



# Remote working and digital transformation during the COVID-19 pandemic: Economic–financial impacts and psychological drivers for employees

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## ABSTRACT

Digital and Information and Communication Technologies (ICTs) and, consequently, remote working have increased since the start of the COVID-19 pandemic. However, workers' economic–financial perception of remote working conditions, such as digital technology and its implementation, has scarcely been researched. Therefore, this study aims to investigate the economic–financial impacts of remote working on labourers. Using a mixed-methods sequential exploratory design, a sample of 976 workers is investigated. This study highlights that the majority of workers experience a negative economic–financial impact due to the additional costs incurred for digital technology and platforms and for utilities as well as the non-payment of overtime and meal vouchers, which are higher than the savings in commuting costs and out-of-pocket expenses. Furthermore, this research emphasizes that psychological–behavioural variables, specifically job satisfaction and technostress, are essential in the choice to continue working remotely after the COVID-19 pandemic. Finally, our results have important theoretical implications related to the existing literature both on the managerial issues connected to digital transformation, with interdisciplinary elements linked to psychological aspects, and on corporate finance topics associated to the economic–financial impacts of remote working.

## 1. Introduction

Digital and information and communication technologies (ICTs) have been increasingly used as a consequence of the spread of the SARS-CoV-2 virus, which caused the COVID-19 pandemic. This pandemic caught the world by surprise, posing a serious threat to people's life (e.g., Donthu & Gustafsson, 2020; Ghobadian et al., 2022; Khanra, Dhir, Kaur, & Joseph, 2021; Laato, Islam, Farooq, & Dhir, 2020; Talwar, Talwar, Kaur, Tripathy, & Dhir, 2021). To mitigate the spread of COVID-19, most countries have implemented many measures (Anderson, Heesterbeek, Klinkenberg, & Hollingsworth, 2020) that have also had significant impacts on how and where employees work. In particular, businesses around the world, which have been badly affected by the COVID-19 pandemic, have taken various actions, many imposed by governments, to try to reduce contact between people (Hadjielias, Christofi, & Tarba, 2022). Among these actions, including governments' encouragement to work from home, remote working (also termed teleworking and home working) has grown as a new mode of work (Wang,

Liu, Qian, & Parker, 2021).

During the last two decades, digital technologies and ICTs have favoured the adoption of remote working across many organizations and entrepreneurial activities (e.g., Daniels, Lamond, & Standen, 2001; Nambisan, 2017). Even so, prior to the COVID-19 pandemic, remote working was a known but not widely used practice (e.g., Delfino & van der Kolk, 2021; Hafermalz, 2021; Kosses & Lautsch, 2018). In this crisis context, the organization of work activities faced a period of unprecedented change in spatial configuration, operating routines, and overall design (Parker, 2020). A recent study highlighted that, before COVID-19, 2.9% of the total US workforce and around 2% of that in Europe engaged in emergency remote working (Wang et al., 2021). Prior to the COVID-19 crisis, most workers had limited familiarity with remote working. Nevertheless, the pandemic abruptly upset normal work routines and accelerated previously ongoing trends relating to the migration of work to online or virtual environments (Kniffin et al., 2021). While, on one side, the pandemic situation has accelerated the shift away from traditional office work to remote working (Yang, Holtz, &

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Jaffe, 2022), on the other side, the development of digital technologies has enhanced their implementation for this way of working (Mariani & Castaldo, 2020).

In general terms, the literature on the subject of remote working is rather fragmented, especially with reference to the digital economy (Donnelly & Johns, 2021). Different studies have focused on the various outcomes and elements of remote working (e.g., enhanced productivity, knowledge sharing, creativity, employee retention, employee well-being, job satisfaction, and flexibility) for individuals and organizations and the aspects that influence its fruitful implementation (e.g., Allen, Golden, & Shockley, 2015; Anderson, Kaplan, & Vega, 2015a, 2015b; Donnelly & Johns, 2021; Fenner & Renn, 2010; Kelliher & de Menezes, 2019; Kroll, Doebler, & Nüesch, 2017; Moen, Kelly, Tranby, & Huang, 2011). Many of these studies were carried out when workers had a choice over where to work (Anderson & Kelliher, 2020). However, during the COVID-19 pandemic, many workers have had little choice and, consequently, it has become interesting to investigate its effects. Specifically, the economic–financial impacts of remote working for workers are largely unknown and workers' perception of many elements connected to remote working, such as digital technology and its implementation, as well as the psychological drivers linked to home working, have barely been explored.

