

## How Digitalization, Work-Family Balance, and Work Efficiency Can Influence Employees' Preferences for Teleworking in the Future

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*During Covid-19 pandemic many employees found themselves in the new position of teleworkers. Proof of the last years, teleworking remains an alternative to the classic system, reason why in this paper we aim to examine, based on an online questionnaire, the perceptions of Romanian employees about the very complex aspects that teleworking involves: the new ICT tools and technologies adoption, impact on work efficiency, work-family balance, and employees physical and mental health. The paper is based on an empirical analysis of data, and the authors have used as research methods: testing the independence of groups (Mann-Whitney U and Kruskal Wallis) and the correlation between variables, categorical principal components analysis (CATPCA) and logistic regression model. Our findings show that several factors, such as flexible working hours, family time, and autonomy have a positive influence on the decision to telework, while IT security risks, interruptions and virtual meetings were not perceived by respondents as negatively influencing their decision to telework. However, the consequences for mental health, such as mental stress, lack of socialisation and the difficulty of separating working time from family time, lead respondents to prefer another working system. The implications of the research are relevant for policy makers, employers, and employees as they reveal which categories of employees are more likely to telework and why.*

**Keywords:** *Teleworking; Digitalization; Work Efficiency; Work-Family Balance; Mental Health.*

### Introduction

Covid-19 pandemic crisis has generated many negative effects, both at the level of the public health system and at the economic and social level. It has caused changes in the current practices of the organizations which were forced to ensure their survival through enhanced management of working conditions, and performance criteria adjustment. At the same time, specialists have seen new opportunities for a sustainable and favourable economic recovery, better communication in the online environment and refinement of ICT (Information and Communications Technology) tools needed to achieve it (Baert *et al.*, 2020; Loia & Adinolfi, 2021). Researchers in the field believe that teleworking will become a preferred work system in the future, considering teleworking being a key factor in business and economic continuity over the past year, identified as a new way of working where employees focus less on where they work and more on asynchronous communications and results-based monitoring (Knutson, 2020). The global restrictions imposed by the Covid-19 crisis have changed the conditions of the telework system, in the sense that it was no longer a voluntary choice of employer or employee, but rather a way of working imposed by context, no longer only occasionally. During the lockdown period imposed by the COVID-19 pandemic, teleworking has been widely adopted as a part of the Romanian government stay-at-home policies, according to Law no. 55/2020 (Romanian Parliament, 2020), to ensure the continuity of economic activities.

In Romania, until the Covid-19 pandemic crisis, the teleworking system was a very low practice, ranking last in

the European Union as a percentage of employees who worked (sometimes and usually) from home in the period 2010–2021 (Eurostat, 2022). According to Eurostat data - *European Labor Force Survey*, teleworking in Romania has evolved from 0.3 % in 2010 to 1.4 % in 2019, increasing to 6.6 % in 2021. According to the *Living, working and COVID-19* e-survey (Eurofound, 2021), the share of employees working from home due to COVID 19 increased significantly, reaching 27.1 % in Romania in 2021, and 66.7 % of them wish to continue working from home after the pandemic.

The purpose of this study is to analyse the perceptions of Romanian employees related to the very complex aspects that telework involves: the ease/difficulty of the adoption of the new ICT tools and technologies; the impact on work efficiency; on work-family balance, and on employees' physical and mental health. Our research will explore all these associations, and further identify the differences in perception determined by gender, age, level of education, family status, industry, and the size of the organization in which they work. The objectives of the research are to identify the effects of telework perceived by the employees and the factors that influence the option of Romanian employees for teleworking in the future.

The originality of this paper is provided by the multidimensional approach of teleworking in the context of the COVID-19 pandemic, which allowed the identification of multiple correlations between factors such as work efficiency, work-family balance, digitalization, and physical/mental health, named, and used in the paper as influential factors. Moreover, the debate focused on aspects

specific to an emerging country like Romania, but also on issues specific to certain socio-professional and demographic categories (such as women and young employees).

This paper contains four sections. The first section gives an overview of the related literature focusing on the concept of teleworking, on its advantages and disadvantages, and teleworking relationship with the influential factors. Based on the reviewed literature, a series of hypotheses have been formulated both in terms of the employees' perceptions related to teleworking effects and to the factors that could influence their option to involve in telework system in the future. The other two sections concentrate on describing the data and the research methods applied in the empirical analysis.

Our discussions and research conclusions, comments on the limits of our research, and some directions for future research are drawn in the last section.

### Literature Review

The concept of teleworking emerged in the 1970s, when Nilles (1975), due to several factors that favoured rising energy costs and the development of computers and new telecommunications technologies, proposed the use of teleworking as one of the ways to lead to urban and organizational decentralization, on the one hand, and to increased labour productivity, on the other. In the same idea of decentralization and dispersal of organizations, Widen Van der et al. (1993) consider that different forms of teleworking could be studied in this context, information technology making it possible to geographically relocate many types of work involving electronic information processing. Teleworking involves working in a variety of alternative locations outside organizations' premises and includes home, telecentres, client space and even work in the organization's offices, by using only ICT tools for interaction with colleagues/team and managers (Allen, Golden, & Shockley, 2015). The regulation of teleworking activity was conducted in Romania in accordance with Law no. 81/2018 Romanian Parliament, 2018). By the very definition of teleworking, both at the legislative level (ETUC, UNICE, UEAPME, & CEEP, 2002; Romanian Parliament, 2018) and at the level of the scientific literature, teleworking involves the combination, to some extent, of several dimensions: a) technology, work being achieved through the use of ITC infrastructure, b) organizational, teleworking can be implemented according to certain fields of activity and / or for certain positions / functions, organizational systems and managerial practices, c) spatial and temporal, the work being carried out totally or partly in telework from any space: from home, from customers, from the car, from other decentralized offices / telecentres of the employer in work programs other than those from the employer's office (flexibility) (Baruch & Nicholson 1997; Neirotti *et al.*, 2012). In fact, the topic of teleworking includes several research sub-topics, such as wellbeing, professional isolation, work-family conflict/balance, job satisfaction, mental stress, technology, flexibility, and flexible work programs (Santana & Cobo 2020).

The implementation of teleworking requires appropriate ICT infrastructures (hardware, software, connectivity, cloud, cyber-security) that enable teleworking and ensure protection from cyber risks and access to data

(Mihailovic *et al.*, 2021), ICT training and support for teleworkers (Bentley *et al.*, 2016; Ghilic-Micu & Stoica, 2016), supportive organizational culture (Dima, Tuclea, Vrânceanu, & Tigu, 2019), and appropriate managers perception, attitude, and practices (Silva, Montoya & Valencia 2019; Lembrechts, Zaroni & Verbruggen, 2018). The non-use of teleworking is due not only to the absence of technical solutions to carry out professional activities at home or elsewhere, but also to cultural barriers in the workplace, such as presence culture, where presence is expected in the regular workplace, which can become visible in the way the work and meetings are organized, but also in the expectations revealed explicitly or implicitly by management (Lott & Abendroth, 2020).

