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PATRICIA SAURI LAVIERI
BIANCA BIANCHI ALVES
ORLANDO STRAMBI
SCHOOL OF ENGINEERING OF THE UNIVERSITY OF SÃO PAULO (CONTACT:PATRICIA.LAVIERI@USP.BR)

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Patricia Sauri Lavieri

Bianca Bianchi Alves

Orlando Strambi

School of Engineering of the University of São Paulo (contact: patricia.lavieri@usp.br)

ABSTRACT

Telework has been adopted and studied in some countries for over 30 years; in Brazil, the phenomenon is in its early stages but rapidly advancing. This paper investigates how companies are shaping their telework policies: what the goals, benefits and limitations being experienced are. The results show that while the major barriers to telework adoption are mostly cultural, changes are encouraged by the need to reduce real estate expenses and to improve employees' work-life balance. It is observed that the main difficulties reported by companies that do not adopt telework were not perceived as obstacles by those that are already using these arrangements. This result suggests that a misunderstanding regarding telework practice may be preventing a faster dissemination among companies.

Keywords: telework, exploratory survey, travel behavior

INTRODUCTION

After the industrial revolution, work became an activity predominantly related to a specific and centralized location; first the industrial plants and later the offices. However, with the onset of the information age, the use of technology has allowed people to be in simultaneous contact even if separated geographically. In this context, one can question if there is a real need of binding work to the premises of an organization, especially when it employs only information and communication in its daily routine. This potential spatial dissociation of work-related activities and the organization's office could also allow, in many cases, a new distribution of work throughout the day and a new arrangement of non-work related activities, changing individuals' schedules, with consequences on their activity and travel patterns.

Today, telework is seen as a flexible form of workplace arrangement where employees work one or more days off-site, usually at home. There is a large number of terms

that can be used to denote telework, such as telecommuting (largely used in the US), remote work, distance work, flexible-location work and e-work (Andreev et al., 2010). When this kind of work arrangement began to be studied, some differences in nomenclature were established, mainly concerning the use (or not) of technology and whether there was substitution of a commute trip or not (Nilles, 1988 and Mokhtarian, 1991). In this study, we will use the term telework in the sense of work performed remotely from the organization premises, considering the use of information and communication technologies (ICTs). In our definition, some kind of travel substitution or the adoption of more flexible activity and travel patterns is expected to occur. It is important to point out that neither the mere use of a mobile phone during lunch for a work call nor a home-based business are considered forms of telework in this context.

According to Kwan et al. (2007), the earliest studies in transportation research focusing on the impact of telework on travel behavior used the geocoded activity-travel data from the State of California Telecommuting Pilot Project, collected in 1988-1989. These studies found that teleworkers had significant reductions in work-related travel and also chose non-work destinations that were closer to home.

Andreev et al. (2010) review of the state of teleactivities brings together studies that find effects at individual levels such as a reduction in the number of trips and vehicle miles traveled (VMT) as well as additional travel outside peak hours. However, they point out that this substitution may not be significant at an aggregate level (in terms of traffic volumes) and that current efficiently chained work-related travel could be modified leading to an increase of one-stop trips and even to longer distances.

From the literature, it is possible to note that there is no consensus on the impacts of telework on travel behavior and on the transportation system, a fact that may result from the diversity of telework arrangements and differences related to local culture and cities characteristics such as urban form, transportation infrastructure and main economic activities. Also noticeable is the lack of studies concerning the particular case of Brazil, where the potential for telework in some major cities is considerable and may have a significant contribution to reducing time lost in congestion.

This paper reports the first of a two-step research effort aiming to portray the telework scenario in Brazil and to provide an understanding of its role in potentially changing activity and travel behavior. The main objective of this stage of the research is to characterize the organizational culture in which telework may be adopted, identifying motivations and barriers. Also, we attempted to elicit management perspectives and awareness of the possible impacts of telework on overall travel patterns. Companies contacted at this stage will be a useful resource to select a sample of teleworkers from whom activity and travel data can be collected in the second stage. While the first step used only qualitative techniques, the second will combine qualitative and quantitative methods.

The remainder of the paper is structured in three main sections. The first contains a brief description of the Brazilian context regarding labor legislation, job market, ICT usage and traffic conditions. The second details the methodology adopted and the characteristics of the sample of companies for which qualitative data was collected. The final part presents a structured discussion of the socioeconomic, organizational and cultural factors affecting the adoption of telework and its potential interactions with travel and transportation, followed by some conclusions.

