

9-2017

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Recommended Citation

Torre, Terestina and Sarti, Daria, "Work Flexibility And ICT Use For Professional Purposes. First Evidence From The European Context" (2017). *MCIS 2017 Proceedings*. 3.

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WORK FLEXIBILITY AND ICT USE FOR PROFESSIONAL PURPOSES. FIRST EVIDENCE FROM THE EUROPEAN CONTEXT

Research full-length paper

Track N°16

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Abstract

This work aims at investigating the relationship between two major concepts in current research on working environment and working conditions, work flexibility and ICT use. Specifically, our aim is to demonstrate that an increase in work flexibility relies on higher levels of ICT use, coherently with the diffused idea that new technologies should be structurally and intrinsically flexible and their use in work means greater flexibility. In order to pursue our goal, a definition of work flexibility is provided in the first part of the paper, along with a review of current literature linking more recent contributions within those two areas of study. Hypothesis are then suggested to test. In the second part, the results of an analysis - carried out on a sample of European employees (N=34.885) taken from the European Working Conditions Survey (EWCS) - are reported. In the final part, the first evidence emerging from the study is discussed, underlying its unexpected features, and concluding remarks on the managerial implications of our enquiry are reported, along with the principal limits and future perspectives of further analysis.

Keywords: Work flexibility, PC usage, Internet usage, Europe

1 Introduction

In the last decades, work flexibility has been a much debated issue in Economics and in the organizational field. Notwithstanding this, it a unanimously recognized definition of the concept has not been reached yet. It had been defined as a broad-spectrum one (Turati, 1996) and continues now to be used in different ways to justify any form of possible adjustment to new and changing circumstances (Maggi, 2001). For this reason, it is acclaimed that this matter is now more and more evaluated positively. Indeed, flexibility is a useful resource for workers, seeking a good balance between work and life (McNall et alii, 2010; Morganson et alii, 2010), and for enterprises, looking for increased employee's commitment, reducing their turnover and improving their productivity (Halaby and Weakliem, 1989) as well as fostering rapid adjustment to the market's needs. Indeed, it is suggested that flexibility may increase employees' positive feeling toward the employer, thanks to the comparison with other jobs and organizations that do not offer flexible work programs. This would increase the value of the employees' psychological contract with the organization (Scandura and Lanaku, 1997). Also, a number of studies propose that the use of work flexibility influence employees' attitudes toward reciprocating with greater loyalty to the employer, ensuring better morale overall (Pitt-Catsouphe and Matz-Costa, 2008).

In brief, work flexibility had been described as the capacity of persons to adapt to changing circumstances (OCSE, 1986) through the use of different tools (Turati, 1996). In this perspective, authors have put forward evidence that work flexibility has been greatly increased, among others, by the development of new technologies (Butera, 2005), which can reduce standardization (of work and of production) in favour of more adaptive conditions. Indeed, according to most authors the "traditional workplace system, with its bureaucratic and hierarchical control system, is no longer efficient or compatible with the dynamic features of a global economy" (Kashefi, 2007, p. 342). On the contrary, more flexible systems are becoming the way to manage work organization (Wallace, 2003).

Work flexibility can be examined starting from two different point of view: from the perspective of the enterprise, as a strategy finalized to conform to market requests, and from the individual perspective, considering the effect of the worker's adaptation to business needs on his/her personal life, on his/her satisfaction and so on. All these aspects have been analysed (Eaton, 2003, Hill et alii, 2008, Moen and Kelly, 2007). We observe that less interest has been evinced in the comprehension of the interaction between technologies, particularly information and communication technologies (ICT), and the various dimensions of work flexibility. It is recognized that the technological revolution has hugely modified the content and meaning of the work, and its organizational characteristics, which define the components of work flexibility (Block et alii, 2012).

Starting from this premise, the aim of our work is to understand the relationship between work flexibility and the use of ICT usage in the work context. The basic idea is that more flexibility means more use of the ICT tools. Indeed, researches have shown both an increase in flexibility and in the pervasiveness of technologies, so that a connection can be imagined, which would be interesting to deepen.

This paper is organized in the following manner. In the second part, the theoretical background is offered and our hypotheses are introduced; in the third paragraph, we present the analysis and the most relevant results. Finally, some preliminary suggestions in relation

to our questions have been introduced, together with managerial implications, and considerations useful for future research activities have been proposed.

2 Theoretical background

Flexibility enables both individual and business needs to be met by making changes to the time (when), location (where) and manner (how) in which an employee works. Flexibility should be mutually beneficial to both the employer and employee and result in superior outcomes. (Aequus Partners, 2010). Work flexibility has been described as “the ability of workers to make choices influencing when, where and for how long they engage in work-related tasks” (Hill et alii, 2008, p.152).

