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Are we ready for remote work? Preliminary results from Portugal

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Abstract

Due to the pandemic crisis caused by COVID-19, people started performing their professional tasks remotely. This transition from the off-line and face-to-face work to online and remote work did not happen without pain, anxiety and some frustration as there was a need for accelerated learning and the frontiers between private and professional life were blurred. In this paper, we report on the preliminary findings of a survey-based research aimed at evaluating the main impacts and challenges faced by professionals in this transition process, in Portugal. Results show that respondents believe they work more, they feel more motivated, have better control over time, easily create methods and pace of work, and have more focus on tasks. Savings on fuel are offset by increased expenses in electricity, water, and food. Increased work-life balance but not increased leisure time are recognised. The most negative impact is social/professional seclusion, despite recognising fewer professional conflicts.

Keywords: Remote Work; COVID-19; Portugal; Digital Transformation; Technologies

1. INTRODUCTION

Globalisation and digital transformation shaped the work and provided a set of tools that allowed remote work to expand as never seen before. Remote work (RW) was already a reality for some very specific industry clusters and job profiles, but hardly a widely accepted or adopted form of work. However, given the social distancing imposed by the COVID-19 (SARS-CoV-2) pandemic, remote work emerged as the only viable solution to continue labour at a large scale, even in the situations where remote work was unforeseeable and, in many cases, happened under inappropriate conditions. In the press, a growing body of voices states that this will be our reality for the upcoming years, as it will be difficult for everyone to go back to the old forms of living and working. In fact, the pandemic situation taught us that remote work is possible for almost all kinds of jobs. Therefore, the citizens' global literacy is at higher stake and risk, considering the multiplicity of social and digital skills required to function in a democratically pluralistic, shared community, across geographical and international contexts, in work and in life (Ramonia, 2014). Nevertheless, this transition and the adoption of remote work, for some workers were not done without pain as it represented, in some cases, sharing the house all day with the other members of the family, sometimes sharing equipment and even managing/bounding their working hours, without a clear distinction between work, leisure and family time. This scenario may differ from country to country, as such, in this chapter, the

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authors present the results of a study conducted in Portugal, regarding the core challenges of the transition to remote work. The aim is to identify and evaluate the main impacts and challenges of the transition from face-to-face work to the remote work in Portugal, an accelerated process that occurred due to the confinement period.

2. BACKGROUND

Globalisation and the recent changes brought by the Industrial Revolution are gaining momentum, industries worldwide were adjusting processes and human resources to the new technology-immersed workplace (Anchal, 2018; Braña, 2019; Hartig, Kylin, & Johansson, 2007). And this is happening because technology and digitalisation are a reality, a global phenomenon, determinant in companies and individual growth. As such, the level of use and quality conditions of technological adoption is as, or even more important, than possessing access or technological knowledge (Guerrieri, Evangelista, & Meliciani, 2014). The changes occurring in work and people may be more visible in the following areas: organisation of work; the relationship between private and working life; the format of work, communication and collaboration; performance and talent management; organisational hierarchies (Carretero, Vuorikari, & Punie, 2017; Mesquita, Oliveira, Sequeira, Oliveira, & Silva, 2020; Mesquita, Oliveira, & Sequeira, 2019; Schwarzmüller, Brosi, Duman, & Welpe, 2018), just to name a few. Technology is in the midst of most changes that occur daily (Susskind & Susskind, 2015), and if till recently we could look at technology and digitalisation as an opportunity for companies and organisations (Gray & Rumpe, 2015; Rintala & Suolanen, 2005), today they constitute a social requirement as everyone is using it to work, to shop, to study and even to get entertainment. Looking at the job market, it is possible to observe that in many countries, the digital transformation has increased the opportunity for employees to perform their work from home (Hartig, Kylin, e Johansson 2007), which is designated as remote work or telework. Remote work can be defined as performing professional tasks outside the facilities of the company/organisation, (Hillman, 1993). Furthermore, Bailey and Kurland (1999) have defined four types of remote work: Home-Based Telecommuting; Satellite Office; Neighborhood/Work Centre; and Mobile Work. In Home-Based Telecommuting, employees work from their homes. In Satellite Office, employers work in a convenient location for both the employee and the employer. In a Neighborhood/Work Centre configuration, the employees work in a place convenient for both the worker and the employer, but there may be workers from other companies in the same location. In the Mobile Work mode, the employee performs the activities in any space outside the company (Bailey & Kurland, 1999).