Based on these considerations, the aim of this study is to fill this gap, investigating the economic–financial impacts of remote working from the point of view of individuals (employees and the self-employed), highlighting aspects connected to both digital transformation and psychological–behavioural drivers (such as job satisfaction and technostress), which are essential in the choice to continue to work remotely after the COVID-19 pandemic. To achieve the research's purpose, for which it is necessary to collect information and data from qualitative and quantitative points of view, this paper is based on a mixed-methods sequential exploratory design (e.g., Creswell, 2014; Edmondson & McManus, 2007; Tashakkori & Teddlie, 1998). When variables are not well known or explored and there are no existing constructs and items that are ready to use, this approach is useful in identifying important variables for subsequent quantitative analysis (Edmonds & Kennedy, 2017; Tashakkori & Teddlie, 1998). We first conducted two focus groups with a total of 21 workers (employees and self-employed) with the aim of studying the topic in more depth and obtaining useful knowledge for structuring the questionnaire. Building on the literature and the information gathered from the focus groups, we collected data from 976 workers in Italy through a questionnaire. Finally, to test our research hypotheses and extend the initial qualitative exploratory findings (Creswell & Plano Clark, 2018), we implemented a cost–benefit analysis (CBA), ordinary least squares (OLS) regression, and logistic regression analysis.

Our results highlight that over 50% of workers face negative and significant economic–financial impacts due to additional costs connected to digital technologies and platforms (e.g., a personal computer, internet connection, and licences for instant communication platforms and cloud sharing space), utilities, non-payment of overtime and meal vouchers that are greater than their savings in commuting costs and out-of-pocket expenses. In addition, this research emphasizes that psychological–behavioural variables, such as job satisfaction and technostress, are essential in the economic–financial choice to work remotely after the lifting of the COVID-19 restrictions. These results lead to some theoretical contributions synthesizable both from the point of view of the managerial issues linked to digital transformation, with interdisciplinary elements linked to psychological aspects, and from the point of view of the corporate finance issues connected to the economic–financial impacts of remote working.

The paper is organized as follows. The first part presents the theoretical background and the second part the hypothesis development. The third part explains the methodology, including the different steps of the research. The fourth part presents and discusses the results. The last part contains the conclusions along with implications for theory and practice,

limitations, and future lines of research.

## 2. Theoretical background

The advancement of digital technologies (e.g., Horváth & Szabó, 2019; Valenduc & Vendramin, 2016; Vrontis, Christofi, Battisti, & Graziano, 2021) and the changing needs of the modern workforce (Kelliher, Richardson, & Boiarintseva, 2019; Rubery, Grimshaw, Keizer, & Johnson, 2018) have revolutionized work patterns by increasing the characteristics of flexibility and mobility. The COVID-19 pandemic accelerated the need to work outside the office due to physical distance policies and contributed to the spread of remote working (Caligiuri, De Cieri, Minbaeva, Verbeke, & Zimmermann, 2020; Como, Hambley, & Domene, 2021). This was made possible by the proliferation of digital platforms (e.g. Mariani, Styven, & Teulon, 2021) (e.g., Google Meet, Microsoft Teams, Zoom, Webex, and Moodle) that, along with email services, instant messaging applications, and social media (Dhir, Yossatorn, Kaur, & Chen, 2018, 2019; Malik, Dhir, Kaur, & Johri, 2021), allow employees to communicate synchronously and/or asynchronously outside the office (van Laar, van Deursen, van Dijk, & de Haan, 2020).

“Remote working” is a term used to describe working from home or another location outside an office at any time, which involves the increasing use of technology enabling workers to communicate with their workplace and supporting flexible working practices (Grant, Wallace, & Spurgeon, 2013; Wang et al., 2021). Some authors, studying the technological aspects of remote working, have noted that the success of this new form of work is due to the advantage of technology-based platforms (Gawer & Cusumano, 2014; Iansiti & Levien, 2004). Digital platforms are relevant technologies and systems that provide services with greater accessibility and usability (Ko, Kim, & Kim, 2021; O'Farrell & Montagnier, 2020), and they are the main success factor for remote working.

Previous studies have investigated various aspects of remote working (Kelliher & de Menezes, 2019), highlighting its advantages and disadvantages. Many of these elements are directly or indirectly attributable to variables with economic–financial impacts, such as productivity (Allen et al., 2015), employee retention (Moen et al., 2011), and salary class (Mas & Pallais, 2017) for the employers and lower travel, clothing, and out-of-pocket costs (Anderson et al., 2015a, 2015b; Smith, Patmos, & Pitts, 2018; Vyas & Butakhieo, 2021) for workers. However, the advantages and critical aspects of remote work cannot all be monetized; there are some advantages/disadvantages that are more related to the relational–psychological sphere of the worker that must be considered to provide a complete overview of remote working.