Coherently with this definition, we can distinguish three different aspects. The first is related to *flexitime*, as named by Shockley and Allen (2007, p. 480) and defined as ‘flexibility in the timing of work’, the second, the “where” dimension, which is called *flexplace* and includes ‘flexibility in the location where work is completed, often referring to work conducted at home (also known as telework or telecommuting)’ (Shockley and Allen, 2007, p.: 480). Finally, the third dimension - which is the “how” dimension - refers to the conditions through which flexibility is realized into the working experience in accordance with the typology of contract possessed by a person.

Within the debate on work flexibility, an interesting perspective is presented by the boundary theory. According to this theory, people tend to create boundaries with the external environment (Desrochers and Sargent, 2004). Naturally, individuals are inclined to build boundaries between their work and family lives, thereby defining different and separate roles (Ashforth et alii, 2000). However, the reduction of physical separation between family and work arising from the introduction of modern ways of work organization and ICT makes it potentially more difficult for individuals to create and maintain a sustainable boundary between work and life (Lapierre and Allen, 2006).

Flexibility at work is used to refer to all those practices connected to an organizational culture devoted to eliminating “systems of rigidities” in a company. On the contrary, in a context where inflexibility prevails, there will be highly segmented roles and boundaries between impermeable roles (Desrochers et alii, 2005). The so called “fragmentation” over time and space of work leads to the gap between roles.

Some studies have demonstrated that flexible work arrangements are more highly related to work interface with family rather than family interface with work (Shockley and Allen, 2007). From this perspective, it seems that flexibility may be a problem only in one direction, which is that work risks to influence and condition family life and not otherwise. Therefore, we find it interesting to verify whether this possible intrusion can be mitigated by the presence of ICT tools, which structurally offer flexibility.

At present, work is normally performed using ICTs, which represent the most diffused tool. Hence, it is evident that a constant work relationship entails a regular use of personal computer (PC) and the Internet for work purposes. Furthermore, it is suggested that the inner and intrinsic potential of ICT tools can represent a source of flexibility when a worker is requested to face changing working situations, as a service context or simply non standardized activities (Iskanius et alii, 2009).

A number of studies has suggested that the use of technology has the potential to support work flexibility (Hill et alii, 2001; Valcour and Hunter, 2005) at the same time it has been proved that a mobile virtual office gives people more flexibility than a traditional office (Hill et alii 2003). Thus, we posit that work flexibility is positively related to ICT usage, such that:

Hp1. The higher the place flexibility, the higher the use of ICT.

Hp2. The higher the time flexibility, the higher the use of ICT.

Hp3. The higher the contract flexibility, the higher the use of ICT.

Hp4. The higher the cognitive flexibility, the higher the use of ICT.

3 Empirical Analysis

3.1 Method

The empirical research was based on data gathered from the database of fifth European Working Conditions Survey (EWCS) conducted in 2010 on a large sample of workers from the EU35 and which is the most recent at disposal. Only people who declared their status of being employed and aged between 18 and 75 were included in the analysis since the purpose of our analysis. The final sample results composed by 34,885 individuals.

3.2 Analysis and Results

In order to test the hypothesis presented in the second paragraph, an OLS regression analysis was performed among the main variables.

PC usage and *Internet usage* were taken as the dependent variables of the study. They were measured thorough a single-item-scale that comprised respectively: “Does your main paid job involve - working with computers: PCs, network, mainframe” and “Does your main paid job involve - using internet / email for professional purposes”.

In both cases, the responses were based on a seven-point-scale ranging from 7 to 1; in detail: 7= Never; 6= Almost never; 5= Around one-fourth of the time; 4= Around half the time; 3= Around three-fourth of the time; 2= Almost all the time; 1= All of the time. Despite some authors suggest for caution in using single-item scales in empirical research (Diamantopoulos et al., 2012), others express approval for this solution (e.g., Nagy, 2002). Indeed, as it has been demonstrated that “single-item measures of overall job satisfaction correlated highly with multiple-item measures of overall job satisfaction” (Nagy, 2002, p. 77), the same solution might be used in special circumstances (Diamantopoulos et al., 2012) so that in present case.

The *independent variables* related to work flexibility number four. In detail, we consider: “place flexibility”, “working time flexibility”, “contract flexibility” and “cognitive flexibility” required by the job and by the organization. These dimensions were also measured through single-item-scales,. Exactly, for “place flexibility”, the appropriate question is: “Where is your main place of work?” and the response scale ranged from 1 to 5, distinguishing from 1= Business’ premises to 5= My own home. “Working time flexibility” is analyzed with the following demand: “How are your working time arrangements set?”; in this case the response scale ranged from 1 to 4, where 1 = They are set by the company and 4 = They are entirely determined by worker. For “contract flexibility”, the query respondents

answered is: “What kind of employment contract do you have?”; the response scale for this question ranged from 1 to 5, considering that 1 = An indefinite contract and 5 = No contract. The last independent variable is “cognitive flexibility”. It was measured through the question present in the EWCS questionnaire, that is: “Generally, does your main paid job involve solving unforeseen problems on your own?”. Possible responses to this question are: 1=yes, 2=no.