BRAZILIAN CONTEXT

The city of Sao Paulo, as many of the large Brazilian cities, is in a very propitious condition for a significant increase in teleworking. However, this phenomenon is seldom studied in Brazil, especially when considering its potential impact on transport.
Several factors lead to this favorable scenario for telework growth, such as (i) high proportion of peak travel and increasing congestion, (ii) fast increase in information and communication technologies, (iii) compatibility with job requirements, and (iv) recent legislation changes. A brief explanation of the four factors is presented below.

(i) According to the 2007 Origin-Destination Survey (CMSP, 2008), 44% of the daily trips in the São Paulo Metropolitan Region are work-related; 78% of these trips use motorized modes of transport. These figures, associated with an unbalanced distribution of jobs and housing in the urban space, leads to the saturation of the transport network. Another characteristic that also contributes to traffic congestion is the fact that work trips are typically concentrated at specific morning and afternoon hours as most companies have fixed work schedules. Data from the Traffic Engineering Company in Sao Paulo reveals that congestion in peak periods has been growing in the past years and at least 30% of the working population takes more than one hour travelling from home to work (IBGE, 2011). A shift to a more flexible work schedule has the potential to improve travel conditions.

(ii) The impact of Information and Communication Technologies (ICTs) on travel behavior and the transport system is an important issue today. Regarding telework, the popularization of ICT tools such as telephones, mobile phones, computers, internet services, and wireless connections plays an important role in its dissemination, as they facilitate remote real time communication and information exchange. Among ICT tools, the Internet has a unique potential to change activity and travel patterns, as it provides access to everyday activities, from education and employment to shopping and participation in social networks, without the need of physical mobility by the individual undertaking the activity (Kenyon, 2010). In Brazil, it is possible to observe a rapid growth in internet use in recent years. According to the Internet Committee in Brazil (CGI, 2010), internet presence in urban households in the country increased from 13% in 2005 to 31% in 2010; in the southeast region, 36% of the households have access to the internet, 75% of these being high-speed connections. In the city of Sao Paulo, in 2009, 45% of households had internet connections (IBGE, 2009). Regarding companies in the southeast region, more than 98% have internet access at least for e-mail usage (CGI, 2010).

(iii) When trying to estimate the number of jobs that could potentially be performed remotely from the main office, authors generally use the number of information workers or, as a proxy, the number of jobs that have a sufficient number of information-based tasks to make them suitable to be performed remotely (Mokhtarian, 1998). In Brazil, occupational classification systems do not consider this specific class of workers. However, in the city of Sao Paulo, there is a large share of occupations

that do not require daily in-person interaction. For instance, according to the Ministry of Labor (MTE, 2010), credit institutions, insurance, commerce and real estate management comprise 22% of the jobs in the city of Sao Paulo. These occupations are potential candidates for remote working, since they deal mainly with databases, telephone calls, and emails, activities that could (at least partially) be performed away from the companies' premises.

(iv) In December 2011, the Brazilian Labor Legislation (CLT) was modified to allow for employees that work remotely to have the same labor rights as those working at the company's workplace (in-office). This can be seen as an initial change in the very strict labor laws in force, which previously had no reference to telework.

METHODOLOGY

The methodology adopted for the whole study relies on a sequential mixed methods approach (Leech and Onwuegbuzie, 2009), a pragmatic approach that tries to combine advantages of both qualitative and quantitative surveys (Leech and Onwuegbuzie, 2005). The stage of the research reported here was conducted as an exploratory (qualitative) research and data was collected essentially through semi-structured in-depth interviews. Although closed format surveys could allow for a larger sample to be surveyed, the complexity of the phenomena, with its cultural, behavioral, organizational, and even technological aspects required a more flexible approach. The richness of the data collected with this method, allows for a better delineation of the problem, identifying which factors are most important when considering the companies' practical views on that matter. Subsequent (quantitative) studies will be required to quantify the influence of those factors on telework adoption by companies and the impact on their employees' travel and activities patterns; this first step provides the necessary overview of the problem. Regarding data collection, instead of randomly interviewing individuals, the method used a technique known as experts interviewing, a specific form of applying semi-structured interviews. Experts interviewing is different from biographical interviews because the experts represent a group instead of an individual and they have both practical and reflexive knowledge; it is a very useful method for exploration and orientation in a new field and to provide a thematic structure and good hypotheses for further analysis (Flick, 2009).