According to the literature, it is possible to identify some characteristics associated to remote work, namely (Olson, 1983): (1) Minimum physical requirements; (2) Individual control over work pace; (3) Defined deliverables; (4) Need for concentration; (5) Defined milestones; (6) Relatively low

need for communications. Chen, Volk and Lin (2004) state that technology allows companies to better communicate with different audiences: customers, partners or employees. For that reason, the authors point out that going virtual becomes beneficial for companies because it allows conducting virtual meetings with customers or employees, online courses/training of virtual teams that could guide sales or product development (Chen, Volk, & Lin, 2004). The study developed by Mokhtarian Bagley and Salomon (1998) showed that the adherence or not to remote work is associated with motivations and constraints. In general, the study shows that, for example, working women performing administrative tasks have primarily identified family, personal benefits, and reduced stress as motivations to opt for remote work when compared to men, managers and qualified professionals. As constraints, women indicated the unwillingness of supervisors to adopt remote work and the probability of not having recognition and visibility before management. Administrative workers identified as main constraints of remote work the lack of willingness of supervisors or lack of job suitability. Also, social seclusion is a constraint referred by administrative workers, skilled professionals and managers (Mokhtarian, Bagley, & Salomon, 1998).

Researchers also believe that remote work can provide a better interconnection between professional, domestic and leisure activities, enhancing flexibility in the organisation of personal time (Steward, 2000). The research conducted by Kazekami (2020) in Japan, aimed to study factors influencing productivity, such as: work-life balance, happiness, satisfaction with life, the displacement of workers to the company, work interruptions or the number of working hours on telework. The main conclusions point out, among others, the fact that productivity is influenced by working hours: working an excessive amount of hours leads to decreased productivity, which in turn increases when working hours are adequate. Generally, if workers spend more than 1 hour travelling to the company, remote work tends to allow them to increase their productivity. Additionally, remote work increases life satisfaction, happiness, job satisfaction and reduces the stress of balancing work and household tasks. Although stress does not directly reduce productivity, stress decreases life satisfaction, so it is important to have a balance between work and household tasks. On the other hand, the study also shows that it can be difficult to maintain concentration in the presence of children, family, or neighbours (Kazekami, 2020).

There have been many reasons and factors contributing to the disbelieve in remote work as a large-scale efficient work format. Despite some advantages, which are mainly identified by employees, there are other issues, especially pointed out by organisations, such as required technology infrastructure, HR training, keeping attendance, monitoring progress, etc. In any case, the option for remote work can present some gains and losses such as a better balance between professional and personal life. Still, in contrast, remote work can lead to social secluding due to the lack of contact with colleagues, and for that reason worsen the work-life balance This is an evidence of «polysemy:

it liberates and enslaves, it is a trap and an opportunity», it fulfils and sacrifices (Perez Sanchez & Galvez Mozo, 2009).

In March 2020, more than16 million US knowledge workers were in remote work (Hanson, 2020); In Portugal, there were more than 68 thousand public service workers in remote work (Lopes, 2020). In this scenario, technology became central to society and organisations, because the technology allowed communication between workers and companies and between companies and their customers; and tools needed as the cloud-based management tool, instant messaging service, professional videoconferencing services or mobile Internet, artificial intelligence, big data analytics and cloud computing (Guerra, 2020; WEF, 2018; Wong, 2020).

At the moment, when this article is being written, many workers are still adapting to this new reality. Businesses are also reinventing themselves and managers are trying to balance the need to supervise employees with trust, allowing them to manage their time and space. At the moment, all this is necessary and even more now that companies and people are suffering collateral effects caused by the COVID-19 pandemic, because around the world 1.6 billion people may lose their income; 436 million companies are at high risk of disruption, with about half (232 million) being in wholesale and retail trade; 45 percent of the world's GDP is accounted for by self-employment; and the level of poverty is already increasing (ILO, 2020). The pandemic situation led to the confinement of millions of people and remote work was the solution found all over the world (Belzunegui-Eraso & Erro-Garcés, 2020; Elavarasan & Pugazhendhi, 2020). In Portugal, there is the emerging notion that remote work may be here to stay (Lima, 2020). A study conducted during April 2020 shows that companies (45%) and workers (55%) want to keep pursuing remote work. Among the reasons given are: more productivity and increased quality of life (Idealista, 2020c; Lima, 2020). In the next section, further details on remote working in Portugal, are presented.

3. REMOTE WORK IN THE PORTUGUESE CONTEXT

In Portugal, as in Europe, it is possible to witness the emergence and development of the 4th industrial revolution, and the increasing focus on technology. And there is consensus that this revolution has direct implications on employment and the labour market (Frey e Osborne, 2013; Schwab, 2017). Data shows that 92% of small, medium or large Portuguese companies use computers, and 98,3% are connected to the Internet (Pordata, 2019). Also, 75% of Portuguese citizens (aged 15 and over) have access to the Internet through the computer (private or professional), mobile phone or tablet (Marktest, 2019). In this scenario, it is possible to consider that current technological infrastructure is favourable to the expansion of remote work in Portugal.