Teleworking is perceived as a work system with advantages and disadvantages, both for employees and employers. The most common advantages identified in literature are related with improved productivity, loyalty and organizational commitment, autonomy, job satisfaction, self-efficacy, flexibility, work-family balance, job-related wellbeing, retaining and attracting employees, perceived career opportunities (Bailey & Kurland, 2002; Belzunegui-Eraso & Erro-Garces, 2020; Nakrosiene, Buciuniene, & Gostautaitė, 2019; Felstead & Henseke, 2017; Janicko & Krckova, 2019; Galvez, Tirado, & Martínez, 2020; Palumbo, 2020). Teleworking can also provide benefits for employees' health by providing an environment conducive to focus, less noise, fewer interruptions, more privacy, better air quality, reduced daily commuting stress from home to work (Gajendran & Harrison, 2007).

In contrast to the advantages of teleworking, there are studies that point out also the disadvantages of teleworking as increased labor intensity (Kelliher & Anderson, 2010), weak relationships and communication with colleagues (Gajendran & Harrison, 2007), lack of social support, decreased welfare and productivity (Morilla-Luchena *et al.*, 2021), information and work overload (Raisiene, Rapuano, Varkuleviciute, & Stachova, 2020), difficulties in separating work-family time, affected opportunities for promotion/career advancement (Tavares, 2017; Nakrosiene *et al.*, 2019). Also, teleworkers perceive greater social isolation (Morganson, Major, Oborn, Verive, & Heelan, 2010) and disconnection from colleagues and managers, affecting commitment to the organization (Ruiller & Dumas, 2019). Moreover, a continuous online connection stress teleworker, by inducing a state of insecurity, and the feeling of being continuously monitored reduces productivity and interpersonal relationships (Bolisani, Scarso *et al.*, 2020; Brown *et al.*, 2020; Fairweather, 1999; Solis, 2017).

### *Teleworking Effects on the Mental and Physical Health of Employees*

The lack of daily commuting creates conditions for reducing physical activity, which could have adverse effects on physical health, but also on mental health in terms of certain factors as isolation, depression, stress, and overload (Kawada, 2020; Tavares, 2017), technostress (Suh & Lee, 2017), loneliness, irritability, worry and guilt (Mann & Holdsworth, 2003). However, Henke *et al.* (2015) suggest that employees can benefit from telework opportunities,

showing that non-teleworkers have a higher risk of obesity, alcohol abuse, physical inactivity, tobacco use and even depression. Moreover, Montreuil & Lippel (2003) showed that telework is generally seen by teleworkers as having a positive effect on their health, although potential problems could arise from the workstations design, long hours, isolation, and poor application of the provisions regarding the employees' health and safety.

Other studies focus on the perceived boredom and burnout of telecommuting employees during the COVID-19-pandemic. Boredom, often caused by a state of demotivation, lack of coherence or purpose, can be understood as a negative state that can even turn into a phenomenon called "boreout" (Starchos & Schull, 2021). Stress generated by the Covid-19 pandemic crisis, adapting to new ways of communicating with colleagues and managers, working with new IT techniques and technologies, exhaustion, social isolation, and anxiety experienced by employees are all triggers of burnout (International Labour Organization, 2020a). As previous studies showed, burnout has a negative influence on job satisfaction (Voll, Gauger & Pfnur, 2022). Due to the lack of physical contact in their home office, these employees experience loneliness and feelings of isolation (Wang, Liu, Qian, & Parker, 2021), factors that are positively related with burnout (Voll, Gauger & Pfnur, 2022). Social support techniques and methods can be used as an "invisible" shield for an increased workload assigned by managers during teleworking (remote working), checking for the presence of burnout effects in such circumstances (Slavkovic, Sretenovic, & Bugarcic, 2022).

Fatigue and mental stress in teleworking are aspects that can be avoided by improving work environment and results (Bentley *et al.*, 2016), ensuring social support from organization and colleagues, employees' control over their professional and personal activities (Dima *et al.*, 2019), and by avoiding organizational practices that may encourage family-work conflict (Vander Elst *et al.*, 2017).

#### *Teleworking Effects on Work-Family Balance*

Teleworking has both positive and negative effects on work-family balance, considering that balance as a holistic concept, unique for each person, which depends on each individual values, priorities, and objectives (Haar, Russo, Sune, & Ollier-Malaterre, 2014). By promoting a sense of control over working and family time, teleworking gives employees more flexibility and autonomy, a fact which allows them to spend more time with family, friends, greater availability to solve family problems, time for personal activities, in other words better quality of personal life (Eurofound, 2020a; Lasfargue & Fauconnier, 2015; Lopez-Igual & Rodriguez-Modrono, 2020; Felstead, Jewson, Phizacklea, & Walters, 2002).

The harmony established between family life and work has a positive impact on job satisfaction, productivity, physical and mental health (Haar *et al.*, 2014). The positive impact of teleworking on work-family balance and stress levels is also supported by Gajendran & Harrison (2007), but it largely depends on telework intensity. In a less positive light, other studies point out that many employees have increasingly felt a blurring boundary between work and personal life, an intensification of work, and an increase

in working hours (International Labour Organization, 2020a), but using a set of behavioural, temporal, physical and communication tactics, teleworkers could improve work-family time management (Golden, 2021).

Although the effects of the teleworking system on the work-family balance are mostly positive, the reality is often complicated, especially in the context of crisis in families with children, due to family responsibilities that can challenge work-family balance (International Labour Organization, 2020b; Eurofound, 2020b), but working at home could help women effectively manage the work-family balance (Powell & Craig, 2015).

#### *Teleworking Effects on job Satisfaction, Effectiveness, and Efficiency*

Job satisfaction is a significant factor that shows how much the job, seen as the whole work experience, fulfills the employee's expectations (Toscano & Zappala, 2020). In general, the positive relationship between teleworking and job satisfaction is given by the flexibility and autonomy to manage work-family balance (Schall, 2019; Davidescu, Apostu, Paul, & Casuneanu, 2020; Gajendran & Harrison, 2007), workplace environmental conditions (Ordonez Parada, 2018), proper communication channels (Smith, Patmos, & Pitts, 2018), technical and managerial support, training, and minimal interference between work time and family (Baker, Avery, & Crawford, 2007; Allen *et al.*, 2015), this relationship depending on telework intensity (number of days per weeks) (Golden, 2006). Also, teleworking could fulfil teleworkers' basic psychological needs, thus leading to a higher level of job satisfaction (Brunelle & Fortin, 2021).

Nonetheless, during this COVID-19 pandemic, social isolation determined by the restrictions enforced by legislation caused a negative effect on job satisfaction, Toscano & Zappala (2020) and Schall (2019) highlighting the harmful effect that social isolation has on stress, job satisfaction and work productivity. Also, increasing workload and higher level of stress and depression due to loneliness have a negative effect on job satisfaction (Rofida Novianti & Roz, 2020; De Cuyper & De Witte, 2006).