To select the experts, companies were asked to designate persons that would respond about the companies' policies and practices, for example, higher hierarchy human resource representatives. The representativeness of the expert is an important issue in this study. Some interviewees were long date employees, in tune with the company's policies and influential in structuring the company's human resource strategies, thus probably and desirably having a holistic view of its members' opinions. Others, maybe because of a shorter period in-house, expressed more of an individual opinion or an opinion formed in previous job experiences. These more recent employees discussed mainly general issues such as how companies will adapt in face of the probable growth of telework and how they can benefit from telework policies in general.

It is worth mentioning that in the early stages of the definition of the methodology for this study, important choices had to be made. First, the decision about whom to interview.

Different perspectives could be raised by employees, top-level executives, or human resource managers. We opted to interview those indicated by the companies as responding for their human resource policies and practices, based on the supposition that, in addition to their own views, they would have information from both extremes of the hierarchy spectrum. Second, alternative qualitative survey methods were considered, particularly focus groups. The idea was to form focus groups within companies, gathering individuals at different hierarchical levels, and between representatives of different companies. Issues of confidentiality were soon perceived to plague the latter option; also, in both cases, the difficulty in bringing together individuals to a common meeting was assessed as a significant obstacle. While we acknowledge that a more comprehensive scenario could possibly be derived if several employees from the same company were interviewed, this approach would not necessarily provide data to be analyzed across companies, an important objective of this study. Finally, we believe that experts interviewing would be more conducive to obtaining a structured view of the issue. After analyzing the results, we are convinced that the methodological choices were adequate, considering the existing constraints.

Companies that have adopted telework and those that are still in the planning stages were selected, as well as companies that do not intend to adopt it in the near future. For companies in the first group (already adopt telework or are planning to do so), the interview covered: (i) general information (motivations, limitations and policy details); (ii) teleworker characterization; (iii) operational aspects (resources, costs, security, and worker performance); (iv) possible impacts on travel behavior; (v) results from policy adoption. These themes were identified throughout the literature review and were used for the initial meta-matrix in data analysis (see Miles and Huberman, 1994, p.178). For companies that do not intend to adopt telework, the interview explored aspects such as their views about the subject and related labor legislation, as well as job functions amenable to telework.

Interviews were recorded and transcribed to allow direct comparisons. They were then analyzed for each selected theme using a theoretically informed reading, in which parts of the interview were abridged using meaning condensation, a technique often used to find natural meaning units in extensive interviews (Kvale and Brinkmann, 2008). The resulting information was organized in a meta-matrix in order to conduct a cross-case analysis. Finally, a clustered summary table was constructed, in which all the themes identified had corresponding citations from different interviews (Miles and Huberman, 1994). The final analysis tried to identify similarities and differences among companies and their policy stages, considering motivations and restrictions, and the impacts of organizational culture, technology and legislation.

Sample

We tried to reach more than 80 companies and initial contacts were established with half of them. However, only 10 organizations agreed to participate in the interview. Several companies that denied participation in the survey stated not to have a consolidated policy for telework, which prevented them from officially expressing opinions on the matter. Other companies simply stated that they could not give interviews because of confidentially issues. Further investigation revealed that in all these companies some medium/high hierarchy employees already performed telework, although based on informal agreements and on an

irregular basis. Data from 30 companies, obtained by email or telephone, were used to complement ideas and perceptions raised in the main 10-companies sample data.

The sample contains medium and large-size private multinational and national companies and one national public organization. Obtaining diversity in the sample was important to capture companies' motivations and limitations from different perspectives. As presented in Table 1, ten companies from different economic sectors, based in the São Paulo Metropolitan Area, were interviewed.

Interviews were conducted between May and August of 2012. Company A was founded based on the idea that all employees would telework, while companies B, C and D have been adopting telework for more than 7 years and count on consolidated organizational policies. Company E is in its first semester of a pilot project that covers managers, directors and Human Resources staff. Companies F and G are planning to adopt telework and companies H and I do not consider this alternative for the moment. Company J adopts telework arrangements for the field and sales employees.