However, remote work has been generally overlooked, with only a few companies creating conditions for some tasks to be carried out by remote workers (Johnson, 2013). In 2010, only 3% of

Portuguese workers were in remote work, and five years later, the percentage has remained low (Eurofound, 2020). And this scenario was not very different from other European Union countries. In 2015, only one-fifth of European workers were able to work remotely: in Portugal, only 8% were in remote working mode, showing Italy the lowest level (5%) and Denmark the highest level (38%) (Eurofound, 2020). Despite its low expression, in 2010 Portugal had as much as 2464 employees in remote work, but in 2014 it decreased to 805. In this period, the precariousness has also augmented, with the number of workers with fixed-term contracts increasing, compared to those without fixed-term contracts (Dray et al., 2016). Among the reasons for Portugal not fully embracing remote work can be pointed out: organisational culture with rigid, traditional hierarchies; low levels of digital literacy; unions with low visibility; low levels of education and remuneration; or the fact that Portugal has recently experienced an economic crisis that destroyed jobs and businesses (Boavida & Moniz, 2020; Martins, 2020) even though the situation has evolved favourably in the years before the present pandemic situation. However, precisely during the recent pandemic crisis, industry and society were forced to move online, with unprecedented urgency and mitigation-based strategies. In this context, remote work emerged as a response to the impossibility of performing professional tasks in the usual companies, schools, or universities' facilities. All kinds of businesses had to change rapidly and to adapt, being forced to change the way they contact potential clients, interact with them, sell and even deliver the goods. Simultaneously, citizens had to rapidly change their purchasing habits which became more digital than ever, even for those who hadn't prior online shopping experience. Additionally, the vast majority of services have sent their employees home, expecting them to, intuitively, know how to work remotely, and manage a completely new family-work time and space reality. Finally, in a period of approximately two weeks' time, teachers were forced to become experts in distance learning and students had to learn how to work autonomously and many workers and businesses adapted to this new reality (Falcão, 2020; IPL, 2020).

Actually, this scenario has brought tremendous challenges for people and organisations being one of the impacts related to the costs that telework can cause in family income (Idealista, 2020a, 2020b). More time at home means increased costs, for example, with food, electricity, gas or water. Families are also spending more money on purchasing multifunction printers, computers, and other peripheral devices such as webcams and headsets which are costs related with the remote work (Idealista, 2020a, 2020b; Nunes, 2020) and have a significant impact on family income.

Another study carried out by the European University at the beginning of the confinement period, shows how 539 respondents feel about remote work. According to this study, more than half of the Portuguese respondents (65%) preferred not to be in remote work, 9% were «not satisfied» with it and 3% «not satisfied at all» with this model. The study also shows that 49% of respondents believe that they work more at home than in a normal situation, while 35% feel they work the same. Most of the participants (68%) do not feel that management controls their working hours. This control is

more felt by those who work in medium-sized companies. As main disadvantages of remote work, the respondents indicated: distance from work colleagues (76%), with unmarried respondents feeling more isolated than the married ones; a blend of professional and family life (64%) and lack of support when needed (39%). The difficulties were: a mixture between professional and family life (56%), the lack of an appropriate physical space for work (49%) and the difficulty of access to technology (35%). Regarding the family context, data show that those who have children had higher levels of conflict with work and family (2.97 on average) than those who do not have children (2.70 on average). Regarding gender, women have higher levels of stress and tiredness than men. On the advantages side, respondents identified the following: gain of time (79%), improved schedules management (57%) and flexibility (44%) (Branco, 2020).

4. METHODOLOGY

The main objective of this work was to identify the impacts and challenges of the transition from face-to-face to remote work in Portugal. To achieve the goal, an exploratory survey-based research was carried out. Exploratory research is characterised by employing a single data collection method to obtain an initial view of the issues being analysed. Provided the scarceness of literature and systematisation of the impacts of the confinement period imposed by COVID-19, the goal of this research is to provide a current view of how workers are adhering to RW and its impacts, with particular emphasis on tentative professional and personal/financial aspects. Regarding these, respondents were provided with a list of positive and negative statements. Each item on the questionnaire was presented in a labelled 4-point Likert scale, anchored at 1 = "Totally disagree", 2 = "Partially disagree", 3 = "Partially agree", and 4 = "Totally agree". Higher scores represent a higher level of agreement with the item/issue. The survey was disseminated through social media (personal, institutional), open groups e and by email; so it consists of a non-generalisable random sample. Survey data were downloaded and transferred into IBM SPSS Statistics 26.0 statistical analysis software package for analysis.