In recent years, a number of meta-analyses have been conducted to understand the potential advantages and disadvantages of remote working. Several studies have found positive outcomes, such as higher job satisfaction, performance, autonomy, and work–life wellness, and lower work–family conflict (Allen et al., 2015; Gajendran & Harrison, 2007; Golden, Henly, & Lambert, 2014; Kelly & Moen, 2007; Martin & MacDonnell, 2012; Moen et al., 2011; Schieman, Glavin, & Milkie, 2009). However, some negative effects under certain conditions have been observed in the literature (Soga, Bolade-Ogunfodun, Mariani, Nasr, & Laker, 2022), including social isolation (Biron et al., 2021; Ruiller, Van Der Heijden, Chedotel, & Dumas, 2019), dissatisfaction (Wheatley, 2012), tensions concerning work–life balance (Como et al., 2021; Fuller & Hirsh, 2019; Golden & Wiens-Tuers, 2006), gender inequality (Jacobs & Padavic, 2015; Thornton, 2016), and stress due to a negative impact of digital technology use (Haley & Miller, 2015; Ingucci et al., 2021).

The Technology Acceptance Model (TAM) (Davis & Venkatesh, 1996) and the Technostress Model (Arnetz & Wiholm, 1997; Lei & Ngai, 2014; Suh & Lee, 2017) provide the main theoretical framework for studying teleworkers' acceptance of ICT services, digital platforms, and new forms of communication. The TAM assumes that the perceived usefulness and ease of use of new technologies improve work productivity and efficiency and consequently job satisfaction. Indeed, if users

feel that the information technologies (e.g.: digital platforms, technological services, software, etc.) are easy to understand and of usefulness, is likely to use it more often.

The technostress model explains how new technologies create stressors for workers when they perceive a mismatch between their skills and the skills required to use them beyond the “anytime, anywhere connectivity” that can result from the use of digital platforms and ICTs. It possible to apply the “technological paradox” (Hajli, Sims, & Ibragimov, 2015) to remote workers: on the one hand, ICT offers workers new opportunities by improving their ability to make the best use of time and space, thereby increasing their productivity and satisfaction; on the other hand, it can create new challenges and pressures that they must learn to overcome. The technostress model highlights a variety of techno-stressors (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Tu, 2008): the overload due to the increasing of work volume and speed originate by ICTs; the invasion when users feel the need to be permanently connected to work and became difficult to reach the balance between work and personal life; the complexity when users feel lack the skills to manage ICT-related complexity, inducing insecurity and stress.

Based on the theoretical background and the findings from the discussion with the focus group (see paragraph 3.2), we identify the variables that may influence the economic–financial decision to continue working remotely. The variables can therefore be divided into psychological–behavioural variables (technostress and job satisfaction), the economic–financial variable (net benefits), and variables related to demographic characteristics (gender, age, employment status, geographic area, and salary class).

### 3. Hypothesis development

#### 3.1. Psychological–behavioural variables

##### 3.1.1. Technostress

Some studies have highlighted the relationship between the use of digital technologies and platforms and higher levels of stress among workers (Suh & Lee, 2017), in other words technostress (Camacho & Barrios, 2022; Camarena & Fusi, 2022; Halbesleben & Buckley, 2004; Moen et al., 2016). Technostress is defined as “any stress experienced by end-users of information and communication technologies” (Ragu-Nathan et al., 2008). The increased use of digital technologies and platforms has changed contemporary work patterns (World Health Organization. *Facing the Challenges, Building Solutions. In Proceedings of the WHO European Ministerial Conference on Mental Health, Helsinki, Finland, 12–15 January 2005, 2005*); it has created a constant sense of urgency and an expectation that individuals are constantly available and work faster and better (Ayyagari, Grover, & Purvis, 2011).

Digital technologies and internet connections are in operation 24/7, creating an expectation that workers are constantly connected, available, and ready for action.

Technostress is the stress experienced by users due to application multitasking, constant connectivity, information overload, frequent system upgrades and resulting uncertainty, constant relearning and resulting job-related uncertainties, and technical problems related to the organizational use of digital technologies and platforms (Tarafdar, Tu, & Ragu-Nathan, 2010). Molino et al. (2020) examined three technostressors (techno-overload, techno-invasion, and techno-complexity) during the pandemic era in Italy and suggested a strong relationship between remote working and high technostress.

Constant connectivity, the workload associated with email, cyber security issues, and the rapid adoption of technological platforms require great attention and learning efforts from remote workers, who need to adapt quickly to these new technologies. All of these contribute to increased stress, and this could lead remote workers to demand an increase in their salary to continue working remotely (Chesley, 2014).

These considerations lead to the following hypothesis:

*H1: As technostress increases, workers’ willingness to reduce their own*

*salary to continue working remotely decreases.*

##### 3.1.2. Job satisfaction level

Some studies have argued that remote working has a positive impact on workers’ job satisfaction as it offers greater flexibility in work schedules and facilitates collaboration and knowledge sharing (Charalampous, Grant, Tramontano, & Michailidis, 2019; Coenen & Kok, 2014; Vega, Anderson, & Kaplan, 2015). Remote working increases employees’ quality of life (Azarbouyeh & Seyed Gholamreza, 2014), happiness, job satisfaction, and motivation (Kazekami, 2020) because it improves their work–life balance (Irawanto, Novianti, & Roz, 2021). Remote working contributes to increase the job satisfaction because meeting workers’ psychological needs in terms of autonomy, competence, and motivation (Brunelle & Fortin, 2021). Regarding the relationship between job satisfaction and salary, on one hand, several studies have shown that compensation, salary, bonuses, and benefits are the critical factors that influence job satisfaction (Basak & Govender, 2015; Ogonda, Orwa, Peter, & Jedida, 2015); on the other hand, Hsiao and Lin (2018) found that salary is not strongly related to satisfaction, which means that a good salary cannot improve job satisfaction.