Table 1: Sample Description

Company	Economic Sector	Category	Employees (Brazil)	Teleworkers
A	Market Research	National	70	65
B	Clinical Research	Multinational	260	210
C	Technology Services	Multinational	17000	(≈10%)
D	Data Storage and Processing	National (Public)	11500	47
E	Auditing and Consulting Services	Multinational	4500	pilot (>30)
F	Cosmetics (production and sales)	National	7000	-
G	Web Services	National	130	-
H	Cosmetics (production and sales)	National	4000	-
I	Pharmaceutical retail chain	National	17000	-
J	Energy	National	760	289

ANALYSIS AND DISCUSSION

Telework is a broad term used to describe a variety of arrangements that involve working away from the employer's main campus (Morganson et al., 2010). Arrangements can vary in terms of work locations and frequency of remote working. According to Mokhtarian (1991) and Morganson et al. (2010), it is possible to identify 6 categories of locations: home, satellite office, neighborhood work center, field or sales work, client office and mobile (when a specific place is not needed). Concerning telework frequency, it is possible to find schemes in which the worker stays remotely most of the time in a fixed place or moving, or schemes in which he/she teleworks only once a week or eventually. The interaction between place and frequency can assume different patterns and understanding this variability is very important for having a clear view of telework impacts on travel.

In our survey, all the 6 companies adopting telework had different arrangements. For example, while workers from company A had total autonomy to decide when to go to the office and when to work remotely, the other companies had more fixed schedules. Some

companies offered more than one possibility for their employees: staying predominantly at home and going to the office only for meetings, working at the client's and at home, working 2 days from home and 3 in the office, etc.

The distinction between compulsory and optional teleworking arrangements is also relevant to this discussion, as these alternatives may have different drivers for the companies and different impacts on the employees. An optional arrangement gives the employee the possibility to choose whether he prefers to telework or not, while under a compulsory arrangement, the company obliges him/her to telework.

Salomon (1998) proposes that research aimed at estimating the potential adoption of telework should consider this phenomenon as a function of various exogenous factors, such as economic, environmental and social trends. This is a complex task, as the magnitude of each of the positive and negative impacts should be assessed in order to arrive at the final numbers. Besides, there is a variety of external processes that may affect the rate and type of telework adoption (part-time/full-time, home, client, neighborhood center). Therefore, in this research, we selected the main factors and analyzed their interaction using the information collected during the interviews.

A systematic analysis of the factors affecting telework is developed below. The schematic view of the overall analysis structure is presented in Figure 1 and is followed by the discussion of each factor. Excerpts from the interviews were translated into English and are used for illustration along the analysis.