5. RESULTS

Overall, 156 questionnaires were excluded because they were not fully answered. A dataset with 323 responses was pre-processed. The entries of respondents who did not reside in Portugal and/or who are not currently employed were then removed, resulting in a final dataset of 305 valid responses (N = 305) which was used for analysis. The demographics of the sample are displayed in Table 1.

5.1. Demographics

Most of the respondents are female, aged between 40 to 49 years old, living in Northern Portugal, and have completed some level of higher education. Regarding the employment status, most have a permanent employment contract for more than 10 or 20 years with that organisation, and most of the employers are private.

	n	*%*		*n*	*%*
Gender			**Employment status**		
Female	224	73.4	Intern	9	3.0
Male	81	26.6	Employee (Green receipts)	6	2.0
Age			Employee (Contract)	63	20.7
20-29	31	10.2	Employee (Permanent)	206	67.5
30-39	73	23.9	Self-employed	21	6.9
40-49	121	39.7	**Time in organization/employment**		
50-59	75	24.6	< 1 year	35	11.5
>=60	5	1.6	1-2 years	33	10.8
Region			3-5 years	40	13.1
North	226	74.1	6-10 years	34	11.1
Centre	44	14.4	10-20 years	70	23.0
M. A. Lisbon	32	10.5	>20	87	28.5
South	2	0.7	No answer	2	0.7
A. R. of Azores	1	0.3	**Sector**		
Education			Public	113	37.0
Up to 9th grade	9	2.9	Private	192	63.0
From 10th to 12th grade	37	12.1	**In remote work**		
VET	27	8.9	Yes	**244**	80.0
Degree	115	37.7	No	61	20.0
Post-Graduation	36	11.8	*Would like to be*	*35*	*57.4*
Master	61	20.0	*Would not like to be*	*26*	*42.6*
PhD	19	6.2			
No answer	1	0.3			

Table 1 – Sample Demographics (N = 305)

Regarding the work mode, 80% of respondents are working remotely (n = 244). Among the remaining 20%, which are not, ≈ 58% would like to be in remote work, while the remaining 42% prefers to continue in the traditional working model.

The confinement restrictions imposed by COVID-19 are the reason why 98% of the workers have moved to remote work (n = 244), and for ≈ 87% this is the first time in remote work for the current job. Only 9% have experienced RW in previous jobs and only 14%, overall, have received any kind of training to work remotely.

5.2. Devices and applications

Regarding the devices and applications used for remote work, the computer (99%) and the smartphone (61%) are the most used devices, and most of the work is performed asynchronously, by using email and Facebook Messenger, as shown in Table 2.

Devices	*n*	*%*	Applications	*n*	*%*
Computer	241	98.8	Email	241	98.9
Smartphone	148	60.7	Facebook Messenger	148	60.7
Camera	91	37.7	Zoom	91	37.3
Microfone	97	39.8	Skype	97	39.8
Ipad/Tablet	21	8.6	Microsoft Teams	21	8.6
Other	11	0.04	WhatsApp	14	5.7
			Other	168	68.9

Table 2 – Sample Demographics (n = 244)

Other referred devices include using a second monitor, headphones, printers and scanning tables. Other applications include Google Drive, Teams, Hangouts/Meet and Classroom as most referred.

Almost half of the workers report not having received all the necessary equipment for remote work from their employers. However, nearly 90% of workers believe that they have, at home, all the required equipment to work remotely and, in about 86% of the cases, they are not constrained by the need to share it with other family members. Also, 37% of the workers need to share their workspace with other people in the house and 44% feel that their working environment is disturbed by other people they live with.

5.3. Assessment of remote work

Respondents were provided with a list of 32 positive and negative statements concerning professional and personal/financial aspects of remote work. Cronbach's alpha, a measure of intercorrelation among measurement items used as an indicator of internal consistency (Cronbach, 1951) was calculated for the non-demographic Likert-scale questions depicted in Table 3**Error! Reference source not found.**. The items worded negatively were reverse coded and results show Cronbach's $\alpha = 0.86$, indicating acceptably high internal consistency (≥ 0.70 is considered the minimum acceptable for use in research (George & Mallery, 2003; Nunnally, 1994)).

The descriptive statistics are presented in Table 3. For all items, the minimum value is 1 ("Totally disagree") and the maximum value is 4 ("Totally agree").