Based on these considerations, we propose the following hypothesis:

*H2: As job satisfaction levels increase, workers’ willingness to reduce their own salary to continue working remotely increases.*

#### 3.2. Economic–financial variable

##### 3.2.1. Net benefit

The net benefit of working remotely is the difference between the economic–financial benefits in terms of a reduction in commuting costs and out-of-pocket expenses and the economic–financial disadvantage associated with the costs incurred for digital platforms, for electricity and gas, and due to the lack of meal vouchers.

If the net benefit is positive, it represents an additional form of bonus for workers. Workers often underestimate the value of the benefits that they receive (Carragher, 2011; Hart & Carragher, 1995) because they are unaware of their economic value (Gerhart, Milkovich, & Murray, 1992; Scarpello & Carragher, 2008; Wilson, Northcraft, & Neale, 1985) or are not even aware of their existence (Gerhart et al., 1992; Milkovich, Newman, & Milkovich, 1996). According to classical equity theory, if employees are aware of a benefit, they are motivated to make the situation more equitable (Bell & Martin, 2012; Heneman, Greenberger, & Fox, 2002; Mayes, 1978) and thus more willing to lower their own salary. These considerations lead to the following hypothesis:

*H3: As the net benefit increases, workers’ willingness to reduce their own salary to continue working remotely increases.*

#### 3.3. Demographic characteristic variables

##### 3.3.1. Gender

Several studies (Arntz, Sarra, & Berlingieri, 2019; Bloom, Liang, Roberts, & Ying, 2015; Golden et al., 2014) have highlighted that remote working can help to reduce the gender gaps in the labour market. The high level of flexibility of remote work – flexible work locations and hours – makes it a very attractive option for both male and female workers. Angelici and Profeta (2020) also claimed in their study that remote work enables the narrowing of gender gaps because it improves women’s work–life balance and invites men to participate more in housework and care activities. During COVID-19 pandemic, the gender role inequalities have been corrected by the increase paternal involvement in family life and in childcare (Del Boca, Oggero, Profeta, & Rossi, 2021). Moreover, the study by Wiswall and Zafar (2018) estimated through an experiment that, on average, women are more willing to pay for jobs with greater job flexibility and job stability, while men are more willing to pay for jobs with higher income growth. These job preferences were collected in a follow-up survey conducted four years after graduation. Gender differences in job preferences explain at least 25% of the

gender wage gap at the beginning of workers' career. Bonacini et al. (2021) show that remote work represents an opportunity for male because associated with an increase of income. Based on these considerations, we propose the following hypothesis:

*H4: Women are more willing to give up part of their salary to work remotely.*

### 3.3.2. Age

The desire for flexible work is present in all age groups, especially among young people. This is evident from a survey of US professionals (Dean & Auerbach, 2018), 96% of whom said they wanted flexibility and 47% reported already having flexible work. In Europe, too, most workers (three in four on average) have access to some work flexibility. A recent report (Gallup, 2017), which collected data from 195,600 workers, also found that flexibility plays an important role in workers' decision to take or leave a job. Among millennials, these figures have risen to 50% and 63%, respectively. Millennials benefit from a direct connection to their lives and family members and are willing to change jobs to ensure this. Flexible jobs and working hours are a priority for them (Angelici & Profeta, 2020; Carillo & Jappelli, 2020). In addition, their digital mentality and background lead them to prefer working in a team using technology (Bannon, Ford, & Meltzer, 2011), and they have little difficulty adapting to remote working through the use of digital platforms and ICT technologies. Gallacher and Hossain (2020) point out that older workers tend to emphasize the disadvantages of remote working (lack of interactions with colleagues and managers, difficult work-life balance, poor technological competence), younger employees mainly highlighted the advantages and necessary skills.

*H5: Younger workers are more willing to renounce part of their salary to work remotely.*

### 3.3.3. Employment status

Workers who carry out their work independently, moving around in different contexts or in a "nomadic" mode, like managers and self-employed people, appreciate remote working since they can save commuting time and costs (Edmans, 2011; Fuchs, Carroll, Oglensky, & Saut, 1998). On the contrary, working "without precise working hours and places" is not equally welcomed by those who have a subordination contract since they find it difficult to accept the idea of working like a manager but without any change in their working activity and keeping their usual working conditions, like the persistence of swiped badge and the absence of an evaluation of results or performance indicators (Bloom, Kretschmer, & Van Reenan, 2009; Xiao, Wu, & Kim, 2021; Bonacini et al., 2021). Based on these considerations, we present the following hypothesis:

