mitigate the potential for employer responsibility in the instance of

injury as there is some room for dispute. As in Hatzimanolis v A.N.I

Corporation Limited(1992), 173 C.L.R 473 the responsibility of the employer

may extend to intervals or interludes within an overall period of work. In this

case the company was held responsible for an injury which was incurred out of

work time, on a leisure trip organized by the company. The circumstances of

this case were reasonably special, however, it would suggest that an incident

that occurred during a recess e.g. morning tea in the workers own kitchen, may

not preclude the employer from responsibility.

The second issue concerns the premises where the work is performed. This

may be a difficult issues to resolve if the injury occurs due an unsafe aspect of

the location itself. In Northern Sandblasting Pty Ltd v Nicole Anne

Harris(1997) Australian Torts Reports 81-435) where a young child was

severely injured due to faulty wiring, the landlord was held partially responsible

even though the landlord was unaware of the fault. This may bring some

comfort to employers in that in the instance of an injury arising from a safety

characteristic of the place of work they may not bear the full responsibility, as

the owner of the premises whether it be the employer , or a third party may be deemed to be at least partly responsible. This may be especially relevant in terms of an injury to a third party. With this in mind some writers advocate that meetings between telecommuters and clients should not occur at the home of the telecommuter(HR Focus, 1996).

The third issue deals with the employment relationship. Whilst most often it has been the case that a contractor working for one single employer has been seen to be an employee this may not necessarily be the case. There is no definitive answer to this and the whole nature of the employment needs to be taken into consideration. A case ostensibly dealing with the issue of Superannuation guarantee (Vabu Pty Ltd v FC of T1996 96 ATC 4898) found that for this purpose contracted couriers were not seen to be employees. This has ramifications in the area of Workers Compensation and insurance as well as the Occupational Health and Safety responsibilities of employers. With this case in consideration it may be in the company's interests to review the nature of employment of telecommuters to minimize their liability.

Negligence

The final legal issue with respect to workplace injuries is the common law action of negligence. This facility is no longer available for workplace injuries in Victoria and there is discussion about removing it in NSW. This would suggest that the trend is for injured parties to seek remedy through the Workers

Compensation Act provision alone. However as the law currently stands this avenue is available.

The major issues concerned with negligence are those of establishing that in the case of an injury there was a duty of care, that duty was breached and that the injury occurred as a result of that breach of care. In any instance of negligence the courts have to take into account many issues. In the case of an injury occurring to a home based employee the process would be no different, only that the injured worker would be attempting to prove that the duty of care was held by the employer.

Other Legal Issues

There are other legal issues to be considered which may receive less attention. These may include the zoning laws within the neighbourhood which may preclude the conducting of business. There may be tax issues concerned with workplace expenses and establishing areas of the premises as work places alone. There has been some suggestion that there may be ramifications when the owner of the premises chooses to sell after having a certain percentage of the premises set aside for business, in that, that percentage, may be subject to capital gains tax.

In the United States, whilst not attempting any detail, it must be recognized that there are different laws and regulations. One such example is the Fair Labour Standards Act. Another which could pose problems is the Americans with Disabilities Act(Minehan M., 1996). Of interest in the US is the Federal Clean

Act and some associated states acts which encourage telecommuting by placing the onus on employers to find ways to reduce air pollution from vehicle emissions.

In summary with respect to health and safety, there are no legal concessions for employers with telecommuters, therefore it is reasonable for employers to assume the same level of responsibility for the health and safety of their telecommuters as if they were located in the office. Equally it is reasonably safe to assume the same penalties apply in the event of a breach of the Occupational Health and Safety Act occurs.

IMPACT ON THE ENVIRONMENT

It is the definitive relationship between telecommuting and travel behaviour which has the most potential to impact on the environment. This is due to the very basic assertion that more telecommuting means less travel which means less traffic congestion, and fewer pollutants being emitted.

Whilst this assertion is correct, in that telecommuting does reduce travel, there are broader issues to be addressed with respect to the potential impact of telecommuting on the environment :- pollution, energy consumption, traffic congestion, urban and rural communities.

Telecommuting and Travel

Telecommuting and its direct impact on travel behaviour i.e. by replacing trips to and from work, can be of importance when determining travel and transportation strategies. This was in fact the major purpose of the Roads and Traffic Authority(RTA) telecommuting project in 1993/94.

"Teleworking throughout the world is recognised as a travel demand strategy which has the potential for: reducing travel demand, reducing traffic congestion, redistributing trips away from central business districts, reducing trip lengths, spreading peak period travel. "(RTA 1995).

