AN ASSESSMENT MODEL TO ANALYZE ORGANIZATIONAL READINESS TO IMPLEMENT TELEWORK ARRANGEMENTS

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This article analyzes the implementation of telework as a process accomplished through changes in organizational culture and structure. In considering this scenario, the article presents an assessment model to diagnose the degree of organizational readiness to implement flexible work arrangements such as home telework. The assessment model analyzes the following aspects: 1) the organizational context; 2) the context of functions; 3) the individual context; and 4) the home context. After presenting the assessment model, the article also delineates the organizational characteristics that are conducive to telework as well as practical actions towards its successful implementation.

1. INTRODUCTION

The organizational scenario has been experiencing a period of deep changes in the nature of organizational forms and in the organization of work. Such changes are unprecedented since the industrial revolution and the consequent emergence of bureaucracy. In that period of domination of mass production, industries depended largely on the concentration of people, equipment and resources in one sole place. The major factors of success in production were grounded in the organizational ability to standardize and repeat activities; this was reached through the synchronization of employees' movements in space and time (Jackson & Van der Wielen, 1998.)

The development of information technology and the growth of the service economy have lifted intra- and inter-organizational frontiers, generating emerging organizational forms characterized by spatial and temporal dispersion. These organizations, which display diverse degrees of virtuality (Venkatraman & Henderson, 1998; Lévy, 1996), were established in such a way as to overcome the restrictions associated with conventional bureaucratic structures. Such emerging organizational forms are built up on differentiated philosophies, related with the HOW, WHERE, and WHEN work is to be accomplished.

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Telework is configured within an organizational practice that allows for flexibility towards the where and when work is performed. The implementation of telework in an organization is made effective through a change in aspects of organizational structure and culture (Kompast & Wagner, 1998.) Despite the fact that most teleworkers make use of information technology to carry out their activities, the greatest challenge for the implementation of telework is not technological, but organizational and human (Fulk & De Sanctis, 1995.)

This article presents a model of the organizational variables to be analyzed in order to assess organizational readiness for the implementation of telework in homes. With such an aim, this article has been structured as follows: first, telework and home telework are defined. Next, the aspects to be assessed in order to determine the feasibility of implementing telework are analyzed. These aspects encompass: 1) organizational context; 2) functional context; 3) individual characteristics; and 4) potential teleworkers' home context. The analysis of each aspect includes a presentation of proposals for actions that may guarantee the success of the implementation of telework. In the last section, we will present our final considerations and recommendations for further research.

2. TELEWORK

Nilles (1997) defines telework as any form of substitution of displacements related to work by means of the use of information technology such as telecommunications and computers. Central to his concept is the notion of substitution – the commuting of workers from their residence to the organization are substituted (total or partially) by the use of information technology.

Nilles' initial emphasis on the substitution of commuting by information technology has been gradually supplanted by the emphasis on accomplishing work at a distance from where it was traditionally accomplished, by means of the utilization of information technology. The convergence toward this new understanding of what telework is stems from the fact that there are various modalities of telework that do not adapt to aspects of the substitution of commuting *per se*. The term telework includes notions of independent, alternate, mobile, and tele-cooperative work (Wigand et al., 1997.)

The definition developed by *European Telework Online* (ETO, 1998) has been the most widely accepted. For ETO, telework occurs when information technology is applied to allow for the accomplishment of work at a distance from where its results are required, or at a distance from where work would conventionally take place. In this perspective, telework occurs when computers and telecommunications are utilized to alter the received geography of work.

Telework at home occurs when the employee or employer works in his or her residence, at least once a week, instead of commuting to the premises of the company being serviced. This article presents the aspects to be analyzed and the guidelines for action towards the implementation of telework at home – in the category of employed teleworkers – as a conscious organizational strategy of flexibilization for boosting competitiveness and life quality in the organization.