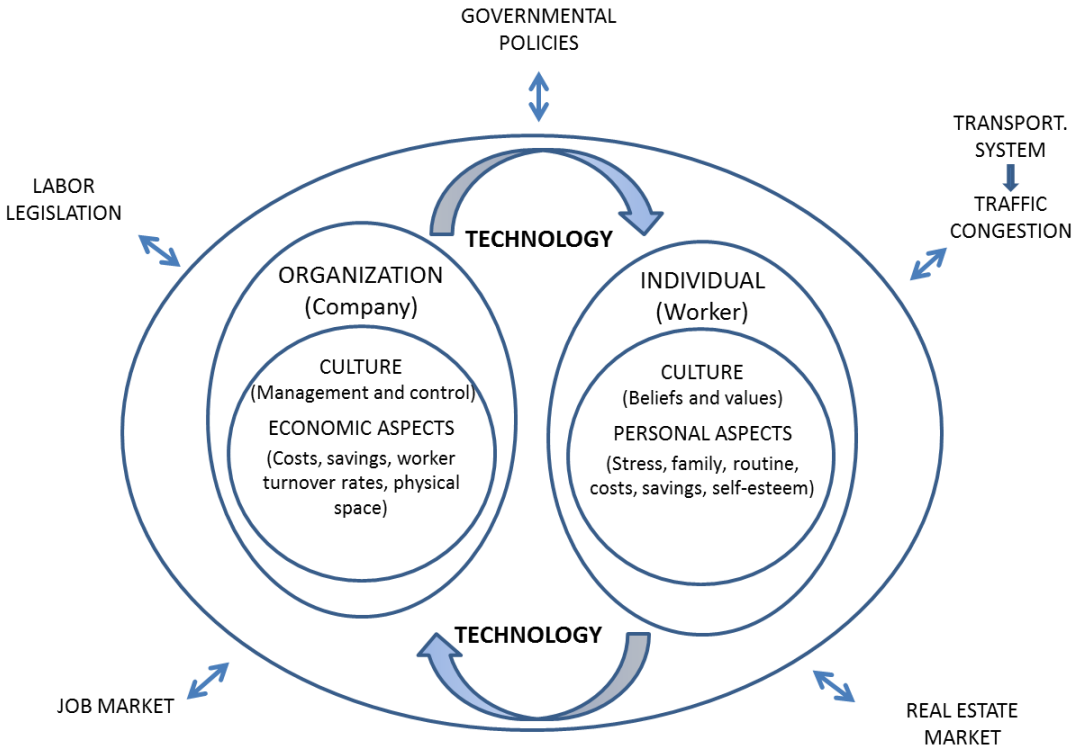

Figure 1: Factors affecting adoption of telework.

The Impact of Labor Legislation

Despite the recent change in labor legislation allowing for remote monitoring of employees, companies still perceive legislation as a barrier to the adoption and diffusion of telework. In many cases, companies are not willing to spend resources on the effort required to adapt internal regulations according to new legislation, since some laws are contradictory. For instance, while labor legislation has been made more flexible, a restraint followed; companies are now required to control employee's presence electronically. Some companies see this conflict as an additional difficulty to implement remote working policies. For example:

> "Today, from the legal perspective, we can't eliminate time cards for some posts in the office… I believe that labor legislation is opening up. But I think there are still problems…For example, the recent obligation of electronic time cards made things more complicated, turned it into some kind of chaos, right? … First the home-office regulation, now the time card obligation, you end up asking yourself: 'what should we do? So, those who are required to use time cards should not be allowed to telework?'" (HR coordinator, Company H)

However, companies that already adopt telework do not share this opinion. They make telework arrangements feasible by amending employees' work contracts and by establishing agreements with labor unions. This certainly requires investments that are perceived as worthwhile in terms of cost-benefit. Companies C and E are examples:

> "Specifically in Brazil, we have an addendum to the employment contract that is signed by the employee; this was prepared by our legal department, because the law, back in 2005, did not address the telework issue… the legislation change had no influence on us as we had already found a way of formalizing our telework arrangement." (HR coordinator, Company C)

> "We have been following the recent changes in labor legislation, but, actually, we already had something before that… We have an agreement of flexible work hours with the unions… this (agreement) is made because we have many employees that are frequently at the clients' offices. So, with that, we have all the elements for implementation." (HR national manager, Company E)

In two instances, telework seem to be more easily accepted: IT markets, in which unions have already agreed with this format of work, and for employees in position of trust, in which a strict supervision is not required.

The Impact of the Real Estate Market

Some companies in the sample state that the impact of the real estate market in Sao Paulo on telework is significant. One of the companies declared having reduced its floor area

needs by half due to its teleworking policy; others declare that telework will allow the company to grow without adding floor space. Another company, however, stated to prefer remodeling offices to narrower personal spaces to fit more employees than to consider a policy of telework:

> "At (one of our departments), we are facing an office space limitation indeed… So, I went to talk to the executive director and said: 'Look, we have this problem and we have two alternatives. The first is to remodel the office and that will cost us X and this solution will last us Y months. The second is to no longer provide staff with a fixed personal workspace so that they would use any available desk as needed, and to implement 1 day of telework for these employees. When I said the word 'telework', he scowled at me and said that he had strong prejudice against telework, so he preferred remodeling." (HR coordinator, Company H)

At the opposite extreme, Company A decided that the only financially feasible manner for them to start up would be to work as a full telework company. After its initial rapid growth, an office space was felt necessary; this space works similarly to a "show-room" for clients rather than an actual office space, as explained by their representative:

> "The company started with only 5 people, we didn't have a physical space, you know? All work from 2005 through 2006 was developed with no office facilities… recently we acquired this space… As the company grew, it was necessary to have an office to welcome clients and to provide a space where employees could work together when needed." (HR representative, Company A)

Another important issue that adds up to office space requirements is parking. Frequently, in the business-oriented areas of the city, the cost of a parking space is similar to the cost of work space for one employee. Some companies provide parking to all employees, but the most common arrangement is to provide it only for employees above a certain level (manager).