Feelings of loneliness have been shown to have a negative influence on job performance (Ozcelik & Barsade, 2018) and work engagement (Basit, Azeem, & Haq, 2019; Tian, Pu, & Ren, 2021). Furthermore, Galanti *et al.* (2021) argue that social isolation and work-family conflict have been associated with significant decreases in productivity and work engagement, on the one hand, and increases on job stress on the other hand (Galanti, Guidetti, Mazzei, Zappala, & Toscano, 2021). We observe that a new factor "work engagement" has specific nuances in telework and as expected, „social support" has a positive mediating role on the relationship between loneliness and work engagement (Slavkovic *et al.*, 2022) and, implicitly, on the effects related to job satisfaction, effectiveness, and work efficiency. These results suggest that both the management of organizations and employees should consider these factors as specific for telework and develop new changes in organizational culture for expected positive outcomes in this work system.

Teamwork effectiveness and satisfaction are also affected by teleworking, teams working remotely face more significant collaboration and communication challenges

(Hertel, Geister, & Konradt, 2005), with focus on knowledge sharing, cooperative attitude, and competitive conflict (Lin, Wang, Tsai, & Hsu, 2010).

### *Hypothesis*

Based on the literature, the key aspects that influence and are influenced by teleworking have been identified. The main factors that influence teleworking can be analysed in terms of socio-demographic and professional characteristics of employees (gender, age, level of education, family status, size of organization, type of economic activity).

A1 Overloading with activities for accomplishing work tasks (A1.1), increasing working time (A1.2), stress at work (A1.3) and fatigue (A1.4) are the effects of teleworking felt much stronger by women than by men.

A2 Improving physical health was felt more intensely during the Covid-19 crisis by employees in families with children (including single parents) than by those without children (including those without a family).

A3 Students feel the most need for online courses / training in the teleworking system.

A4 The increasing amount of time spent in virtual meetings and teleconferences/video conferences is an effect of teleworking perceived more acutely by employees from large organizations (> 250 employees) compared to those from organizations with less than 9 employees.

The most important effects of pandemic teleworking on employees are related to work efficiency and effectiveness, work-family balance, digitalization, and mental health and these aspects influence the choice of employees to involve in teleworking also in the future.

B1 Effectiveness and efficiency in teleworking correlated with task overload (B1.1), stress for performing work tasks (B1.2) and increasing of working time (B1.3) influence the option of employees to involve in teleworking also in the future (B1.4).

B2 Digitalization, an essential component of teleworking, which involves technical problems encountered in assimilating new ICT tools (B2.1), but also security risks and data access (B2.2) influence the option of employees to involve in teleworking also in the future (B2.3).

B3 The main consequences of teleworking during the COVID-19 pandemic crisis over mental health, such as increased fatigue (B3.1) and increased stress and mental problems (B3.2), influence the option of employees to involve in teleworking also in the future (B3.3).

B4 The advantages of teleworking for the family-work balance, such as the flexibility of the work schedule (B4.1) and the increase of quality time spent in the family (B4.2) influence the option of employees to involve in teleworking also in the future (B4.3).

### **Data and Methods**

**Data.** The results presented in this paper are based on a questionnaire applied on employees from Romania who work in teleworking system. In this regard, an online tool was created using Google forms that facilitates data collection, being sent via e-mail in February 2021. This method of online questionnaire was chosen, given the alert situation caused by the COVID-19 pandemic crisis, which would have made fieldwork more difficult. In fact, there are

studies that show that computer tools for data collection are practical and suitable for obtaining appropriate statistical results (Horton, Rand, & Zeckhauser, 2011), and currently many studies are conducted through online questionnaires. Before completing the questionnaire, all participants were informed that their answers were anonymous, and confidentiality was ensured. During the research, a reminder was sent to complete the questionnaire. A total of 212 questionnaires were received completed by employees in teleworking system between February and April 2021. The sample size is suitable for processing the 26 items, according to the ratio of 5 to 1 between the sample size and the estimated number of parameters (Janssen *et al.*, 2016).

Although the number of responding teleworkers is relatively small compared to the total population of teleworkers (a response rate of approximately 0.05 %), it is not unusual to have only a part of employees who worked in teleworking (Kuruzovich *et al.*, 2021). A sample size of approximately 200 respondents was used in most research conducted on the same topic in Romania (Davidescu *et al.*, 2020; Petcu *et al.*, 2021; Turkes, Stancioiu, & Baltescu, 2021).

The questionnaire was designed to collect data on teleworkers' perceptions of the effects of teleworking on work efficiency, work-family balance, physical and mental health, and their experiences of using the new ICT infrastructure. To measure the perception of teleworkers regarding the effects of teleworking 26 statements were made in which respondents had to indicate the level of agreement on a Likert scale (5-points Likert agreement scale) from 1 (total disagreement) to 5 (total agreement).

All the data were analysed using IBM SPSS Statistics 23.

**Methods.** The methodology applied in this paper was selected to answer the research questions. Our research is primarily exploratory, aiming to better understand the patterns of perceptions, attitudes, and behaviours, but also to discover new and relevant / interesting relationships between the factors studied. We performed a multi-stage analysis, which involved the following steps:

i. *Testing the association between two or more independent groups.* For testing category A of hypotheses, we applied two nonparametric tests specific to quantifying the association between two or more independent groups: Mann-Whitney U and Kruskal-Wallis H. To test the association between two independent groups we used the Mann-Whitney U test, a nonparametric version of the T-Test, due to its power advantage when testing on non-normal distributions. To test the association between more than two independent groups / categories we have used the Kruskal-Wallis H test.

ii. *Testing the correlation between variables.* The correlation between the variables was evaluated using the Spearman rank correlation coefficient. A significant correlation coefficient can also provide information on the intensity of the link between the variables. Thus, we analysed the rank correlation coefficients higher than |0.5|, which indicate the existence of a strong relationship (Corder & Foreman, 2014).

iii. *Categorical Principal Component Analysis (CATPCA).* To test category B of hypotheses and extract from the total number of 26 variables analysed a smaller set of latent factors we have used the Principal Component

Analysis. To synthesize in a smaller number of factors the multiple aspects that telework involves, we have used the method of Categorical Principal Component Analysis (CATPCA). All variables included in the analysis were measured on the ordinal scale.

iv. *Logistic Regression Model.* Often, PCA is used as a preliminary step to more in-depth statistical analysis (Yao, Coquery, & Le Cao, 2012). Such us, in our research, the scores of the factors obtained by CATPCA were included, in turn, in the regression analysis (logistic regression model) to quantify using the OR indicator (Odds Ratio) what are the chances that the response variable will appear among the variant of interest ( $x = 1$ ) compared to the alternative ( $x = 0$ ) (Kemalbay & Korkmazoglu, 2014):

$$OR = \frac{\pi(1)/[1-\pi(1)]}{\pi(0)/[1-\pi(0)]} = e^{\beta_1} \tag{1}$$

For simple logistic regression model:

$$\pi(x) = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}} \tag{2}$$

where the response variable is:

$$y = \pi(x) + \varepsilon \tag{3}$$

and the logit function:

$$g(x) = \ln \left[ \frac{\pi(x)}{1-\pi(x)} \right] = \beta_0 + \beta_1 x \tag{4}$$

The choice to use in our research the logistic regression model stems from its advantages, namely enabling us to simultaneously capture the influence of several explanatory variables and to avoid confusing effects (Sperandei 2014).