3. THE IMPLEMENTATION OF TELEWORK AT HOME

The literature on the implementation of telework at home is vast. The minute analysis of this material, however, reveals that its bulk is configured around prescriptive approaches developed by consulting firms. The scope of prescriptions is generally restricted to the aspects related to the appropriateness or not of tasks for telework, for support technologies, and for monitoring or controlling teleworkers' activities. The tendency is to bypass the fact that the implementation of telework is tantamount to a cultural change in the organization, and that, as such, it requires an in-depth analysis of the current organizational culture and structure, as well as of the organizational capacity for change. The inability to perceive the organizational reality alongside the variables involved in the process of change is the main reason why approximately 50% of the pilot programs for the implementation of telework fail (Girard, 1998.)

This is the real scenario in which the analysis of the feasibility of implementing telework at home must be carried out in a comprehensive way. The model proposed in this article encompasses the analysis of: 1) organizational context; 2) the context of functions; 3) individual characteristics of potential teleworkers; and 4) potential teleworkers' home context (ETO, 1998; Bélanger & Collins, 1996.)

Following is an analysis of each aspect of the model for the assessment of the feasibility of telework in organizations, and a presentation of guidelines for its successful implementation.

Table 1 presents a summary of the major aspects of the model and of the factors facilitating the implementation in each context of analysis. The remaining sections of this article will detail each of the items below.

Table 1. Aspects of the model for the analysis of organizational readiness to implement telework, and factors facilitating the process

Contexts	Aspects to be analyzed	Facilitating factors
Organizational Context	Structural Characteristics: - centralization; - formalization	- decentralized structure; - standardized activities through the creation of rules for decision-making and behavior
	Organizational culture and psychological contracts	- favorable values, such as autonomy; diminished fear of losing control; confidence; effective communicability; - congruence between discourse and action
Context of Functions	Degree of efficiency at which tasks can be accomplished at home	- tasks requiring low adherence to company premises; - pilot program set off by tasks of grouped interdependence
Individual Characteristics	Adequate profile for telework	- knowledge of computer technology; - high levels of commitment and organizational performance; - abilities for time-management; resisting dispersion; communicating effectively and the like
Home Context	Adequate site for accomplishing work and rearranging domestic routines	- existence of sound-proof office, used exclusively by the teleworker; - strict observance of ergonomic rules to avoid accidents or the development of ailments caused by work

3.1 Characteristics of the Organizational Context

3.1.1 Structural characteristics

Organizational structure deals with the way the organization plans and coordinates the collective activities of its members towards attaining organizational goals (Robbins, 1983; Hall, 1984; Perrow, 1986; Haas & Drabeck, 1973; Rogers & McIntire, 1983; Weisbord, 1983.)

For the implantation of telework, special attention must be given to the centralization of authority and to the formalization or standardization of activities in the organization, as well as to their dynamic interrelations.

Centralization refers to the degree of concentration of authority at the top of hierarchy. Highly centralized organizations are generally unprepared for the successful implantation of telework. Research has demonstrated consistently that complex environments require lower levels of centralization in the organizational structure. Complex environments hinder workers' grasp of ample information required for decision-making by a single individual, thus generating inefficiencies in the process, and pressure to distribute authority (Mintzberg, 1989.)

Centralized organizations also seek to solve their coordination problems by boosting direct supervision and/or boosting formalization. *Formalization* is directly related to centralization, and refers to the extent of standardization under which tasks are accomplished in the organization. (Robbins, 1983; Hall, 1984; Marsden et al., 1994.)

The main point in the analysis of centralization x formalization is the identification of the way the organization standardizes not only the development of tasks but also employees' behavior. Let us stress that rules, whether explicit or implicit, are the sustaining pillars of organizations. Rules are what effectively contributes to meeting drawing-board expectations and guaranteeing the predictability of organizational results, allowing for decentralization in decision-making without loss of predictability (Xu, 1994; Perrow, 1986.)

The *standardization* (or regulation) of organizational activities generally takes the following shapes: a) standardization by means of the utilization of exhaustive written rules for task-undertaking (Clegg, 1989; 1990); b) standardization by means of decision-making rules (Thompson, 1993.) Such rules are configured in general operational procedures elaborated by a small group of top managers. These procedures set limits for the action carried out at the lower levels of the organization, where the agreement of superiors is unnecessary for decisions covered by rules of procedure; and, c) standardization by means of creating and reinforcing rules of behavior (Thompson, 1993; Lebas & Weigenstein, 1986; Barker & Cheney, 1994; Steil & Navas-Sanches, 1998.) This involves organizational investment in the behavior ability of the workforce, which includes cooperation, commitment, adaptability, self-discipline, etc.