From our data, it is possible to establish an association between the emphasis given by the interviewee to the office space concern and the work arrangement offered by the company. In general, companies that had real estate costs as the main motivation for adopting telework implemented compulsory teleworking arrangements, not necessarily full-time, but compulsory.

Job Market

With the Brazilian economy continuously growing and the low qualification of the labor force in general, companies face a retention challenge. Since the higher the specialization the more difficult to hire, companies tend to offer the possibility to telework as a benefit to higher-level employees. In our sample, 2 companies that have a predominant share of women employees felt the need to consider telework policies, as women usually

have more household duties and child-caring demands and would thus benefit from these policies.

Many companies state that the major motivation for the adoption of telework is to improve the work-life balance of their employees. Only a few mention improving retention rates and employee productivity, although this might be considered a possible and desirable component of better work-life balance. One of these companies acknowledges that due to their employees' profile (80% fluent English-speaking-women) telework became an important attraction and retention mechanism:

> "I've had many professionals who left the competitors or the pharmaceutical industry to work with us, precisely because of the flexible working model. So, telework is a means of attracting talented and skilled people... but in my opinion, as a human resource professional, the main gain (related to telework programs) is employee retention..." (HR director, Company B)

Some respondents acknowledge that employees' profiles are changing, and that job applicants are becoming more aware of work-life balance. This, together with a growing familiarity with internet use would result in a fertile environment for telework adoption. However, this seems to be a trend that is still in its early stages in Brazil, probably found more often in some specific sectors such as advertising, marketing and IT.

Governmental Policies

In some countries, the government played an essential role in telework diffusion, both by example, through pilot projects in public agencies, and by implementing policies that encourage and support telework. In Brazil, on the other hand, companies claimed complete unawareness of such governmental actions or policies. However, this situation may be about to change, as new legislation (Law 12.587/2012 – National Policy for Urban Mobility) was recently enacted making mandatory the development of a "Mobility Master Plan" for all cities over 20,000 habitants. Hence, cities have to formulate plans and take actions to improve their transportation system and to adopt incentives to travel substitution, such as telework.

Transport System and Congestion

Potential impacts on performance of the urban transportation system and on employees' travel were rarely cited among the reasons for companies to adopt telework. This is in agreement with Nilles (1988), who found that social and environmental benefits are not sufficient for companies to change; it is necessary for them to see direct financial benefits.

Several companies acknowledge the frequently excessive effort and resources involved in commuting to work, including the stress resulting from the long and time-consuming trips through the saturated transportation network. Also, there is the issue of vulnerability to transit service stoppages; strikes of subway operators were mentioned as a significant burden on daily commute, even though they are not a frequent occurrence. Companies D and F commented:

> "I know people from the office here in São Paulo and in Rio de Janeiro that take between 2 and 4 hours commuting every day! And that makes them very fatigued…" (HR manager, Company D)

> "We realized that telework is different from simple flexible work schedule as it has an important role in the employees' mobility, which is a huge concern in a city like São Paulo. As the transport system is working at its limit and our office is located in the outskirts of the Metropolitan Area, employees' trips are quite complicated." (HR coordinator, Company F)

When asked about the possible impacts of the organization's telework policy on the employees' travel behavior, only a few companies showed concern. Company E, for instance, surveyed its employees' about their commuting time and distance in order to understand whether the policy would have significant impacts; it was found that more than 55% of the employees took more than 1 hour travelling from home to work and lived from 10 to 25 kilometers from the company's office. Company D (public sector) used the employees' commute distance as a criterion for telework eligibility.

Some companies, in addition to not properly acknowledging the potential impacts of employees' daily commutes on the transport system, take actions that can make the problem worse, such as providing parking space for all their employees, a policy that works as an incentive to car use. In fact, more than half of the companies revealed that the main mode used by their employees to commute is the automobile (Table 2). Abundant parking is also a consequence of municipal regulation in Sao Paulo, which sets *minimum* standards for the supply of parking spaces in new office and commercial buildings.

Table 2: Main mode to work and parking availability.