Thus, we have also estimated multiple logistic regression models of the form:

$$\ln \left[ \frac{\pi_i}{1-\pi_i} \right] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n \tag{5}$$

## Results

Regarding the profile of teleworkers who completed the questionnaire, it should be point out that the majority are women (72.6 %) and that 58 % of the sample are in the age group up to 29 years.

The descriptive statistics of the answers to the questions from the questionnaire is described in Annex 1, in which the aspects appreciated by the respondents are ordered according to the importance given by them.

**Testing the independence of groups.** The independence test of the samples in relation to the researched variables was performed using the Mann-Whitney U and Kruskal-Wallis tests. Results for which asymptotic significance  $<0.01$  or  $<0.05$  were interpreted. The Mann-Whitney U test shows that there are significant differences between men and women in terms of the effects they perceived in telework, with women feeling more overloaded than men in carrying out work tasks, increasing working time for them and stress at work (Table1), thus confirming hypotheses A1.1, A1.2 and A1.3. Increasing the level of cooperation with colleagues / work team is another indicator felt much more strongly by women (Table 1). At the same time, the analysis reveals that women felt much more acutely than men an increase in fatigue and stress, a slight imbalance of mental health (Table 1) explained by the much greater tasks that often fall to a woman in the family, the need for ensuring a balance between family and work, thus confirming hypothesis A1.4.

The Kruskal-Wallis test reveals that there are significant differences between respondents, by age category, in terms of time spent in meetings, virtual meetings and teleconferences (Table 1). Thus, people in the 30-39 age group experienced a sharp increase in the time spent in these meetings. One possible explanation is that this age group is mostly encountered in management positions. Respondents up to the age of 29 are at the opposite pole.

Table 1

Results of the Mann-Whitney U and Kruskal-Wallis H Tests

Variables	Sex	Age	Educational attainment level	Family status	Management position	Organization size	Industry
Workload	-3.181**	2.007	.908	6.296	-.405	.727	7.3
WorkTime	-2.451**	6.849	1.57	4.837	-.102	1.547	16.838
WorkCommun	-.074	.251	2.246	1.39	-.429	.915	10.686
LimData	-.198	6.155	1.083	3.143	-.619	3.371	14.644
ManagCtrlPress	-1.462	2.511	3.24	.783	-.258	.553	16.76
TechInterr	-.874	1.454	1.397	1.944	-.953	2.959	13.205
VirtMeet	-1.582	11.286*	.645	1.1	-1.363	9.321*	7.979
WorkStress	-2.673**	.497	1.607	5.127	-.789	2.563	16.815
SecSata	-.042	1.685	1.528	8.073	-1.72	8.446*	9.012
TeamCoop	-2.300**	5.472	4.94	3.04	-1.327	5.466	16.622
Train	-.004	2.887	6.353*	5.637	-2.54	2.105	14.643
Aut	-.505	.82	2.246	2.879	-.814	.96	5.436
WorkFamilyTime	-1.23	5.872	2.326	3.417	-2.012	2.746	10.856
FlexWork	-0.52	1.376	3.506	1.627	-1.954	5.642	4.178
FamQualTime	-0.768	5.905	6.265*	3.812	-0.115	15.448**	11.559
TranspCost	-0.621	7.017	6.424*	0.27	-1.283	1.319	6.593
ICTTrain	-0.191	3.819	0.95	1.69	-0.842	1.493	9.266
HardProbl	-0.234	1.403	1.581	3.545	-0.188	3.748	13.717
SoftProbl	-0.486	4.242	3.771	0.938	-0.877	3.843	7.093
NetConex	-1.81	0.61	4.089	1.442	-0.446	1.285	8.664

Variables	Sex	Age	Educational attainment level	Family status	Management position	Organization size	Industry
MentalStress	-3.097**	3.183	2.069	2.323	-0.913	1.945	13.391
Fatigue	-3.438**	6.816	5.061	3.332	-0.554	0.947	7.002
ICTDepend	-1.414	1.768	0.958	7.66	-0.455	6.54	6.882
SocLack	-0.87	5.028	1.569	1.68	-0.276	8.259*	6.843
HealthImpr	-1.326	0.828	2.991	10.815*	-0.465	5.421	33.722**
CyberThreats	-0.687	2.618	0.754	0.056	-0.631	0.968	9.295

\*Test is significant at the 0.01 level. \*\* Test is significant at the 0.05 level

Single-parent families and families with children felt more of an improvement in their physical health than employees without children or without a family, confirming hypothesis A.2. The students felt more of an increase in the number of online courses/training than the other employees, confirming the A3 hypothesis, which can be explained by the low work experience at the level of the organization. The quality time spent in the family and the reduction of expenses for home-service transport are significantly appreciated by employees with high school.

At the level of large and very large organizations (over 250 employees) the time spent in meetings, virtual meetings and teleconferences was much higher perceived by their employees than in small organizations, thus confirming the hypothesis A.4. A possible explanation derives from the level of control from the management of the organization, the degree of decision much more hierarchical than in other forms of organization. Also, the risk of security and access to data is much higher felt by employees in very large organizations. Quality time spent in the family is a significant feature felt by employees in companies with 10-49 employees.

**Testing the correlation between variables.** All variables analysed were found to be significantly correlated with at least one of the other characteristics (at a significance level of 0.01) (Annex 2). For example, the highest rank correlation coefficient is 0.726 indicating a strong correlation between hardware and software issues that respondents encountered in assimilating the ICT technologies needed to perform the tasks in teleworking system, and a strong correlation between hardware problems and inadequate training (0.573). In the same context of the use of ICT infrastructure, there is a strong correlation between cyber threats and security and data access risk (0.530). It is also worth noting the strong correlation between the level of fatigue and stress and other mental problems (0.715), but also between the stress for performing work tasks and stress and mental problems (0.592).

A significant correlation also appears between limited access to data and poor communication between employees (0.519). An explanation associated with this correlation derives from the fact that limited access to data will affect the time spent using different communication tools, which will materialize in poor communication with colleagues / managers to solve work tasks, indirectly generating delays in doing their job.

And between the variables overload with tasks and the increase of the working time necessary to solve the tasks we have identify a strong correlation with a coefficient of 0.659, being in turn correlated with the increased level of stress. According to several studies in the field of teleworking, teleworkers tend to work more than when working at the

employer's premises, partly because travel time to work is replaced by doing the work tasks and due to changes from workplace, routines and blurring the boundaries between work and personal life, all of which lead to high levels of stress and fatigue (Eurofound & International Labour Office, 2017).