The wider potential of changing travel behaviour is reduction in traffic congestion which can contribute to safer, less costly and more enjoyable travel as well as reduction in pollution and energy consumption.

Pollution and Energy Consumption

The RTA study quotes figures which show that if teleworking were to achieve an acceptance level of 10% across industries in Sydney, car travel could be reduced by 2.1% per day thereby reducing operating, accident social and pollution costs from $2.1 billion to $1.3 billion.(RTA 1994).

Figures such as these project an attractive and seemingly achievable scenario. However travel behaviour needs to be considered from an overall perspective. For example if as a result of not travelling to work by public transport the telecommuter actually uses the car more often in shorter local trips then the net result may in fact be an increase in polluting emissions. Another example may be, if a telecommuter no longer drives to work does that mean that another family member uses the car instead of not travelling, or taking public transport as the car is now available.

These and related issues have been the subject of a number of papers. The RTA study concluded that whilst there was not an overall increase in travel on telecommuting days there was a small increase in car related travel by other household members.(RTA 1995).

Mokhtarian cites evidence to suggest that non work-related travel on telecommuting days does not increase either and that travel from family members has been shown to decrease.(Mokhtarian P., 1991).

There are other pollution related issues discussed by Mokhtarian such as choice of vehicle in a two or more car family. There is the chance that the more fuel efficient vehicle is saved for the longer trips, and if there is an increase in shorter trips, then the less efficient vehicle may be used, thus creating a net result of more emissions.

Mokhtarian also suggests that travel behaviour needs to be analysed in terms of vehicle starts, as more pollutants are emitted at those times. Therefore if there is an increase in journeys which require more stopping and starting as a result of the telecommuter no longer travelling to work, then again the net effect may in fact be detrimental to the environment.

There are similar complexities related to energy consumption. Whilst on the face of it one might assume that with an increase in the number of telecommuters there may be a reduction in energy requirements in offices. However unless there is a critical number of telecommuters there would be not much change to the energy consumption of a large office space. Indeed the net affect may be an increase, due to telecommuters using less efficient energy resources at home without a significant reduction of usage in the office. Of particular relevance to colder climates may be the added pollutants of log fires.

Telecommuting is not in itself a solution to travel related problems. It can be used as one approach in an integrated set of policies in which government and local authorities can participate. However it is important that these policies be coordinated or there may be conflict.

As an example, promoting work-based child care may not compatible with a policy of telecommuting. An example of this is given where a woman made more trips on telecommuting days than normal as her child was in work based child care. Whilst this is perhaps hard to credit, it does serve to illustrate the point that an overall strategy needs to be applied. (Mokhtarian P., 1991)

Rural and Urban Impacts

There are wider issues in terms of travel and telecommuting explored by Jack Nilles. He examines the potential affect of telecommuting on *urban sprawl*. He specifically addresses the question as to whether telecommuting can exacerbate urban sprawl or not.

Urban sprawl is described as a phenomenon with some undesirable side affects. As workers move further away from the city seeking affordable and quality housing the demand on transportation increases. Traffic congestion increases. The overall pressure on the transport infrastructure increases. Areas that were formerly rural or wildlife habitat are absorbed into urbanization. The possibility that telecommuting could facilitate this sprawl is one that causes some concern

An alternative is that rather than continue the *sprawl*, telecommuting, by making work location independent, gives workers a far wider choices of residence, including rural and isolated townships. Nilles states that if telecommuting becomes widespread then it can be of vital interest to town planners. Nilles used a two year test by the State of California for most of his data. Whilst he concluded that there was no significant evidence in this data that telecommuting affected residence location decisions he stresses that this may be a long term phenomenon and that two years is not long enough to make absolute conclusions. Telecommuting does impact on location decisions although as Mokhtarian describes it more as a *permissive rather than a deterministic factor in location decisions*(Mokhtarian P., 1991) This is both for residence and business location decisions.

Nilles however gives two possible future scenarios if telecommuting is widespread. In the first he calls *nominal future* - telecommuting acts as a partial or total substitute for commuter transportation as intended. Home based telecommuting leads into more telecentre based work, with the development of neighbourhood work centres. The positive affects of this future are many and varied. In this scenario there is less long distance commuter travel thus placing less strain on transport infrastructures into and away from the main city centres., Due to the development of neighbourhood work centres there is much less distances involved in the remaining commuter travel. With the shorter commute distances there is the potential to replace pollution emitting vehicles

with bicycles or even walking. With the increase in the number of the local population being home during the day there is as an the increase in local business and service centres to support this population. During the day, rural towns and smaller centres are revitalised.