Company	Employees' main transportation mode	Parking Availability
A	public transport	none
B	automobile	only senior positions
C	not informed	not informed
D	automobile	to all employees
E	automobile	only senior positions
F	automobile	to all employees
G	public transport	only senior positions
H	automobile	to all employees
I	not informed	only senior positions
J	automobile	to all employees except teleworkers

Personal Aspects: Work-life balance, isolation and career

Some respondents in our sample, especially those working in companies that do not adopt telework regularly (or do not adopt it at all), seem to overemphasize the favorable

aspects of telework on employees' well being. Empirical findings of the impact of telework on work-family balance are inconclusive and dependent on the direction of the relation: work interference with family or family interference with work (Morganson et al., 2010). Several authors point out drawbacks of working away from the office such as decreased motivation because of lower task interdependence (Feldman and Gainey, 1997), work interference with family (Golden et al., 2006) and depression due to isolation (Campione, 2008). On the other hand, some authors found that telework was negatively related to family interference with work and was unrelated to work interference with family (Lapierre and Allen, 2006), and others revealed a positive relationship between home-based telework and job satisfaction (Gajendran and Harrison, 2007).

A very interesting case can be found in one of the companies in our sample. Idealized to operate as a full telework company, at some stage measures had to be taken to minimize possible feelings of isolation and low interaction among workers; some employees now go to the office once a week, not to work, but to sing in the employees' choir:

> "Sometimes I'm working at home and communicating with colleagues who are in the office and we just say: 'Let´s have lunch together?' We then meet for lunch and continue working in the company's office during the afternoon. Besides, we have some cultural activities that take place here (in the office) after 6 pm. For example, we have a choir and we rehearse every week." (HR representative, Company A)

Another point raised by respondents is that companies that offer telework are viewed as better places to work. The rationale is that this policy is adopted because these companies are concerned with their employees' wellbeing, which in turn is related to productivity:

> "We've not asked employees what they think about teleworking, but I guess it would have a high level acceptance... Personally (not the companies' view), I think that one of the biggest benefits from teleworking is in quality of life and I think the employee would be more productive." (HR coordinator, Company H)

While some authors support this idea (Sparrow, 2000; Shockley and Allen, 2007), some studies have shown that the impacts of teleworking on employees' well being might depend on the context. If teleworking is not *always* a good solution for *every* employee, we suspect that, for instance, companies that offer teleworking on a compulsory basis may be mainly motivated by cost reduction rather than the well being of employees. Different opinions from employees are described by the Company E manager:

> "Some people say: 'No way! I won't work at home! It's the dog barking or my children yelling! It's impossible to concentrate!' So, they don't want and have already said that won't telework! But the majority, the MAJORITY likes the idea and said they would join it!" (HR national manager, Company E)

Although some feel that telework is not suitable for them, in general, it is possible to infer from the human resources representative comments that workers do see benefits from not having to commute and are interested in doing it at least once a week. The same conclusion can be drawn from those companies in the sample that already adopt telework; the preferred arrangements seem to be those in which teleworking is performed one or two days per week.

Organization: Management and Business Culture

For companies located in Sao Paulo, cultural aspects are currently seen as the major barrier to the adoption of telework. This concurs with the findings of Nilles (1988). The author indicates that a major deterrent to telecommuting is the managers' resistance to change. Data from our sample illustrate this aspect. First, some companies state that face-to-face interaction is a value for them. Second, a few companies in our sample (those that do not adopt telework) report to believe that their employees would not have the discipline required to work from home, an issue possibly related to personal aspects of family-work interference, mentioned before. Both opinions are illustrated in companies' F and H speech:

> "Because our company is built upon relationships, it's in our DNA, so we have a lot of eye-to-eye contact, a lot of decisions are made jointly, in each other's presence! So, there are some things that could make this interaction with the home-office employee difficult…" (HR coordinator, Company F)

> "Well, I believe it's all a matter of employee maturity, I think ok, cool, now everyone can telework and I don't have a way of controlling them. So I think this would allow some kind of abuse and they (employees) could think: 'Ok! Cool! Uhhu! Today I'm going to the beach and will reply to all my e-mails by mobile phone!'" (HR coordinator, Company H)

However, this contrasts with the opinion of the companies that do implement telework, since they attribute their efficiency to the manager competence rather than to employees' personal characteristics:

> "We have a global telework policy in which we ask 'what are the characteristics needed for a manager to lead virtual teams?'... The first word we have to remove from our vocabulary is "control", right? Exactly, there is no control, no control of time or anything, what really exists is result-oriented managing!...that's why the manager needs to be prepared and qualified to define goals, deadlines, timelines and so on. And he needs to monitor his employees, which is different from controlling them." (HR director, Company B)

Clearly, the manager has to be trained to organize, delegate and monitor from a distance, which seems to be a great bottleneck for companies. Also, a result-oriented type of control demands more of the manager and, typically, companies pay for work-hours and not

for results. As Nilles (1988) points out, with the loss of ready visual cues, managers must move from a process to a product orientation when dealing with their subordinates; they must be significantly more concerned with identifying and negotiating for specific results than with controlling work activities.