*H6: Self-employed workers are more likely to renounce a portion of their salary to work remotely.*

### 3.3.4. Geographic area

During the pandemic crisis, remote work spread throughout Italy. Bonacini et al. (2021) show that remote work represents an opportunity for employees being resident in the north of Italy. However, Istat's (2020) analysis showed that the cost of living is higher in the north than elsewhere in Italy. Moreover, market conditions are more favourable in the north than in the rest of Italy, where jobs are becoming not only scarcer but also increasingly less labour-intensive, stable, and skilled. Consequently, we propose the following hypothesis:

*H7: Workers in central and southern Italy are more willing to lower their salary to work remotely.*

### 3.3.5. Salary class

In the study by Mas and Pallais (2017), a discrete choice experiment was used in the employment process of a national call centre to estimate the distribution of willingness to pay for alternative work arrangements to traditional office jobs. Some workers with high ratings allowed substantial compensation differentials. On average, workers were willing to

give up 20% of their pay to avoid an employer-imposed short-term schedule and 8% for the opportunity to work from home. Barrero, Bloom, and Davis (2021) also found in their study that workers, especially those with higher earnings, will derive great benefits from more remote work. The same result is found in the study of Bonacini et al. (2021) which shows that remote work represents an opportunity for well-paid employees.

These considerations lead to the following hypothesis:

*H8: As salary classes increase, workers' willingness to reduce their own salary to continue working remotely increases.*

The following figure summarizes the conceptual model and hypotheses (see Fig. 1).

## 4. Methodology

### 4.1. Design

With the purpose of exploring the phenomenon better and the promise of well-founded results, this study employed a mixed-methods research design (e.g., Creswell, 2014; Edmondson & McManus, 2007; Tashakkori & Teddlie, 2021; Terrell, 2012) based on the investigation of qualitative and quantitative data, in which the data were collected sequentially (e.g., Creswell, Plano Clark, Gutmann, & Hanson, 2003; Fetters, Curry, & Creswell, 2013). Mixed methods have been increasingly used in academic research over the last decade to address a wide variety of research questions in business research (Verga Matos, Romão, Miranda Sarmento, & Abaladas, 2019).

Specifically, in our study, the sequential implementation of the data collection was exploratory (qual → QUANT) (Creswell & Clark, 2011; Fetters et al., 2013). The first qualitative phase was conducted through a focus group to identify the main questions for the questionnaire and to determine which non-monetizable variables affect employees' decision to work more or less remotely. Subsequently, the results of the questionnaire were used to plan the second phase, which consisted of quantitative data analysis, providing a deeper understanding of the phenomenon under study (Cameron, Sankaran, & Scales, 2015).

### 4.2. Focus group

Focus groups are commonly used in many disciplines (Guest, Namey, & McKenna, 2017) in the preliminary phase of research with the purpose of defining items for inclusion in a questionnaire (Morgan, 1997) and articulating contextually appropriate questions (Dumka, Gonzales, Wood, & Formoso, 1998). Focus groups allow researchers to obtain people's opinions with reference to an explicit issue and offer an enhanced understanding of people's perceptions of a detailed phenomenon (Byers & Wilcox, 1991). Specifically, focus groups encourage self-disclosure of participants' experiences and viewpoints through the group dynamics in connections between participants (Cui, Mrad, & Hogg, 2018). Focus groups offer a possibility to inspire interaction within a group, allowing participants to produce data and helping to expose their emotional states regarding actual experiences and concerns (Hudson, Matson-Barkat, Pallamin, & Jegou, 2019; Krueger & Casey, 2014).

In this study, the focus group activity was undertaken with two groups (Guest et al., 2017) of Italian workers, with a total of 21 participants. We conducted the two focus groups using the same procedure (Guido, Pino, & Peluso, 2016) to determine the economic-financial impact of remote working. The main aim of the two focus groups was to investigate the topic in greater depth and to enable us to structure the questionnaire better. The two focus groups were organized separately, and two different authors moderated the meetings. Finally, to avoid possible bias, the four authors discussed the main elements that emerged from each group (Golden & Wiens-Tuers, 2006).

The first group was based on online conversations with 14 employees (nine female and five male employees aged between 23 and 58). Nine