**Categorical Principal Component Analysis.** To meet the objective of the research, namely, to identify the effects of telework during the pandemic and to test the category B of hypotheses, we included all 26 variables analysed (26 items in the questionnaire) in the CATPCA analysis. We retain the 26 items since none of these factors elimination would have brought a significant improvement of the Cronbach's Alpha value of 0.8. This fact came in line with the aim of our study, namely evaluating as many aspects involved in teleworking as possible.

From the Scree Plot and considering the values greater than 1 (Kaiser's rule) resulted the possibility to choose a number between 1 and 7 principal components.

The criteria for choosing the final number of principal components were the amount of variation explained by the selected components and the interpretability.

Thus, we have decided to include in the analysis the first 7 principal components that capture a percentage of approximately 60 % of the variation of the initial variables. The decision was also supported by our intention to conduct an in-depth analysis of the topic of teleworking and capture the complex facets of this phenomenon, and in this case the choice of the number of principal components must be subsumed to the research purpose (Bro & Smilde, 2014).

Matrix A (Component Loadings) captures the correlation between each variable (item) and the 7 principal components before the rotation of the factors. After the oblique factor rotation (promax) resulted Structure Matrix (Annex 3), which contains the correlation coefficients between variables (items) and factors. *Component 1*, which we have entitled "*Digitalization - technical and training difficulties*" is positively and very strongly correlated with items related to hardware and software problems, internet connection problems and those caused by the lack of training that the respondents in the sample met during their teleworking system during COVID-19 pandemic, thus confirming hypothesis B2.1.

As we expected, there is a link between *component 1* and *component 5* (Annex 3), which we called "*Digitalization - risks and training needs*", because the latter is strongly correlated with items such as: time spent in virtual meetings, frequent interruptions, security risk, increasing cyber threats, the need for training, confirming hypothesis B2.2. *Component 2*, which explains in the largest percentage the variation of the initial variables, is the one that captures the problems that the respondents who worked in the teleworking

system faced in performing the work tasks. We have entitled it “*Work efficiency problems*” because it is positively strongly correlated with items such as: overload with tasks, stress at work, increased working time, increased level of control, thus confirming hypotheses B1.1, B1.2 and B1.3.

In turn, component 2 is related to component 4, which we have named it “*Mental problems*”, but also to component 5, “*Digitalization - risks and training needs*”. The main mental problems that the respondents considered to be related to teleworking are fatigue, mental stress, lack of socialization and the difficulty of separating working time from the family time, thus confirming hypotheses B3.1 and B3.2.

Component 3, which we called it “*Benefits for the family and for the workplace*”, is positively correlated with items such as: program flexibility, quality time in the family, autonomy, reduction of expenses and team cooperation, thus confirming hypotheses B4.1 and B4.2.

Component 6 is positively correlated with items such as devices addiction and improved health status and has been named “*Health versus Addiction*”, while component 7 is positively strongly correlated with items such as: limited access to data and work communication. The latter was called “*Accessibility and Communication*”.

Table 2

Validity Analysis and Correlation Matrix Components

Dimension	Validity analysis*		Correlation matrix components**						
	Average variance extracted (AVE)	Composite reliability (CR)	1	2	3	4	5	6	7
1. <i>Digitalization - technical and training difficulties</i>	0.7	0.9	1.00						
2. <i>Work efficiency problems</i>	0.6	0.9	0.26	1.00					
3. <i>Benefits for the family and for the workplace</i>	0.5	0.8	-0.17	-0.10	1.00				
4. <i>Mental problems</i>	0.6	0.8	0.19	0.44	-0.09	1.00			
5. <i>Digitalization - risks and training needs</i>	0.5	0.8	0.41	0.38	-0.10	0.28	1.00		
6. <i>Health versus Addiction</i>	0.6	0.8	0.12	0.14	0.00	0.16	0.05	1.00	
7. <i>Accessibility and Communication</i>	0.7	0.8	0.29	0.27	-0.07	0.07	0.26	0.03	1.00

\*AVE and CR are computed based on the items loading over 0.6

\*\*Variable Principal Normalization. Rotation Method: Promax with Kaiser Normalization

For validity analysis, we computed average variance extracted (AVE) and composite reliability (CR) with proved to meet the required thresholds of 0.5 for AVE and 0.7 for CR (Janssen et al., 2016).

The correlation matrix between the components (Table 2) showed that one of the main implications of teleworking is digitalization, but also that the latter is accompanied by technical difficulties, risks and need for trainings. Digitalization is also correlated with work efficiency issues, which in turn are related to certain mental problems. However, the correlation coefficients do not exceed [0.5], the amount for a strong correlation, which allowed us to include the factors identified in the logistic regression model.

**Regression Logistic Model.** Given the multiple implications of teleworking during the COVID-19 pandemic on the professional and personal lives of respondents, we have tried to determine by means of logistic regression, which of these factors significantly influences the choice of employees to work in teleworking system, thus testing category B research hypotheses. We have created a binary variable (1 = Yes for telework and hybrid, 0 = No for telework and hybrid and Yes for the classic working system).

We estimated several regression models in which we have included in turn the scores of the principal components and then, along with these factors, we have also included the socio-demographic and professional variables. Of the latter, only the size of the companies in which the respondents

work, and their fields of activity proved to have a statistically significant impact on the decision to work in teleworking system.

We have analysed the results of the 4 regression models in which we included: principal components (Model 1), principal components and firm size (Model 2), principal components and fields of activity (Model 3), all the variables mentioned above (Model 4).

Thus, the factors that proved to have a significant impact on this decision (preference for teleworking) are component 2 (‘*work efficiency problems*’ - negative correlation), component 3 (‘*benefits for the family and for the workplace*’ - positive correlation) and component 5 (‘*digitalization - risks and training needs*’ - positive correlation), confirming hypotheses B1.4, B2.3 and B4.3, and not confirming instead B3.3. In model 1, when the scores of the observations for component 2 are increased by 1 unit, we expect a decrease in the odds ratio (OR) between the choice to work in teleworking system versus the classic working system by 53 %, while at 1 unit increase of the scores of the observations for component 3, we expect an increase in the odds ratio (OR) by 67 %. In model 2, when we included in the analysis the size of the companies, at the increase by 1 unit of the observations scores for component 2 we expect a decrease in the odds ratio (OR) by 56 %, while at the increase by 1 unit of the observations scores for component 3 we expect an increase in the odds ratio (OR) by 91 %. In model 3, when we included in the analysis the

fields of activity of the companies, the results were like model 1. In model 4, in which both the size of the companies and the fields in which they operate were taken into account, when increasing by 1 unit the observations scores for component 2 we expect a decrease in the odds ratio (OR)

between the choice to work in telework versus the classical system by 58 %, while at 1 unit increase in the observations scores for component 3 we expect an increase in the odds ratio (RO) by about 90 % (Table 3).