This seems to create a major obstacle for telework implementation and could be one of the reasons for a reported initially strong resistance in companies that now do adopt telework:

> The Brazilian manager's culture is one of having his employee working in the same building, he needs to see the employee working. So we had this kind of resistance in the beginning of the adoption of telework… by the managers… Here, we are a result-oriented company and that is what allows the telework program to function." (HR coordinator, Company C)

Analysis Summary

The adoption of telework by companies was investigated as a company-employee interaction, conditioned by five exogenous factors: labor legislation, real estate market, job market, governmental policies, and the transport system.

As shown in Figure 1, the agent enabling this interaction is technology. Although the literature identifies telework programs implemented prior to the more recent spread of ICT (eg: Pendyala et al., 1991), the current technology is definitely a facilitator to working and communicating both inside and outside the office. Data from the interviews support this idea, as none of the companies see the acquisition of appropriate technology as a technical or financial obstacle, and many employees already use portable computers and mobile phones.

Regarding the exogenous factors, the analysis shows labor legislation as the main constraint perceived by companies, while job and real estate markets are the primary drivers stimulating the adoption of telework. Companies lack governmental policies addressing the issue, while legislation sends contradictory signs. Finally, the saturation of the transport system in large cities and the consequent congestion during peak hours are seen by companies as a factor which degrades employees' quality of life. Notwithstanding the fact that this concern appears in the discourse of some interviewees, it is basically seen as a secondary driver for telework adoption by companies.

CONCLUSIONS

The paper presented results from an exploratory survey about the potential for telework adoption by Brazilian companies, particularly those located in the Sao Paulo Metropolitan Region. Although 80 companies were contacted for our survey, only 10 agreed to be interviewed about their views on telework. From the 10 companies interviewed, 6 already adopt some form of teleworking. Additional information was gathered from companies that did not agree to participate, indicating that telework is being informally conducted. In many cases, individuals that hold high rank positions or who have some

degree of autonomy telework at least once a week, even if their company does not have an explicit telework policy.

Comparing perceptions of companies that do and those that do not adopt telework, it is possible to conclude that there are still some myths regarding non-presential work. For example, skeptical companies believe that most employees would not have the required discipline to work without close supervision, while companies adopting telework state that this may be an easy step to overcome if work assessment is based on results and if managers are properly trained. It is also possible to notice some inertia in maintaining organizational structures that function "reasonably" well, at least provided that competitiveness is not at risk. Since telework in Brazil is in its early stages and experience is limited, it still requires a significant effort from companies to adopt it, giving rise to some resistance. This perception may have been overemphasized in our sample, as it is composed mostly of large companies. As Neirotti et al. (2011) point out, if the technology is available, small to medium enterprises are more likely to adopt telework given their less complex organizational structures, which can be changed more easily.

Regarding employees' travel habits, many companies acknowledge that commute trips are a cause of stress due to congestion and the often long distances between home and work. However, some of the interviewed human resource representatives reveal an understanding that telework practice would benefit the employee only, since time savings in commuting could be used in non-work activities.

The interviews revealed that organizational and employee's potential personal benefits are driving telework adoption, although timidly. Since there are also potential benefits to society as a whole – through the improvement of travel (and environmental) condition –, a government action to stimulate telework adoption may be welcome, since there are positive externalities to be captured.

Finally, some considerations should be made concerning the research method employed. The number and type of companies reached by our survey are not sufficient to support a generalization of results; the research is, thus, of exploratory nature. Given the scarcity of studies about telework in Brazil, we believe that collecting qualitative data about the phenomenon was required. The expert interviewing technique was adequate to the current stage of the research. This study has thus to be seen as a first step of a larger effort that will investigate the individual changes in activity and travel patterns of workers before and after the adoption of telework.

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