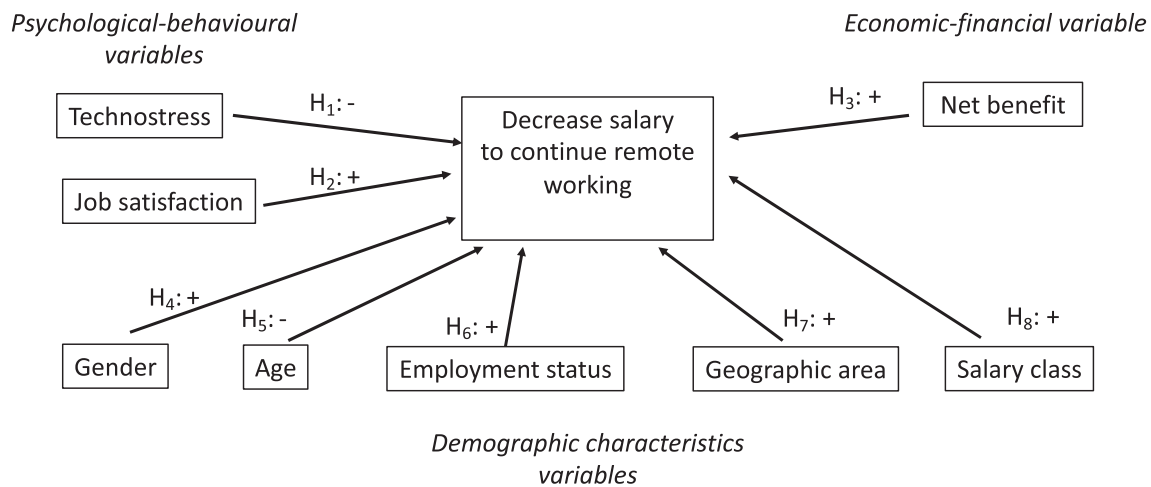


Fig. 1. Conceptual model and hypotheses. Source: Authors' elaboration.

employees work in public companies, while five work in private companies. This focus group lasted around 2 and a half hours. The second focus group was based on online conversations with seven self-employed individuals (three women and four men aged between 26 and 62). This focus group lasted around 2 h.

In the early stages of both focus groups, the authors asked the participants some general questions related to their work (e.g., the number of hours worked per week, time taken to reach the workplace, means of transport used, and distance between their place of work and their residence). Subsequently, the topic of remote working was introduced in both focus groups. First, it emerged that remote working represents a very current and interesting topic, especially during the COVID-19 pandemic, despite the differing characteristics and impacts between the two groups.

Specifically, all the participants in the first focus group had resorted to remote working; 11 of these are still working remotely while four mainly worked remotely during the first lockdown in Italy (February–June 2020). Among the 11, more than half have resumed travelling to their workplace at least once a week. The discussion led the participants to identify the most relevant economic–financial impacts connected to remote working. In particular, it revealed the participants' great sensitivity to the issues of both costs (in terms of new costs arising in connection to remote working) and revenues (in terms of lost earnings). Among the costs, great emphasis was placed on the costs incurred for the organization of remote working (costs related to digital technology and platforms, i.e., a PC, tablet, printer, WiFi router, and software) and daily operating costs (costs related to utilities, i.e., electricity, gas, and the Internet). Considering revenues, prominence was given to lost earnings (e.g., payment of overtime hours and canteen vouchers). Some differences also emerged between public and private employees (e.g., working hours, use of canteen vouchers, and payment of overtime).

Among the seven participants in the second focus group, six made use of remote working (especially during the first lockdown) while one did not but highlighted the flexibility of his self-employment. Among the six, one is still working remotely and another is alternating on a weekly basis. The participants in the second focus group were also asked to identify the most relevant economic–financial impacts connected to remote working. They highlighted some economic–financial benefits, mainly related to the cost of lunches and means of transport, as well as some critical elements related to human relations.

Taking this last aspect into account, the authors asked the participants in both focus groups to describe the relational–psychological aspects connected to remote working. Based on the analysis of the literature, we listed the psychological–behavioural aspects of remote working and the use of technology, highlighting both the positive and the negative points, and we asked the participants to highlight, among

the proposed aspects, those that could affect their economic–financial decision to continue working remotely (see Table 1).

Of the 21 participants, 18 highlighted that the “technostress” factor represents a crucial element connected to remote working. At the same time, almost all the participants emphasized the delicate issue of work–home conflict, especially for those who have children under the age of 14. Finally, especially for the participants in the first focus group, the motivation aspect, such as job satisfaction, also played a key role.

Thanks to the fervour shown by the participants, different willingness to resort to or continue to work remotely emerged. This was an important step in the research because it allowed us to focus our attention on aspects that have not been fully covered in the literature.

### 4.3. Survey

To acquire insights into people's experiences, ambitions, sentiments, and feelings (May, 2001), data were collected using a structured questionnaire (e.g., Das, Agarwal, Malhotra, & Varshneya, 2019; Meade & Craig, 2012; Battisti, Alfiero, Quaglia, & Yahiaoui, 2022). A careful search of the literature showed a lack of investigation of remote working's economic–financial impacts. To ensure good representation of workers, our sample comprised employees and self-employed workers who were contacted by e-mail or through social networks (e.g., LinkedIn and Facebook).

After the initial preparation, the survey was conducted over approximately one month, from the end of April to the end of May 2021, the questionnaire having been created using Google Forms (Rey, Panetti, Maglio, & Ferretti, 2021). After a brief overview of the research topic, in

Table 1  
Main psychological–behavioural aspects.