The vast majority of the respondents indicate (A10) RW is useful but only in certain circumstances. In fact, most (A11) feel that they work more in RW ($\bar{x} = 3.08$), though opinions are split concerning (A12) an increase in the tasks they usually perform, with the tendency on for a slight rise. However,

it is evident that most workers have easily adjusted to RW ($\bar{x}$ = 3.36), despite only about half of them (A6.ª) believe that all their regular tasks are feasible in RW ($\bar{x}$ = 2.51). Among some of the possible benefits of RW, the highest level of agreement is verified for (A2) feeling that there are fewer conflicts between colleagues ($\bar{x}$ = 2.82), (A3) a better balance between work and household tasks ($\bar{x}$ = 2.80), (A4) a better control of the schedule ($\bar{x}$ = 98.8) and (A4) increased focus on their tasks ($\bar{x}$ = 2.59).

Concerning motivation and productivity, the level of agreement is split evenly for (A7) feeling more motivated in performing tasks ($\bar{x}$ = 2.50) and for (A8) feeling more productive ($\bar{x}$ = 2.46), though the majority feels that (A9) the stress levels have not reduced ($\bar{x}$ = 2.38; *Mo* = 1), despite (A21) not having difficulties in creating work methodologies and rhythm ($\bar{x}$ = 2.09) Regarding workflow management and cooperation, respondents tend to believe that (A14) that RW does not make teamwork more difficult ($\bar{x}$ = 2.75), that (A17) it does allow to manage teams ($\bar{x}$ = 2.19), and they do not (A19) find it difficult to contact their co-workers ($\bar{x}$ = 2.12). However, respondents do not believe that (A10) they can better share their tasks with co-workers ($\bar{x}$ = 2.27), thus we believe that is unrelated to RW circumstances. Most of the respondents also (A20) disagree that they have been subject to increased monitorisation of their work ($\bar{x}$ = 2.11).

With regards to career management, opinions are split towards (A16) foreseeing difficulties in career advancement ($\bar{x}$ = 2.40), and towards (A15) RW not being adequate for supervisor/manager's job positions. However, the most frequent answer is that it is not (*Mo* = 3). Respondents also tend to disagree with RW prejudicing professional prestige ($\bar{x}$ = 2.18) and, notably, most do not believe (A22) it will be challenging to go back to a face-to-face job ($\bar{x}$ = 1.82). In fact, when asked what they would like to happen when normality is restored, 65% answered that they would like to go back to their regular workplace, 18% would like to remain in RW and 17% have not formed an opinion yet.

		n	*%*	*$\bar{x}$*	*Mo*	*σ*
A1	I adjusted easily to RW	242	99.2	3.36	4	0.7
A2	I fell that there are fewer conflicts between colleagues	215	88.1	2.82	3	1.0
A3	I can better balance work and household tasks	240	98.4	2.80	3	1.0
A4	I can better control my schedule	241	98.8	2.76	4	1.1
A5	I am more focused on my tasks	238	97.5	2.59	3	1.0
A6	I feel that all my regular tasks are feasible in RW	243	99.6	2.51	3	1.1
A7	I feel more motivated in performing the tasks	237	97.1	2.50	3	1.0
A8	I am more productive	237	97.1	2.46	3	1.0
A9	I feel less stressed	238	97.5	2.38	1	1.1
A10	I can better share tasks with my co-workers	233	95.5	2.27	2	0.9
A11	I think RW may be useful, but only sporadically	244	100	3.22	4	0.9
A12	I work more in RW	239	98.0	3.08	4	1.0
A13	I felt an increase in the tasks	235	96.3	2.75	4	1.1

A14	Makes teamwork difficult	240	98.4	2.75	3	0.9
A15	I feel RW is not adequate for supervisor/manager's job positions	202	82.8	2.38	3	0.9
A16	I foresee increased difficulties in career advancement	204	83.6	2.40	1	1.1
A17	I feel RW does not allow to manage teams	224	91.8	2.19	2	0.9
A18	I fee RW does not give professional prestige	221	90.6	2.18	1	1.0
A19	I find it difficult to contact my co-workers for teamwork	242	99.2	2.12	1	1.0
A20	I feel more monitored by my employer	231	94.7	2.11	1	1.0
A21	I have difficulty in creating a methodology/rhythm of work	243	99.6	2.09	2	1.0
A22	I find it difficult to get back to a face-to-face job	238	97.5	1.82	1	0.9

Table 3 – Results concerning professional issues of remote work (n = 244)