If the organization opts for boosting direct supervision (Mintzberg, 1989) or for increasing exhaustive written rules (Clegg, 1989, 1990), it will be jeopardizing the

development of an adequate work environment. This is because telework rests upon a differentiated set of premises regarding the individual – organization relationship.

As a strategy to make the execution of work more flexible in an ever-increasingly service economy, knowledge workers demand relationships of greater autonomy, reliance and freedom to innovate in the creation of processes that best meet consumers' demands. Exhaustive written rules and direct supervision (in the case of the teleworker, the utilization of "time tracking software") break the psychological contract between the organization and the teleworker, transforming telework in an extension of the system of coordination and control traditionally used in centralized bureaucracies.

Due to their clear inadequacy for knowledge workers, pure forms of standardizing activities and behavior have been left behind and gradually replaced by a hybrid compound of standardization processes, set off by a drop in the volume of exhaustive written rules and a gradual increase in the utilization of rules for behavior and decision-making.

The organizational literature indicates that standardization by means of rules for behavior and decision-making is the most highly recommended for accomplishing distributed work. In this case, the employer is led by internalized general organizational guidelines, which provide parameters for deciding by which specific means individual activities shall be developed. Explicit controls and norms are thus transformed into self-control, exerting pressure for the worker to avoid cognitive dissonance (Festinger, 1975), and to work on behalf of organizational goals.

3.1.2 Organizational culture and psychological contracts

Organizational culture may be understood as a set of signifiers and ways of perceiving reality as shared by the members of an organization (Morgan, 1986.) The predominant culture in an organization is configured around an archetype: a particular composition of ideas, beliefs, and values connected to structural attributes. Kikulis et al. (1995) suggest that archetypal designs are configured on the conceptual basis for the comprehension of organizational change. Once notions of value are the basis on which archetypes are formed, organizational change is infrequent.

For the analysis of the possibility of implementing telework, organizational analysts must: a) identify the basic elements of the organizational culture (especially beliefs and values); b) consider the extent of necessary change from those central values to a new set of values more favorable to the development of telework (autonomy; search for new solutions; Y management style; diminished fear of losing control; confidence; effective communicative skills; etc.); and, c) elaborate a plan for the development of those new values. On the other hand, if the members of an organization present high levels of consensus on non-facilitating factors for telework, then the suggestion is that telework not be recommended for that organization for the moment. The organization would have extreme difficulties in distancing itself from its current archetypal design, and the program of implantation of telework would be boycotted precisely by the group which should be supporting it.

For the effective implantation of telework, people as well as organizational processes must change. However, for people to be able to change, organizational analysts must understand not only the process of change, but also the people. The

analysis of organizational capacity for change also requires identifying which is the predominant psychological contract in the organization.

Psychological contracts deal with issues underlying interpersonal relationships, in groups of two or more workers. They are configured by implicit agreements between employer and employee, based on shared beliefs, in which each party makes the commitment to treat the other fairly (Shein, 1980.) The issues covered by psychological contracts are basically emotional, therefore when such contracts do not function properly, intense emotions are triggered. These mutual agreements are particularly important in contexts of uncertainty and risk, as is the case in situations of organizational change (Morrison, 1994.)

Understanding the expectations underlying psychological contracts is essential to the implantation of telework. This is because people develop their expectations by means of the perception and memory of what they have experienced. Contracts are created from what people do, not from what they say they will do. This is why psychological contracts are considered more real and concrete than the organization's formal policies. The analysis of recent organizational history in relation to other implanted changes is an effective way to single out some of the elements of the psychological contract.

Organizations in which psychological contracts on changes denounce discontinuous, interrupted actions do not succeed in motivating the functional group (including middle management) to commit themselves and believe in the stated intention of organizational change. Such organizations must alter the psychological contracts among their members by means of changes in management action. Top management must develop congruence between discourse and action, in seeking the psychological contract which is most adequate for the development of relations of trust and commitment.