Table 3

**The Results of the Logistic Regression Model**

Variables	Model 1		Model 2		Model 3		Model 4	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
<i>Principal Components</i>								
1. Digitalization - technical and training difficulties	-0.013	0.987	0.068	1.070	-0.052	0.950	0.015	1.015
2. Work efficiency problems	-0.763**	0.466	-0.832**	0.435	-0.760**	0.468	-0.881**	0.415
3. Benefits for the family and for the workplace	0.515*	1.673	0.649*	1.913	0.520*	1.681	0.640*	1.897
4. Mental problems	0.151	1.163	0.109	1.116	0.095	1.100	0.049	1.051
5. Digitalization - risks and training needs	0.691**	1.995	0.740**	2.095	0.701**	2.016	0.781**	2.184
6. Health versus Addiction	0.207	1.230	0.219	1.245	0.203	1.225	0.220	1.246
7. Accessibility and Communication	-0.402	0.669	-0.319	0.727	-0.375	0.687	-0.290	0.748
<i>Organization Size</i>								
Under 9 employees			-0.789	0.454			-0.776	0.460
10-49 employees			-0.823	0.439			-0.924	0.397
50-249 employees			-1.240*	0.289			-1.217*	0.296
250 employees and over (ref)								
<i>Industry</i>								
Education					0.450	1.568	0.313	1.368
Financial					1.236	3.443	1.702*	5.485
Information					1.299	3.666	1.033	2.810
Others (ref)								
Constant	1.945**	6.993	2.568**	13.039	1.640**	5.154	2.294**	9.910
Nagelkerke R Square	0.236		0.237		0.235		0.283	

Significant \*at the 0.05 level, \*\* at the 0.01 level

Basically, as expected, the benefits of teleworking positively influence the decision for teleworking, while work efficiency issues lead respondents to prefer another working system. One result that deserves further research is the significant and positive influence of component 5 on the choice for teleworking. Factors such as security risks, interruptions and time spent in meetings were not perceived by respondents as issues that would negatively influence their decision for teleworking system.

Other variables that have been shown to influence the choice for teleworking are the size of the company and the field of activity. Thus, compared to other fields of activity, there are 5.5 times more chances for employees in the financial field to choose the teleworking system, while compared to employees in very large companies, others are less likely to choose the teleworking system (Table 3.) Besides, the composition of the answers corresponds perfectly with the results of the study conducted by the OECD in 2021: financial services and highly digitalized industries, respectively large companies used the teleworking system. In addition, especially employees with higher education and

women were more involved in this work system compared to the other social categories (OECD, 2021).

### Discussion and Conclusions

Our paper aimed both to investigate the main consequences of telework in Romania, given that until COVID-19 pandemic teleworking and work from home were very little used practices, and to identify the factors influencing employees' intention to telework, totally or partially, in the future. This study, focused on the perceptions of Romanian employees on the teleworking effects in the pandemic context, examined a series of positive and negative factors that affected work efficiency, work-family balance, and physical and mental employee's health. The lack of experience in the teleworking system is also reflected in the analysis of the Romanian employees' perception on the effects of telework. As expected, given the relatively small phenomenon, until the emergence of the pandemic there were not many studies conducted in Romania in the field of teleworking (Davidescu *et al.*,



2020), but the significant increase in the use of teleworking in Romania after the pandemic for sure will lead in the development of the research in the field, our research aiming to make contributions in this regard.

Regarding the main effects of teleworking on employees analysed in terms of socio-demographic and professional characteristics, the use of Mann-Whitney U and Kruskal–Wallis tests revealed that there are significant differences between men and women. The women felt more overload than men and increase of working time and stress. The advantages generated by the teleworking system allowed women to solve problems related to family and work but with additional efforts generating stress and fatigue. These research findings are supported, in a partial and indirect way, by Robertson & Mosier (2020) who believe that caring for children and other family members can cause stress if employees are constantly forced to solve family and work problems at the same time, work stress being a much more acute factor felt by women than by men (Oakman, Kinsman, Stuckey, Graham, & Weale, 2020). However, teleworking, under normal conditions, also has an important impact on the health of teleworkers in terms of its effects that allow a better balance between family life and work (Baruch, 2000), and reducing stress (Tavares, 2017; Moretti *et al.*, 2020). Although women have shown a preference for the teleworking system (Allen *et al.*, 2015), they have often experienced greater difficulties in finding a balance between work responsibilities and the responsibilities involved in caring for children, family members and concerns about school requirements (OECD, 2020).

The need for courses/training is a factor in supporting teleworking, perceived in the current conditions by all teleworkers. The results of our research, through the Kruskal-Wallis test, reveal those employees (students/master students) with less or no work experience have felt more of an increase in the number of online courses / training than other employees. This perception can be explained by the concern of management to support inexperienced employees in this context of crisis and is supported by studies that stressed the importance of investment in education for providing young people with necessary skills to adapt to future labour market needs (Dimian *et al.*, 2016).

The time spent in virtual meetings and teleconferences is a form of communication with the work team/supervisors, specific to teleworking, which allows the best decisions to be made, the result of our research revealing that the risk of security and access to data is much higher for large organizations, while job insecurity is felt much more significantly at the level of small organizations (<9 employees). Another issue was the increased time for virtual meetings, which had a direct impact on working time for daily tasks, affecting job effectiveness and efficiency. At the same time, it is noted that the communication in teleworking has changed a lot, having major implications in terms of job and team efficiency and effectiveness, teleworkers satisfied with appropriate communication channels are experiencing a higher level of job satisfaction (Smith *et al.*, 2018). A consequence of meetings and interruptions generates employee anxiety, work pressure, frustration, and stress (Luong & Rogelberg, 2005), while extended meetings and interruptions stimulate negative feelings and require employees to restructure their work time and tasks to be

performed, which can lead to a decrease in job satisfaction (Leonardi, Treem, & Jackson, 2010).

As expected, considering the profile of the sample (high share of female respondents), the main problems of job efficiency were given by the work overload, stress, increased working time, and a higher level of management control. Other negative effects as fatigue, mental stress, social isolation, and the difficulty of separating working time from family time were put in a direct relationship with the work-family balance and employees' mental health. However, it can be appreciated that as the "lesson is learned" the intensity of the negative effects of teleworking decreases. This aspect has also been highlighted by Gajendran & Harrison (2007), the authors identifying that the positive impact of teleworking on the work-family conflict and the level of stress depends largely on the learning curve of the teleworking system. Also, the effects of teleworking on employees depend on the intensity of teleworking, performing tasks only 2.5 days from home brings increased benefits for both the employee and the employer (Oakman, Kinsman, Stuckey, Graham, & Weale, 2020). The same idea is confirmed also by our respondents which answered in proportion of 62.4 % that the working system preferred for the future is a hybrid one.

Factors that have been shown to have a significant impact on the option for teleworking are those related to work efficiency, digitalization, and work-family balance, while factors related to physical and mental health have not been identified as having a significant impact. Thus, the results of the CATPCA analysis were demonstrating that the respondents also perceived certain advantages of teleworking for the work-family balance: the flexibility of the work schedule and the increase of the quality time spent in the family.