Psychological–behavioural aspects that have a positive effect on workers' decision to reduce their salary to continue working remotely	N. choices	Psychological–behavioural aspects that have a negative effect on workers' decision to reduce their salary to continue working remotely	N. choices
Work–life balance/work–life wellness	12	Technostress	18
Job satisfaction	17	Lack of social interaction/ isolation	3
Flexibility and mobility	10	Work–home conflict	15
Job autonomy	4	Gender inequality/ discrimination	6
Perceived usefulness and ease of use of ICT	8	Data protection/cyber risk	7
More free time	9	Invasion of privacy	10

Source: Authors' elaboration.

the preliminary part of the questionnaire, the participants were informed about the study's purpose and guaranteed anonymity and confidentiality with regard to the data analysis (Sarra, Di Zio, & Capucci, 2015). The structured questionnaire was divided into four subsections with closed-ended questions. The first section requested some initial information about the respondents, specifically their gender, age, type of employment, number of hours worked in a week, time taken to reach the workplace, means of transport used, and distance between the workplace and their residence. The second section investigated the issue of remote working before and during the COVID-19 pandemic. The third part focused on the economic–financial impacts connected to remote working for employees and self-employed workers, in terms of both rising costs and monetary savings. Finally, the last section concentrated on the relational–psychological aspects of remote working. Due to the single-respondent approach with regard to data gathering, we decreased the common method variance by splitting the survey questions to remove the possibility of the informants rationalizing their responses (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

A total of 1,023 questionnaires were received, but 47 were omitted because of invalid or incomplete answers. Thus, 976 valid questionnaires were used for the analysis.

#### 4.4. Quantitative models connected to the survey

For employees, remote working involves a trade-off from a purely economic–financial perspective. On the one hand, there are potential benefits, identifiable as cost reductions in terms of lower commuting costs (transportation and parking) and out-of-pocket expenses (meals away from home, laundry, lodgings, etc.); on the other hand, there are potential drawbacks in the form of new costs (higher costs for electricity, gas, the purchase of digital equipment, internet connections, and digital platforms) and reduced income (elimination of cafeteria vouchers and overtime payments).

To determine the economic–financial impact of remote working on employees, first a cost–benefit analysis and then a regression (Model 1) analysis were performed to understand and weight the impact of the independent variables on the dependent variable (the difference between economic–financial advantages and economic–financial disadvantages, called the net benefit).

Besides the economic–financial aspects, there are benefits and critical issues that are more difficult to quantify economically and financially, such as improved work–life balance, greater motivation and satisfaction, and perceptions of isolation or stress. Regarding these issues, we asked workers whether they would ask for a pay rise or accept a pay cut to continue working remotely. A logistic regression model was used to determine the predicted parameters.

Since a salary increase or decrease to continue working remotely is a dummy variable, we used logit models (McFadden, 1973) and analysed the influence of net benefits and psychological factors on our dependent variable (model 2).

To test our hypotheses, we conducted a survey to determine the economic–financial impact of remote work on workers. To ensure internal validity, we chose a specific national context to control for the normative environment and the business context (Beckman & Burton, 2008). Our study was conducted in Italy, which provides an interesting context for our analysis: it is characterized by a traditional lack of flexibility in the organization of work, and only a few companies started to show some interest in remote work 10 years ago, well before Law 81/2017, which introduced an adequate legal framework for the implementation of remote work. Because of the pandemic, almost all companies, private and public, have switched to remote working over the past year.

##### 4.4.1. Cost–benefit analysis and OLS regression model

Cost–benefit analysis (CBA) is an economic approach that can be used to evaluate the costs and benefits of a particular project/option

(Boardman, Greenberg, Vining, & Weimer, 2017; Mishan, 2015). CBA explicitly quantifies and monetizes all costs and benefits and facilitates the systematic consideration of the various factors that influence strategic decisions (Boardman et al., 2017). In this study, an “in media res” CBA was used to evaluate the economic–financial impact and the net benefit of remote working for workers. In a given month ( $t$ ), the net benefit (NB) of the remote working option is the difference between the economic–financial benefits (B) (lower commuting costs and others) and the disadvantages (C) (additional costs associated with adopting remote working, daily operating costs, and lower earnings).

$$NB_{(t)} = B_{(t)} - C_{(t)}$$

If the benefits exceed the disadvantages, NB is positive and remote working is economically beneficial to the employee.

In the equation, the economic benefits (B) are:

- Reduced commuting costs (CM) (travel time, parking and its cost)
- Reduced out-of-pocket expenses (OOP) (lunch out, housing, laundry, and others)

The economic disadvantages (C) are:

- No receipt of meal vouchers (CV)<sup>1</sup>
- Elimination of overtime payments (OP)
- Increase in electricity costs (EC)
- Increase in gas costs (GC)
- Increase in digital technology and platform costs (DTC)

$$NB_{(t)} = (CM_{(t)} + OOP_{(t)}) - (CV_{(t)} * 22days + OP_{(t)} + EC_{(t)} + GC_{(t)} + DTC_{(t)})$$

Then, we used multiple linear regression with an explanatory purpose, that is, to understand the impact of the independent variables identified in the cost–benefit analysis on the dependent variable, the net benefit of remote working. The variables gender, age (four classes), employment status (private employee, public employee, and self-employed), and geographic area (north, central, south, and islands) were included in the model to test the further hypotheses.