To develop our research and to test our hypothesis, we first introduced six control variables, as they might have relevance for the present study. The control variables included here are: sex and age of the respondent, firm dimension the individual is employed in, years in the organization and average hours worked per week. As the second step of the model, the four independent variables related to work flexibility were introduced.

The regression analysis shows first interesting results about the relationship we wished to analyse between work flexibility and the dependent variables - that are PC usage and the Internet usage. The connection between the two main variable are shown in the first part of the Figure, while a detailed representation of the single components of work flexibility related to each dimension of ICT use is reported below.

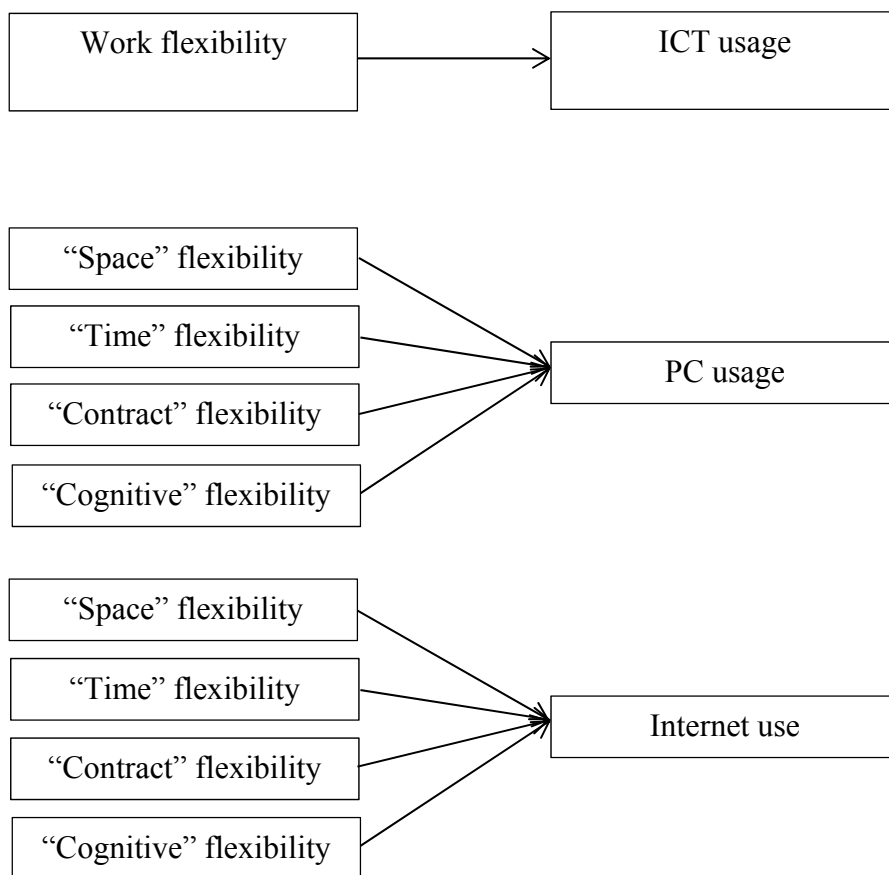


Figure 1. Relationships between work flexibility and ICT usage (N= 34.885)

Indeed, it was found that both models are statistically significant. Variance explained in the regression for PC usage is 15.9% and for Internet usage is 13,9% (R^2_{adj}). Work flexibility explains in both cases quite a high level of variance, respectively: + 13.5% and 12.6% (that is the increase in R^2 between Model 1, considering only control variables, and Model 2 comprising also independent variables). Furthermore, the results for both regressions show that all the factors related to work flexibility affect both the dimensions of ICT usage.

Our first findings demonstrate that work flexibility has a significant and relevant role in explaining ICT usage for professional purposes. In particular, it was proved that flexibility at work affects the time employees spend on PC and the Internet.

However, the findings are contradictory and deserve further attention in future research. In detail, the results show that flexibility related to work time and to decision-making autonomy are linked to a greater use of the PC and the Internet as tools for working purposes, so that Hypothesis 2 and Hypothesis 4 are supported.