Obviously, the benefits of teleworking will influence employees' decision to work in this system in the future (Moretti *et al.*, 2020; Georgescu (Cretan), Gherghina, Duca, Postole, & Constantinescu, 2021). These advantages had mainly a major impact on the work-family balance (Palumbo, 2020), among which we can mention: the flexibility of the program, quality time spent with the family, elimination/decreasing of stress and fatigue generated by time spent in traffic.

The originality of our study is brought by the exhaustive approach of teleworking during COVID-19 pandemic. We have demonstrated through an in-depth analysis that there is a multidimensionality of this topic and multiple correlations between latent driving factors. The research drew attention to certain problems, specific to a country such as Romania, a Secondary Emerging market (FTSE Russell, 2020) from Eastern Europe with technical and ICT training drawbacks, due to a slow digitalization process, but also to problems specific to certain socio-professional and demographic categories (such as women and young employees). Companies' digitalization remains the main solution, in many cases, for their efficiency, but many employees perceive the need for training courses and increased security of data. As Kohtamaki, Parida, Patel, and Gebauer (2020) highlighted, digitalization is not only helping in providing potentially "new business opportunities but also increases efficiencies".

In addition, our study stresses the differences between the perceptions of different social categories related to teleworking, and in the context of labour shortages

experienced by many countries, solving the problems of the active female population and young people should be a concern of both companies and policy makers.

The results of our study are relevant to both companies and employees and could be applied at two levels: a) for companies that intend to extend teleworking system, workers' problems such as overload in carrying out the work tasks, stress produced by accomplishing the work tasks, the increase level of control/pressure from the employer side are relevant and they should be given appropriate importance b) for companies that prefer classical work system, factors such as flexibility, autonomy, coverage of certain expenses and work-life balance should be taken into account in their future development plans.

The findings of our study allow us to develop the following managerial implications:

- The recommendation to develop strategies for the implementation and consolidation of telework and after Covid-19, based on the development and integration of digital technology. Risks perceived by employees such as time spent in virtual meetings, frequent interruptions, security risk, increasing cyber threats, the need for training are essential elements to be aware of and improved, because they can negatively impact work efficiency and effectiveness. The strategic use of new digital platforms and technologies allows real time communication between team members (virtual meeting), sharing data and information between employees; fast transmission of data/information to customers. At the same time, improving employees' digital

skills through appropriate training is just some specific recommendations.

- Change and development of an organisational culture with a focus on adequate management of factors such as overload with tasks, stress at work, increased working time, increased level of control.

However, several potential limitations of our study need to be considered. Even though our sample does not fully reflect the structure of Romania's population, its profile demonstrates once again that the teleworking system is more suitable for certain socio-professional and demographic categories. As the official statistics reveal, in the teleworking system we are more likely to find women, young people and highly educated people from sectors of activity compatible with working from home (information and telecommunications, financial banking, education, etc.). The relatively small number of respondents did not allow us now to apply more complex methods of analysing the correlations between latent factors and researched variables, such as Structural Equation Modelling (SEM), but a future stage of research is to increase the sample and test hypotheses with the help of these modern models.

Finally, as future research direction, we are aiming a qualitative study addressed to managers with the purpose of analyzing factors providing an impact of the organizational culture in teleworking which could help us developing a more detailed understanding of its effects on mental health issues of employees (work overload, social isolation, stress, time-work management).

## Annexes

Annex 1

### Descriptive statistics

No.	Variables	Notation	Min. 1 (% of respondents)	Max. 5 (% of respondents)	Median	Mod
1	Lack of direct socializing	SocLack	1.4	55.2	5	5
2	Reduction of the transport costs between home - work	TranspCost	3.8	49.1	4	5
3	Addiction on ICT devices	ICTDepend	1.4	46.7	4	5
4	Improvement of health by avoiding contact with respiratory viruses or COVID-19 virus	HealthImpr	1.9	34.0	4	4
5	Increase of cyber threats	CyberThreats	2.0	28.3	4	4
6	Increase the level of fatigue	Fatigue	5.2	33.5	4	4
7	Increase the flexibility of the work schedule	FlexWork	3.3	29.2	4	4
8	Increase in time spent in calls, virtual meetings, teleconferences	VirtMeet	5.7	34.0	4	4
9	Overload in carrying out the work tasks	Workload	4.7	30.2	4	4
10	Increase the autonomy level	Aut	2.8	17.0	4	4
11	Increase of stress and mental health problems	MentalStress	7.1	22.6	4	4
12	Increase the security and data access risks	SecSata	7.5	31.6	4	5
13	Increase in stress levels for the accomplishing the work tasks	WorkStress	6.6	27.4	4	4
14	Increase the time to work for the accomplishing the tasks	WorkTime	6.1	27.8	4	4
15	Increase the number of online courses/trainings	Train	7.4	26.6	4	4
16	Increase of quality time spent in the family	FamQualTime	6.1	18.4	4	4
17	The problems related to the difficult assimilation of ICT tools were due to Internet connectivity	NetConex	9.0	20.3	4	4

<b>No.</b>	<b>Variables</b>	<b>Notation</b>	<b>Min. 1 (% of respondents)</b>	<b>Max. 5 (% of respondents)</b>	<b>Median</b>	<b>Mod</b>
18	Increase in the level of cooperation between colleagues and work teams	TeamCoop	2.4	15.1	3	4
19	It was identified a lower communication with colleagues/subordinate team members	WorkCommun	6.6	17.0	3	4
20	Increase the number of interruptions caused by ICT infrastructure failures, including no internet connection or power supply	TechInterr	10.8	14.6	3	4
21	Increase the level of control/pressure from the employer side	ManagCtrlPress	9.9	14.2	3	3
22	It was identified a limited access to data	LimData	14.2	9.9	3	4
23	The problems related to the difficult assimilation of ICT tools were produced by software issues	SoftProbl	12.7	7.1	3	3
24	The problems related to the difficult assimilation of ICT tools were produced by hardware issues	HardProbl	14.6	6.6	3	3
25	The problems related to the difficult assimilation of ICT tools were produced by specific training issues	ICTTrain	16.5	6.1	3	3
26	Deterioration of the work-family balance and the emerge of new conflicts	WorkFamConflict	25.5	4.2	4	4