The results of the inquired personal and financial aspects of RW are depicted in Table 4. In general, respondents tend to agree that RW allows to (B1) protect the environment ($\bar{x}$ = 3.79), (B2) save time in traffic ($\bar{x}$ = 3.49), and (B3) have more family time ($\bar{x}$ = 2.98). However, for most, this does not mean (B5) more free time ($\bar{x}$ = 2.12), as RW (B7) invades their family environment ($\bar{x}$ = 2.82). It is almost unanimous that workers (A6) feel socially isolated ($\bar{x}$ = 3.45), but the level of agreement regarding (B4) being advantageous not to leave home is comparatively markedly lower ($\bar{x}$ = 2.67).

		n	*%*	*$\bar{x}$*	*Mo*	*σ*
B1	It is advantageous as it reduces pollution	238	97.5	3.79	4	0.5
B2	It is advantageous because I have fewer traffic delays	236	96.7	3.49	4	0.9
B3	It is advantageous because I have more time to be with the family	241	98.8	2.98	4	1.0
B4	It is advantageous not to leave home	239	98.0	2.67	3	1.1
B5	It is advantageous because I have more free time	243	99.6	2.12	1	1.0
B6	I fell more socially isolated	242	99.2	3.45	4	0.8
B7	I feel it invades my family environment	243	99.6	2.82	3	1.1
B8	RW allows me to save on fuel	238	97.5	3.80	4	0.6
B9	I spend more money on electricity and water	231	94.7	3.43	4	0.8
B10	I spend more money on food	238	97.5	2.78	4	1.2

Table 4 – Results concerning personal/financial issues of remote work (n = 244)

Finally, there is a very high level of agreement towards RW allowing to (B8) save money on fuel ($\bar{x}$ = 3.80), and simultaneously imposing (B9) higher electricity and water expenses ($\bar{x}$ = 3.43), as well in (B10) food ($\bar{x}$ = 2.78).

6. DISCUSSION AND CONCLUSION

The main objective of this work was to identify the impacts and challenges of the transition from face-to-face to remote work in Portugal. To achieve the goal, an exploratory survey-based research was carried out.

The results lead to the conclusion that the impacts have been small, and the challenges have been to overcome transition from face-to-face to remote work. Regarding the reasons for respondents being in remote work, the results show that it was due to the unforeseen containment restrictions and imposed by COVID-19, and the transition from face-to-face to remote work seems to have been made with some ease. Although the results show that respondents think they work more, they feel more motivated, have better control over time, create methods and pace of work, have more focus on tasks. These factors help explain why respondents assume they are more productive, although the level of stress remains. These results consolidate studies that refer to the fact that stress may not directly reduce productivity (Kazekami, 2020), that remote work is associated with a better interconnection between professional, domestic, time management, schedules (Branco, 2020; Steward, 2000) and the ability of workers to adapt to new realities (Falcão, 2020; IPL, 2020). Concerning time, respondents assume that they gain time by not having to travel to the company, they have more time for the family, but no freer time. With regard to career management, remote work does not seem to damage professional prestige, but neither does it facilitate career progression; perhaps this is why respondents do not associate adequate remote work with management. Concerning financial issues, remote work is associated with less spending on fuel, but more spending on electricity, water, and food, and is associated with spending more time at home working (Idealista, 2020a, 2020b; Nunes, 2020). About devices and applications, data shows that employers have not made equipment available for remote working. Still, respondents assume that they have everything they need to do professional tasks at home, such as access to digital and technological devices. These results allow us to reinforce nationally available data, showing that the Portuguese have access to technology, to the Internet. So it's possible to conclude that the technological revolution has implications in work, namely allowing a good communication between the company and the employees (Chen et al., 2004; Frey & Osborne, 2017; Marktest, 2019; Pordata, 2019).

The most negative impact associated with remote work is social seclusion. Although, respondents assume that remote work allows to easy contact with colleagues, does not hinder teamwork, and allows less conflict between colleagues, they feel socially isolated. This constraint could be explained by the confinement imposed by COVID-19, but this seems to be one more characteristic of remote work because it has already been found in other studies (Mokhtarian et al., 1998). Since the data allow us to conclude that social isolation is a strong negative impact of remote work, perhaps this is the reason why most respondents after this pandemic situation, would like to return to their usual place of work.

The results show the main impacts and challenges experienced by the Portuguese in remote work in the middle of the period of confinement imposed by COVID-19. So it will be relevant, when this situation became normalised, to do a new research that allows to re-analyse the data on this subject.

REFERENCES

Anchal, C. (2018). Dynamic Workplace Revolution: Recent Digitalization Trends in Organizations. In *Radical Reorganization of Existing Work Structures Through Digitalization* (pp. 117-140). Hershey, PA, USA: IGI Global.