In Nilles' other scenario, home based telecommuting remains dominant, few telecentres are developed and the current growth patterns continue contributing or even accelerating the urban sprawl. (Nilles J., 1991).

These scenarios were proposed in 1991 and changes were expected to occur by the mid 1990s. This is an important area where future research could examine current growth patterns of telecommutng, trends and impacts on communities. It may be that the growth of telecommuting has not been dramatic enough to effect the changes described by Nilles and that it is still early enough to properly manage the potential changes and harness the positive impacts.

Here in Australia there is a telecentres program which was started by the Department of Primary Industries and Energy in 1992. This program

..aimed to assist rural; and remote communities to establish and operate community facilities where all people could gain easy public access to computers and information technology for education, training and enterprise purposes.

There does not appear to be at present a substantial amount of telecommuting occurring from these centres, however the facilities are there. As the telecommunications infrastructure continues to develop these centres and their communities may take advantage of opportunities. Crellin suggests that communities need to be proactive to ensure this development.

The lessons from writers such as Nilles, Mokhtarian, Crellin and reports from the UK(Lake A., 1996) are that telecommuting needs to be embraced in planning and community action. That it is a tool that needs management so that its affects are positive, and that the potential benefits can be realised. An example in Crellin of the use of video conferencing in rural hospitals in the USA to access specialist services at larger hospitals is something which can readily be applied here with the current problems associated with lack of medical services to rural Australia.

CONCLUSION

It is difficult to find a truly negative view of telecommuting except in isolated anecdotes and incidents. Telecommuting as a work option is very popular among telecommuters. Telecommuters like the autonomy. They like the lifestyle choices it gives them. They report that they work longer hours and more effectively with less interruptions. As most telecommuters telecommute part time, their concerns about low visibility, alienation and loneliness are often offset by the times that they do spend in the office.

The story is slightly different from an organizational perspective. Whilst organizations benefit from increased productivity, and other human resource opportunities such as recruitment and retention advantages, there are many serious issues which confront organizations when implementing telecommuting. Some of these problems have not been, and perhaps some cannot be, effectively eliminated such as fears by management that a worker who is not on view may not be working productively or worse may be working towards their own goals which may be incompatible with what the company expects. This is only one example of the many challenges facing management. Much of the success of telecommuting has to be based on the integrity of the worker and the trust by management. However, organizations may address some of the problems faced by planning ahead, developing and implementing formal policy, providing education, technological and managerial support. It is a fact that many organizations around the world are taking up the challenge, introducing well planned and well organized telecommuting programmes. Other organizations

are simply allowing it to happen on a more individual basis. Whatever the

method and whatever the predictions, the incidence of telecommuting is

increasing.

As the incidence of telecommuting increases so does the need to understand it

fully in order to manage and plan properly for its development. In order for the

appropriate organizational and community supports to be in place, it needs to

be understood how relationships are maintained and developed through

methods such as e-mail, group support systems and the internet. Once more is

known it may become clearer what kind of individuals are better suited to

working from home, working in telecentres or those who really need the office

environment. Of course telecommuting suitability is not solely concerned with

personality types. The nature of the work, the company and the individual's

family and work situation all play their parts. A more complete understanding

may allow those individuals who are less suited by personality to be educated in

the ways to gain the support and social interaction they may need.

Research such as that conducted by Jack Nilles and Patricia Mokhatarian needs

to continue to examine the way that telecommuting impacts on the nature of

transport and urban forms. In Australia, where a rural telecentres programme is

developing, awareness of this programme needs to be raised to mobilize the

corporate community and government planners. It would be naive to imagine

with such a small amount of participation in Australia, that the effects such as

those described by Mokhtarian and Nilles could yet be observed but projections

could be made and the potential benefits thoroughly investigated. Only with more information, based on effective research, can the growth of telecommuting be encouraged and managed in a way to realise maximum benefit and to ensure that social cohesion is maintained rather than isolation and fracture.

In Australia with its tradition of geographical isolation from the rest of the world and the vast distances between large cities, the potential for telecommuting is extensive. This region could be a prime candidate to capitalize on the benefits afforded by a progressive and well organized population of telecommuters and supporting organizations. Information on the Australian experience of telecommuting is difficult to obtain. There needs to be further research into the Australian situation so that communities, governments and organizations, knowledgeable in all aspects of telecommuting, can confidently implement programmes, plan for community supports and take advantage of a working method which could be ideally suited to this country.

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