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An approach of multidisciplinary criteria for modeling alternatives of flexible working

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ABSTRACT

The concept of Home Office is related to the accomplishment of distance work with the support of computer science and/or telecommunication, software and access to the Internet. Thus requiring an execution model of labor Activity in Regimen of Flexible Work Distance (FW), workers and rules for conducting this execution. This paper aims to describe a definition process of an adequate model of FW according to the preferences of the involved ones. The case study of this research was applied in a Company of the electric sector that implanted a FW project. For evaluation of the alternatives of FW models it was applied a method of Verbal Analysis of Decision (VDA). Results showed an FW model elaborated from an integrated vision of criteria studied in diverse areas, and the users' opinions came from social interactions to better address their needs.

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1. Introduction

The concept of Home Office becomes related to the accomplishment of distance work, with the equipment support of computer science and/or telecommunication, software and access to the Internet. Technological advancements allow collaborators to perform their activities in different ways, environments, schedules, etc., thus requiring a flexible model of execution of activities by workers that is also long distance (in this text, called collaborators and their managers). This work model must be centered around the performance and life quality of collaborators, as well as the interaction and sharing of experiences among them in order to solve conflicts that may affect the completion of their activities.

The ecosystem of definition, execution and evaluation of a FW model must be specified in advance and some uncertainties must be agreed upon so companies can adhere to such model in its amplitude. This ecosystem includes the following steps: (i) the choice of the collaborators; such choice encloses the characteristics of the collaborator and the nature of his/her activities; (ii) the execution of the performed activities; which depends on the legal aspects, the solutions found for the management of activities, as

well as the technical solutions for the execution of the activities with social interactions; and (iii) the evaluation of the results; which include the way in which the work is carried by collaborators. Several professionals (managers, lawyers, technicians, psychologists) must work together to establish a FW model, considering the important elements of their field to this ecosystem. Some elements are the following: those related to the legal aspect (does the model guarantee the human right to disconnection of work, even being flexible?); those related to the management aspect (does the model guarantee the quality of the work? Can an activity be carried through despite some environmental interruptions throughout its execution?); those related to the human aspect (does the model guarantee the increase of productivity of a collaborator and her/his quality of life?); those related to social interaction (does the model guarantee better collaborative work?).

However, in the related work section of this paper, we show there are efforts to offer a FW model by thinking only in the aspects of management (Khalifa & Davison, 2000; Hendrickson & Strader, 1998; Clark, 1998; He, Li, Omland, An, & Sun, 2009 and Schirigatti & Kasprzak, 2007). There are studies in the area of psychology which go beyond an administrative vision, bringing relative criteria to human beings. Other works bring many legal criteria, which need to be studied for the decision of what it may or may not be made in FW model.

It is understood that a FW model should be defined from an integrated view of criteria studied in various fields. It is also believed that the alternatives of FW model should be explored

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and chosen with the workers themselves. Evaluating the preferences of those involved on the characteristics of a FW model may help setting appropriate requirements for the deployment of one or more FW models in a Company, more specifically, to define each model adapted to the needs of those involved. Enterprise's social networks are instruments that may be used to obtain feedback and requisites from beneficiaries, which are necessary for the elaboration of an FW model and adjustments during its execution. However, opinions may be conflicting thus generating uncertainties related to subjective criteria which must compose the model.

Mendes (2009), Mendes, Carvalho, Furtado, and Pinheiro (2010) and Machado, Pinheiro, and Tamanini (2015) have showed that problems of conflicting opinions can be solved by methods belonging to MultiCriteria Decision Analysis (MCDA) (Simon & Newell, 1958). In these studies, alternative models of interaction were identified and assessed in order to choose the best alternative solution or some features to generate another alternative. The criteria which characterized each solution were defined and presented to users so that evaluators could obtain the users' preferences. The analysis of alternative solutions based on users' preferences is the unstructured problem, i.e., a complex problem, where most of its variables are qualitative. An MCDA method (such as ZARPROS III (Tamanini & Pinheiro, 2008)) can be used to support a Verbal Decision Analysis (VDA) process.

The purpose of this article is to describe a process of definition of an FW model suitable to the workers' preferences involved, which were investigated by means of an MCDA method. The context used to apply this process was about an FW deployment project, having as a client a Company which provides electrical services. In this context, the needs of managers and collaborators of the Company and the most relevant requirements were identified in order to describe the criteria that constitute the types of FW model. For such identification the following instruments were performed: studies of existing FW models, application of questionnaires with managers and collaborators and analysis of social interactions among them.