Bailey, N., & Kurland, N. B. (1999). The advantages and challenges of working here, there, anywhere, and anytime. *Organizational dynamics, 28*(2), 53-68.

Belzunegui-Eraso, A., & Erro-Garcés, A. (2020). Teleworking in the Context of the Covid-19 Crisis. *Sustainability, 12*(9), 1-20.

Boavida, N., & Moniz, A. B. (2020). Project Deep View: Concluding report for Portugal.

Braña, F.-J. (2019). A fourth industrial revolution? Digital transformation, labor and work organization: a view from Spain. *Journal of Industrial and Business Economics, 46*(3), 415-430.

Branco, C. (2020). Estudo. Metade dos portugueses em teletrabalho sente que trabalha mais (e quem não tem filhos em casa é mais feliz). *Observador*. Retrieved from https://observador.pt/2020/04/29/estudo-metade-dos-portugueses-em-teletrabalho-sente-que-trabalha-mais-e-quem-nao-tem-filhos-em-casa-e-mais-feliz/?fbclid=IwAR0t52G9VYyC4Rr5tq0w-wGURUUy23tiDx8vVujdiWx_5Lr6G24qccAusgg

Carretero, S., Vuorikari, R., & Punie, Y. (2017). The Digital Competence Framework for Citizens. *Publications Office of the European Union*.

Chen, J. C., Volk, L., & Lin, B. (2004). Virtual collaboration in the workplace. *Issues in Information Systems, 1*, 77-83.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika, 16*(3), 297-334.

Dray, G., Lopes, F. R., Albuquerque, J. L., Guerra, R., Ministro, A., Feliciano, T., . . . Alexandre, H. (2016). Livro Verde sobre as Relações Laborais. Retrieved from http://cite.gov.pt/pt/destaques/complementosDestqs2/LIVRO_VERDE_2016.pdf

Elavarasan, R. M., & Pugazhendhi, R. (2020). Restructured society and environment: A review on potential technological strategies to control the COVID-19 pandemic. *Science of The Total Environment*, 138858.

Eurofound. (2020). COVID-19 could permanently change teleworking in Europe. Retrieved from https://www.eurofound.europa.eu/news/news-articles/covid-19-could-permanently-change-teleworking-in-europe

Falcão, A. (2020). Portugal 4.0. Retrieved from https://www.dn.pt/opiniao/opiniao-dn/convidados/portugal-40-12053573.html

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological forecasting and social change, 114*, 254-280.

George, D., & Mallery, M. (2003). Using SPSS for Windows step by step: a simple guide and reference.

Gray, J., & Rumpe, B. (2015). Models for digitalization. In: Springer.

Guerra, A. R. (2020). Serviços de colaboração remota, robôs autónomos, gadgets domésticos e videojogos registam uma grande subida de interesse e utilização. Retrieved from https://www.dinheirovivo.pt/buzz/isolamento-e-teletrabalho-as-tecnologias-em-alta-com-a-crise-covid-19/

Guerrieri, P., Evangelista, R., & Meliciani, V. (2014). "The economic impact of digital technologies in Europe".

Hanson, R. S. (2020). Report: Remote work in the age of Covid-19. Retrieved from https://slackhq.com/report-remote-work-during-coronavirus

Hartig, T., Kylin, C., & Johansson, G. (2007). The Telework Tradeoff: Stress Mitigation vs. Constrained Restoration. *Applied Psychology, 56*(2), 231-253. doi:10.1111/j.1464-0597.2006.00252.x

Hillman, J. (1993). *Telelifestyles and the Flexicity: The Impact of the Electronic Home: a European Study* (Vol. 8): Amt für Amtl. Veröff. d. Europ. Gemeinschaften.

Idealista. (2020a). Dicas de poupança em tempos de Covid-19: registar e comunicar as leituras dos contadores de água e luz. Retrieved from https://www.idealista.pt/news/especiais/covid-19/2020/04/30/43219-registar-e-comunicar-as-leituras-dos-contadores-de-agua-e-luz-ajuda-a-poupar-em-tempos

Idealista. (2020b). Teletrabalho faz com que gastos domésticos disparem – estas dicas ajudam a poupar. Retrieved from https://www.idealista.pt/news/imobiliario/habitacao/2020/03/23/42816-teletrabalho-faz-com-que-gastos-domesticos-disparem-estas-dicas-ajudam-a-poupar

Idealista. (2020c). Teletrabalho, uma moda em tempos de Covid-19 e visto como tendência a seguir no futuro. Retrieved from https://www.idealista.pt/news/especiais/covid-19/2020/04/08/43001-teletrabalho-uma-moda-em-tempos-de-covid-19-e-visto-como-tendencia-a-seguir-no-futuro

ILO. (2020). *ILO Monitor: COVID-19 and the world of work. Third edition Updated estimates and analysis*. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_743146.pdf

IPL, C. G. (2020). Politécnico de Lisboa é exemplo de boas práticas de teletrabalho. Retrieved from https://www.ipl.pt/iplisboa/comunicacao/noticias/politecnico-de-lisboa-e-exemplo-de-boas-praticas-de-teletrabalho

Johnson, M. (2013). *Teleworking*: Routledge.