However, when flexibility in terms of "work spaces" is considered, and therefore the option of working remotely for employees is contemplated, the use of PCs and the Internet has less impact in terms of working time. Here, the interference of the private sphere of life with work can be hypothesized, which reduces the prolonged use of work tools, or increases the awareness of the need for safeguarding personal spaces. Thus, Hypothesis 1 is not supported. Likewise, the results highlight that in contrast with the Hypothesis 3, when flexibility is related to work contract, the relationship between flexibility and ICT is negative, so that the more the work is stable the more the Internet and PC are used, while the lower the contractual formalization, the lower the use of the Internet and PC Hypothesis 3. Therefore is not supported.

4 Conclusions, limitations and further research

This paper aims to investigate the relationship between work flexibility and ICT usage, a relevant topic, which continues to require in-depth analysis to enrich our knowledge. Our first results seem to put in evidence an unexpected situation. The literature we examined and our personal idea converged towards the existence of a direct and positive link between the two constructs in all their components. Instead, our study demonstrates that two of the four dimensions of flexibility that we considered (namely, space where people work, and the type of contract they possess) have a negative relationship with ICT usage, while the other two (exactly, flextime arrangements and the last, which is associated with that dimension we called "cognitive", - to underscore the presence of unforeseen problems that have to be solved using personal attitude and mindset) are positively related.

Examining the first unconfirmed hypothesis, it looks that more flexibility in the choices of the space in which to work inhibits the intensification of the recourse to ICT tools: we think this is connected to the boundary theory (Ashforth, et alii, 2000) and, thus, to the need to avoid interference with private life, considering that our focus has been put on the professional purpose in the use of technologies and not in their large use for any goal.

This can be coherent with the positive relationship with time flexibility, in the sense that workers could prefer to use this dimension of flexibility to manage their tasks involving ICTs tools and to get separated work life from private life.

So, it turns out that if the spatial dimension is "digressed", ICT usage results as reduced, whilst if the temporal dimension is "digressed" the use of ICT increases.

This apparently contradictory finding, we think, is an extremely interesting result for scholars and practitioners and needs further insights into new research in the next future. Regarding the “how” dimension of flexibility, which we connected to the typology of contract which a person has, we think that the negative relationship can be explained with respect to the specific working conditions, as regard poor tasks or manual ones. Of course, this perspective asks for more analysis to be understood. A number of research has been done on ‘nonstandard employment relations’ highlighting different categories of work arrangements (Kalleberg, 2000) as well as different characteristics and attitudes toward work for employees belonging to those specific categories. Indeed, it was found, for example, that employment relations may affect workers’ psychological experiences, may have an impact on the employees’ degree of control over their work, and affect their perception of equity of treatment compared to other workers in the same organization (Kalleberg, 2000). As a consequence of these findings and of prior studies, a future development of this analysis might use a number of dummy variables for each different status of work arrangement instead of a single variable.

Furthermore, since we suggested that also the content of work might have a relevant impact in affecting the relationship between work flexibility and ICT usage, in a further development of this study other control variables will be added in the model as proxy of work content and degree of responsibilities held by employees.

In general, following our research, when workers can use work flexibility, they tend to use fewer ICT tools, except when they have to involve their personal attitude and knowledge to face new problems. This is the focus of our last hypothesis. We can imagine that technologies are considered in their potential of support to find information, they help in taking decisions and enhance appropriate solutions and they can be seen as an enrichment of the skills a worker has.

This preliminary evidence looks to us like really interesting, first of all because of their counterintuitive feature with respect to the role we usually imagine for ICT tools, and so worthy of further analysis.

The present study does have some limitations. First and foremost, it is based on an analysis developed on secondary data. This means that the studied population and the undertaken measures may not be exactly those that researchers could have chosen to collect for the specific topic they are interested in studying. For example, dependent variables - i.e. time spent using PC and the Internet for work purposes - might be too broad and vague, even if we think that these might represent a good proxy for the purpose of present study. At the same time, it is reasonable to think that things could have changed since the time the questionnaire was submitted (2010), - indeed we think that the analysis has to be re-proposed as soon as the new edition will be at disposal.

Nevertheless, we have not to forget that the use of a database such as the EWCS presents the advantage of being able to manage a very large sample, which offers the statistical power required to obtain significant interactions. On the other hand, it raises questions about the reliability of the measures that - for this study - also lead to a low percentage of variance explained by the model. Also, we are aware of the limitations associated with the use of a single-item measure, as mentioned earlier. Moreover, attention can be paid to the national and cultural differences, as so to different kinds of work activities: in this sense, many possibilities open up for the future.

In conclusion, we think that our work contributes to the garnering of evidence on a topic, which is always more interesting and which is intended to maintain a central role in research.

Indeed, on the one hand, the increasing pervasiveness of ICT in work and, on the other hand, the diffusion of any form of work flexibility have to be considered together, to understand individual behaviors and also to suggest suitable managerial indications to run people. We believe that more attention should be paid in this+ field.

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