Subsequently, a method for the analysis of verbal decision was applied in order to select the most appropriate FW model. The result was the identification of an FW model based on the preferences of collaborators and of the managers involved in the case study. The contribution of this work is the description of a collaborative process to support the existence of the ecosystem mentioned above.

The structure of this article is as follows: Section 2 illustrates the related work. Section 3 presents the research questions of this survey. Section 4 describes the phases for the definition of the FW model. The Sections 5 and 6 describe the MCDA process used in this study as well as the resources used for the analysis of alternatives of FW developed, before the analysis of results, discussion and conclusion sections.

2. Related work

An FW model, adopted by a Company, is driven by requirements – which are the requirements of the Company for the establishment and management of a FW regimen. These requirements are derived from organizational regulations, laws, strategies adopted for quality of work and well-being of collaborators. They cover many kinds of criteria, as outlined in the introduction.

The authors of this study conducted a literature review to identify the criteria that have been studied in the FW models. This systematic mapping is an empirical methodology that provides an overview of a research area to determine if there is evidence of research on a particular topic (Kitchenham & Charters, 2007).

We consider the following databases for research: IEEE and ACM. The criteria for inclusion of literature in the systematic review

were: articles, journals and magazines published since 1995 for analysis of the last 20 years. Exclusion criteria were: articles in languages other than Portuguese and English, and document type consisting of technical reports. The search string used was: (“Telework” OR “Telecommuting”) AND (“Teletrabalho” OR “Trabalho Remoto”). At the end we found 222 publications: 64 from the IEEE source and 158 from the ACM source. After reading all the abstracts, we selected 13 articles that discussed different criteria for FW. In addition, we also considered 7 frameworks (which originated from previous searches) which related to this subject.

Table 1 shows 16 requirements for FW, including associated criteria found in the 20 works.

Table 2 shows the classification of criteria raised by each job in 4 different areas: law, business, psychology and Human Computer Interaction (HCI), the latest including the social sciences field. The “X” means that marked work has some discretion in the area in question. It can be observed that all 20 (100%) of the work contemplated criteria the administration area, 14 (70%) of them contemplated criteria in the area of psychology, followed by works in related areas of law criteria.

In general, criteria for varied areas are presented in research on an isolate way. More specifically they address the administrative (productivity) and psychological (quality of life) areas, with little integration with other fields (law and HCI). One can observe from the literature review that only 6 works (30%) contemplated all 4 areas (see Table 2). As the development of a FW model has, by its nature, a multidisciplinary character, it is considered important to use specific criteria from different areas.

Another point analyzed was the participation of collaborators and managers in the implementation of the model. In the works of Khalifa and Davison (2000), Clark (1998), Turetken, Jain, Quesenberry, and Ngwenyama (2011) and Salazar (2001) questionnaires were applied to collaborators in order to understand their satisfaction and the advantages and problems of this type of employment. In the works of Khalifa and Davison (2000) and Turetken et al. (2011), collaborators were encouraged to answer questions, but had no opportunity for giving suggestions. Only the work of Clark (1998) also applied a questionnaire with managers. The work of Salazar (2001) conducted semi structured interviews with questions revolving around descriptions of a typical workday.

Finally another data refers to the artifacts used for planning and monitoring, since the work done by the collaborators must undergo a process of planning the execution of their activities, and monitoring the implementation of activities and evaluation of results. Only the works of Khalifa and Davison (2000) and Salazar (2001) talked superficially about the criteria for monitoring and recording of activities, although not showing any tools for this purpose.

3. Research questions

In the context of the Company used for this study, we were responsible for defining and evaluating a FW project. The main objective of this project was to assist workers in adopting the FW regimen and to contribute with improvements to the project. Before starting the project many of them had revealed negative behaviors (such as fear of isolation) toward the FW regimen. A specific objective was also defined as follow: to assure the collaborator's satisfaction, productivity and her/his capability of interaction, even in FW regimen.

The period of execution of such project was from August 2013 to September 2014. 14 workers (10 collaborators and 4 managers) participated.

The following research questions emerged for the definition of the FW model for such project:

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