Kazekami, S. (2020). Mechanisms to improve labor productivity by performing telework. *Telecommunications Policy, 44*(2), 101868.

Lima, C. R. (2020). *Portugueses querem ficar em casa no pós-pandemia*. Retrieved from https://www.imagensdemarca.pt/artigo/portugueses-querem-ficar-em-casa-no-pos-pandemia/?fbclid=IwAR2ZplmHHWZTHTcAa4aIfqbzlWNCPf-XrCaXQd6miHDYxWBYeX0QOhrD1Vc

Lopes, M. (2020). Governo quer manter em teletrabalho um quarto dos actuais 68 mil funcionários públicos neste regime. Retrieved from https://www.sabado.pt/coronavirus/detalhe/covid-19-cerca-de-68-mil-funcionarios-publicos-em-teletrabalho-regime-veio-para-ficar

Marktest. (2019). Internet 2019: mais equipamentos por pessoa. Retrieved from https://www.marktest.com/wap/a/n/id~2563.aspx

Martins, P. S. (2020). O potencial do teletrabalho em Portugal. *Observador*, https://observador.pt/especiais/o-potencial-do-teletrabalho-em-portugal/.

Mesquita, A., Oliveira, A., Sequeira, A., Oliveira, L., & Silva, P. (2020, 2020). *The Workforce of the Future - Projects and Initiatives to Overcome the Challenges Enacted by the Digital Transformation.*

Mesquita, A., Oliveira, L., & Sequeira, A. (2019, 2019). *The Future of the Digital Workforce: Current and Future Challenges for Executive and Administrative Assistants*.

Mokhtarian, P. L., Bagley, M. N., & Salomon, I. (1998). The impact of gender, occupation, and presence of children on telecommuting motivations and constraints. *Journal of the American Society for Information Science, 49*(12), 1115-1134.

Nunes, F. (2020). *Vendas de portáteis disparam com o teletrabalho. Estavam a cair antes do coronavírus*. Retrieved from https://eco.sapo.pt/2020/03/30/vendas-de-portateis-disparam-com-o-teletrabalho-estavam-a-cair-antes-do-coronavirus/

Nunnally, J. C. (1994). *Psychometric theory 3E*: Tata McGraw-Hill Education.

Olson, M. H. (1983). Remote office work: changing work patterns in space and time. *Communications of the ACM, 26*(3), 182-187.

Perez Sanchez, C., & Galvez Mozo, A. M. (2009). Telework and daily life: Its pros and cons for work-life balance. *ATHENEA DIGITAL*(15), 57-79.

Pordata. (2019). Empresas com 10 e mais pessoas ao serviço que utilizam computador, com ligação à Internet e presença na Internet. Retrieved from https://www.pordata.pt/Portugal/Empresas+com+10+e+mais+pessoas+ao+servi%c3%a7o+que+utilizam+computador++com+liga%c3%a7%c3%a3o+%c3%a0+Internet+e+presen%c3%a7a+na+Internet+(percentagem)-1156

Ramonia, R. R. (2014). Multiliteracies Pedagogy. In *Handbook of Research on Education and Technology in a Changing Society* (pp. 1005-1013). Hershey, PA, USA: IGI Global.

Rintala, N., & Suolanen, S. (2005). The implications of digitalization for job descriptions, competencies and the quality of working life. *Nordicom Review, 26*(2), 53-67.

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *mrev management revue, 29*(2), 114-138.

Steward, B. (2000). Changing Times: The Meaning, Measurement and use of Time in Teleworking. *Time & Society, 9*(1), 57-74. doi:10.1177/0961463X00009001004

Susskind, R. E., & Susskind, D. (2015). *The future of the professions: How technology will transform the work of human experts*: Oxford University Press, USA.

WEF. (2018, 2018). *The future of jobs report 2018*.

Wong, K. (2020). 25 Key Remote Work Statistics for 2020. Retrieved from https://www.business2community.com/human-resources/25-key-remote-work-statistics-for-2020-02299342