**Results of the Correlation Analysis (Spearman's Coefficient)**

Var.	Work load	Work Time	Work Commun	Lim Data	Manag Ctrl Press	Tech Interr	Virt Meet	Work Stress	Sec Data	Team Coop	Train	Aut	Work Family Time	Flex Work	Fam Qual Time	Transp Cost	ICT Train	Hard Probl	Soft Probl	Net Conex	Mental Stress	Fatigue	ICT Depend	Soc Lack	Health Impr	Cyber Threats
Work load	1.000																									
Work Time	.659**	1.000																								
Work Commun	0.101	.258**	1.000																							
Lim Data	0.120	.268**	.519**	1.000																						
Manag Ctrl Press	.428**	.407**	.254**	.396**	1.000																					
Tech Interr	.264**	.300**	.329**	.272**	.367**	1.000																				
VirtMeet	.431**	.420**	.168*	0.123	.344**	.240**	1.000																			
Work Stress	.530**	.561**	.235**	.278**	.489**	.286**	.366**	1.000																		
SecData	.232**	.271**	0.085	.197**	.274**	.335**	.331**	.238**	1.000																	
Team Coop	.251**	.146*	0.007	0.080	.166*	0.098	.194**	.240**	.173*	1.000																
Train	.166*	.192**	0.060	0.080	.152*	.280**	.439**	0.074	.465**	.144*	1.000															
Aut	0.082	0.046	0.029	0.027	0.130	0.108	.188**	0.007	.165*	.277**	.176*	1.000														
Work Family Time	.265**	.326**	.215**	.158*	.184**	.271**	.375**	.347**	.241**	0.061	.168*	0.056	1.000													
Flex Work	-0.130	-0.051	0.014	-0.089	-0.121	-0.124	0.012	-.183**	0.028	0.098	0.096	.248**	0.062	1.000												
Fam Qual Time	-.229**	-.206**	0.020	0.008	-.169*	-0.029	-0.097	-.202**	-0.053	0.065	0.130	.247**	-0.065	.412**	1.000											
Transp Cost	0.037	0.052	-0.094	-.179**	0.029	-0.047	.188**	0.038	0.124	0.066	0.066	.222**	0.088	.354**	.235**	1.000										
ICTTrain	.207**	.173*	.221**	.321**	.327**	.263**	.191**	.193**	.191**	0.023	.200**	.149*	0.067	-0.019	0.042	-0.120	1.000									
Hard Probl	.263**	.277**	.203**	.279**	.373**	.460**	.259**	.297**	.348**	0.091	.205**	.184**	.248**	-0.070	0.017	-0.054	.573**	1.000								
Soft Probl	.253**	.219**	.163*	.192**	.365**	.432**	.232**	.268**	.272**	.161*	0.129	.145*	0.132	-0.134	-0.046	-0.032	.468**	.726**	1.000							
Net Conex	.179**	.204**	.157*	0.102	.208**	.445**	.191**	.279**	.137*	.142*	.160*	0.091	.223**	-0.010	0.049	0.021	.277**	.455**	.464**	1.000						
Mental Stress	.449**	.489**	.171*	.138*	.429**	.308**	.327**	.592**	.283**	0.122	.158*	0.036	.353**	-0.153*	-.333**	0.098	.136*	.272**	.395**	.248**	1.000					
Fatigue	.459**	.461**	0.118	0.037	.299**	.323**	.297**	.458**	.255**	.141*	.194**	0.054	.390**	-.162*	-.266**	0.103	0.058	.216**	.304**	.270**	.715**	1.000				

Var.	Work load	WorkTime	Work Commun	Lim Data	Manag Ctr IPress	Tech Interr	Virt Meet	Work Stress	Sec Data	Team Coop	Train	Aut	Work Family Time	Flex Work	Fam Qual Time	Transp Cost	ICT Train	Hard Probl	Soft Probl	Net Conex	Mental Stress	Fatigue	ICT Depend	Soc Lack	Health Impr	Cyber Threats
ICT Depend	.164*	.257**	.162*	0.094	0.073	0.115	.179**	.191**	.256**	0.093	.226**	.191**	0.107	0.061	0.037	.155*	0.041	.206**	.195**	0.131	.310**	.354**	1.000			
SocLack	.146*	.236**	.185**	0.106	0.111	0.130	.215**	.265**	.312**	0.071	.197**	.153*	.263**	0.086	0.067	.229**	0.077	.137*	0.094	0.077	.368**	.424**	.481**	1.000		
Health Impr	-0.010	0.053	0.037	0.031	0.107	0.087	-0.014	-0.018	.186**	0.131	0.108	.225**	-0.070	.308**	.278**	.249**	.167*	0.066	0.061	0.008	-0.004	-0.019	.215**	.205**	1.000	
Cyber Threats	.299**	.302**	.162*	0.086	.204**	.310**	.182**	.187**	.511**	0.083	0.133	0.080	0.067	-0.036	-0.075	0.126	.184**	.273**	.220**	.264**	.187**	.227**	.233**	.191**	0.103	1.000

\*Correlation is significant at the 0.01 level. \*\* Correlation is significant at the 0.05 level

Annex 3

Structure Matrix

Variables	Principal Component						
	1	2	3	4	5	6	7
HardProbl	0.959	0.244	-0.177	0.213	0.369	0.176	0.187
SoftProbl	0.903	0.256	-0.192	0.243	0.257	0.241	0.124
ICTTrain	0.841	0.16	-0.087	0.029	0.324	0.168	0.361
NetConex	0.715	0.195	-0.09	0.101	0.413	-0.207	0.273
Workload	0.179	0.821	-0.081	0.334	0.297	0.079	0.033
WorkStress	0.206	0.804	-0.049	0.374	0.167	0.062	0.29
WorkTime	0.174	0.801	-0.053	0.459	0.373	0.114	0.263
ManagCtrlPress	0.394	0.645	-0.129	0.297	0.424	0.243	0.504
FlexWork	-0.16	-0.203	0.795	-0.019	-0.098	0.049	-0.138
FamQualTime	0.009	-0.235	0.755	-0.315	-0.073	0.059	0.033
Aut	-0.103	0.043	0.643	0.061	-0.085	0.084	0.083
TranspCost	-0.18	0.058	0.600	0.163	-0.002	0.179	-0.355
TeamCoop	-0.097	0.281	0.567	-0.091	-0.054	0.109	0.098
Fatigue	0.181	0.556	-0.261	0.828	0.268	0.224	0.032
MentalStress	0.275	0.616	-0.261	0.768	0.269	0.326	0.093
SocLack	0.098	0.237	0.027	0.732	0.119	0.404	0.145
WorkFamilyTime	0.126	0.294	0.094	0.653	0.241	-0.257	0.19
SecData	0.346	0.315	-0.201	0.294	0.748	0.407	0.310
Train	0.245	0.056	-0.025	0.187	0.747	-0.023	0.038
CyberThreats	0.184	0.364	-0.117	-0.064	0.697	0.018	0.209
VirtMeet	0.368	0.540	0.000	0.461	0.659	-0.083	0.16
TechInterr	0.511	0.395	-0.097	0.349	0.638	-0.016	0.356
ICTDepend	0.159	0.129	0.057	0.156	0.067	0.809	0.106
HealthImpr	0.074	0.110	0.195	0.185	0.075	0.794	-0.070
LimData	0.325	0.216	-0.140	0.089	0.262	0.164	0.859
WorkCommun	0.098	0.259	0.073	0.182	0.146	-0.100	0.801

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