3.2 Context of Functions

After the analysis of the organizational context, attention should be given to investigating which functions adapt to telework and which do not. According to Nilles (1997), the main question is related to the level of efficiency at which tasks can be accomplished at home, and how much of that work must be done on the company's premises. In several cases, the conclusion is that it is possible to work at home some of the time. This is one of the reasons why the average of days worked at home is 2.2 per week.

The classic methodology for analyzing functional adequacy of telework was developed by Nilles (1997.) According to the author, functions must be regarded as a group of tasks to be accomplished. Each function encompasses 12 tasks, on average. Here are some examples of tasks making up a function in the field of information: "preparation of reports; data analysis; data comparison; planning; client servicing; [...] composition of letters and memos; supervision of employees; etc."(p. 36).

After drawing the list of main tasks, the percentage of time spent on each task must be analyzed. To reach that figure, the analysis of each function is considered over a reasonable period of time, in order to waive natural routine oscillations. It is important at this point to focus on the analysis of each function in terms of its

requisites for communication rather than in terms of the people performing it at a given moment.

Requisites for communication may be described as: the need for direct contact with other people, full time; the need for direct contact with other people, who may be gathered together during pre-determined periods of time; and the need for interpersonal contact, which can be provided through telecommunications. If the function demands direct contact with other people full time, then it is not adjustable to telework. On the other hand, if the function demands direct contact that may take place in certain periods or on certain days, then one can consider telework as a part-time activity. Finally, if the function demands a low level of interpersonal contact, and if this contact can be mediated by information and communications technologies, then there is evidence of the possibility of introducing telework in such cases, beginning as a part-time activity, and proceeding as a full-time activity.

So far, each function has been analyzed individually. However, the achievement of organizational goals is configured through collaborative enterprise. Therefore, the second step in the analysis of the readiness of functions for telework involves comprehending the interdependence between functions.

A classic typology of interdependence has been summarized by Bélanger and Collins (1996): a) grouped interdependence – takes place when each task contributes individually to the whole, with a low flux of information between individuals; b) sequential interdependence – takes place when there is a sequence of tasks among workers, resembling an assembly line; c) two-way interdependence – takes place when the sequence of tasks flows both to and from the worker. Cooperation is necessary for the performance of activities; and, d) team interdependence – resembles two-way interdependence, but for the fact that information circulates rapidly among participants.

Bélanger and Collins (1996) point out that each specific kind of interdependence involves different forms of communication and coordination. For example, when tasks involve high levels of information exchange, there is an accretion in the necessity for structured mechanisms that guarantee effective communication. Failing to observe this aspect may lead to the duplication of work and to increased errors. In the telework environment, such risks are even further intensified.

As to coordination efforts, in the case of grouped interdependence, tasks may be standardized and decentralized. On the other hand, sequential and two-way tasks require time and charting management in order to avoid gaps in the development of activities. In case such tasks are carried out in a distributed environment, the utilization of *groupware* tools become necessary to allow for frequent exchanges of information and for access to data bases shared and updated in real time.

Thus, the analysis of organizational readiness for telework cannot be configured as an isolated task. The organizational analyst must identify the specific tasks of each function and its adherence to the central office, as well as the relations between functions and the flux of activities for the development of adequate communications and coordination mechanisms. Grouped interdependence tasks require less effort in organizational adjustment and coordination, which makes them a good starting point for a first organizational incursion into telework. More independent telework functions are preferably to be introduced after the organization has experienced success in grouped interdependence tasks.

3.3 Individual characteristics of potential teleworkers

Let us consider that, following the analysis of the organizational context and the characteristics of functions, the organization decides that telework is feasible and desirable. It is then necessary to identify the persons who will participate of the implementation process. Not all workers are good candidates for telework (Nilles, 1997; Bélanger & Collins, 1996; Bredin, 1996; Johnson, 1998.)

Despite the fact that some researchers have stressed each worker's potential to become a productive teleworker (Kugelmass, 1996), there has been a growing consensus on the existence of a profile which is more adequate for telework.

The "ideal" profile of the teleworker encompasses a set of forms of knowledge, skills, and attitudes, similar to those concerning knowledge workers (Nilles, 1997; Bredin, 1996; Bélanger & Collins, 1996; ETO, 1998; Wilkes et al., 1994.)

With regard to **knowledge**, the teleworker must be familiar with the basics of computer technology. Deeper knowledge of the function also allows for a better transition to telework. This aspect is related, though not directly, to *seniority*, or the length of the individual's working time with the organization. Despite the fact that a professional may have in-depth knowledge of a given function even if he or she has only recently joined the organization, we recommend that the length of "time of employment" be considered a criterion when selecting teleworkers. Workers with more company time have gone through a more intense process of socialization, which has led to their internalizing the most important aspects of the organizational culture. This cultural internalization leads to such results as: gained in-depth knowledge of norms, both implicit and explicit; the consolidation of the psychological contract; and the development of attitudes which benefit the organization.

In the context of telework, such beneficial **attitudes** translate into *organizational commitment* – especially in terms of attitudes –, which encompasses three dimensions of interest to telework: 1) belief and acceptance of the values and goals of the organization (feeling of loyalty); 2) the wish to maintain ties with the organization (permanence); and 3) the intention to invest efforts on behalf of the organization (Steil & Navas-Sanches, 1998.)

The main **skills** desired of teleworkers are: optimizing time-management; facing challenges; resisting concentration dispersion; communicating effectively; building up motivation; and creating and maintaining an adequate balance between private and professional life (Bredin, 1996.) In order to gauge such skills, organizational analysts draw on potential and performance assessments conducted previously within the organization, or they may opt for instruments developed specifically to assess employees' readiness for telework (Bredin, 1996; Nilles, 1997.)

A training program devised specifically for telework, aimed at developing knowledge, skills, and attitudes necessary for its effectiveness, is always indispensable, even when the organization and individuals approve telework and seem "ready" for the implantation of the program.

3.4 Home Context of Potential Teleworkers

The home context of potential teleworkers concerns the aspects related to the existence of an adequate setting for the accomplishment of telework; such aspects

include the rearrangement of domestic routines towards ensuring that the teleworker will not run the risk of receiving stimuli which may hinder the development of his or her professional activities. Such adjustments are invariably necessary, because historically, aims pertaining to the home setting have always been in direct opposition to individuals' professional goals.

In ideal terms, the potential teleworker should have a sound-proof office at home, preferably set apart from where there is movement in the rest of the house, and that office should be of his or her exclusive use.

Ergonomic aspects should also be carefully observed. Research conducted by the *Kensington Technology Group* has indicated that 59% of home teleworkers had not received any information whatsoever from their employers about accident prevention, and just 6% of the employers inspect their employees' home offices or request photographs. Organizations must attend to these aspects, once they may be responsible for accidents or professional ailments developed in ergonomically inadequate home offices.

4. FINAL CONSIDERATIONS

This article has demonstrated that telework is a multifaceted and complex phenomenon, and that the analysis of organizational feasibility and readiness for its implantation requires the cooperative efforts of a multidisciplinary team of organizational analysts.

Due to the fact that telework is a recent phenomenon, there is no consensus on a methodology for its implantation. This article has presented a model which provides for the analysis of organizational contexts and of individual and domestic functions in its inter-relations, as well as strategies for change which are to be made effective following the analysis of the organizational reality.

When the analysis of the factors above indicates that the organization operates in such a way as to facilitate the implantation of telework, it is recommended that the organization conduct a pilot program prior to the large-scale implantation of telework. Such a program must be devised on a scale small enough to allow for its thorough management from the initial learning stage, but, on the other hand, broad enough to allow for the assessment of the necessary adjustments for the upcoming large-scale implantation of telework. The effective implantation of telework also requires close attention to several different aspects: training of teleworkers and supervisors; analysis of the legal and contractual terms of the employment bond; and observance of technical details, such as who is responsible for equipment maintenance, etc.

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