##### 4.4.2. Logistic regression analysis

The final stage of the analysis aimed to weigh the additional benefits and critical aspects of remote work that cannot be quantified in monetary terms, that is, the psychological-behavioural effects. To this end, we asked workers whether they would be willing to reduce their salary or instead ask for a salary increase to continue working remotely (Sharma & Bajpai, 2011). To examine the relationships, we used the logistic regression model, a multivariate statistical analysis with a dichotomous dependent variable (Alfiero, Esposito, Doronzo, & Cane, 2018; Wijekoon & Azeez, 2015).

The probability that an event will happen is estimated using the binomial logistic model, which captures the change from the initial status (e.g., “salary increase”) to the final status (e.g., “salary decrease”). In our case, we assumed that this choice was favoured by the net economic benefit, salary class, higher job satisfaction level, lower technostress, and control variables used in Model 1 (gender, age, employment status, and geographic area).

The psychological-behavioural impact of remote working was assessed by indicating the level of job satisfaction on a scale from 1 to 5, where 1 means “very dissatisfied” and 5 means “very satisfied”, and the level of stress on a scale from 1 to 5, where 1 means “low technostress” and 5 means “high technostress”.

<sup>1</sup> The survey recorded the daily value of the meal voucher, so, in the cost–benefit function, this value was multiplied by 22, the average number of working days per month.

The logit regression equation is the following:

$$\begin{aligned} \text{Salary choice} = & \beta_0 + \beta_1 \text{ Gender} + \beta_2 \text{ Age} + \beta_3 \text{ Geographic area} \\ & + \beta_4 \text{ Employment status} + \beta_5 \text{ Net benefit} + \beta_6 \text{ Salary class} \\ & + \beta_7 \text{ Jobsatisfaction level} + \beta_8 \text{ Technostress} + \mu \end{aligned}$$

We then transformed the dependent variable in terms of the probability of the event:

$$\begin{aligned} \text{Probability} = & \text{Log} \left( \frac{P}{1-P} \right) \\ = & \beta_0 + \beta_1 \text{ Gender} + \beta_2 \text{ Age} + \beta_3 \text{ Geographic area} \\ & + \beta_4 \text{ Employment status} + \beta_5 \text{ Net benefit} + \beta_6 \text{ Salary class} \\ & + \beta_7 \text{ Job satisfaction level} + \beta_8 \text{ Technostress} + \mu \end{aligned}$$

### 5. Empirical analysis and discussion

#### 5.1. Descriptive statistics

Our empirical analysis is based on 976 valid responses to the questionnaire. The sample is almost equally balanced in terms of gender: 52.6% of the respondents are female, while 47.4% are male. The respondents' age ranges from 18 to 67; the majority of the respondents, 73.3%, are 32–55 years old, of whom 35.14% belong to the younger age group (32–43 years old) while 38.1% belong to the older one (44–55 years old). Regarding their employment status, 54.9% are employed in the private sector, 38.7% work in the public sector, and the remaining 6.4% are self-employed. Most of the respondents live in northern Italy (41.5%), and 74.2% have a monthly salary of up to 2,000 euros (33.1% up to 1,500 euros and 41.1% between 1,500 euros and 2,000 euros). All the respondents used digital technologies and platforms for remote working to communicate with their team and to share documents in the cloud. During the COVID-19 pandemic, more than 92% of the respondents worked remotely for more than a month, while only 8% worked remotely for a very short period of time lasting at least a week. More than 78% were still working remotely when they completed the questionnaire. **Table 3** shows the frequency distribution and the descriptive statistics of the characteristics of the sample and of the variables used in the empirical analysis (see **Table 2**).

**Table 2**  
Variables' description.

Variables	Denomination	Definition	References and approaches
Dependent variable	Salary choice	Dummy: increase (0), decrease (1)	Sharma and Bajpai (2011)
Independent variable	Technostress	Likert scale: low degree (1), high degree (5)	Molino et al. (2020), Ingusci et al. (2021)
Independent variable	Job satisfaction	Likert scale: low level (1), high level (5)	Suh and Lee (2017)
Independent variable	Net benefit	Continue, euros per month	Determined by the cost–benefit analysis
Control variable	Gender	Dummy: male (0), female (1)	Bonacini, Gallo, and Scicchitano (2021)
Control variable	Age	Dummy: 18–31 (0), 32–43 (1), 44–55 (2), 56–67 (3)	Carillo et al. (2020)
Control variable	Employment status	Dummy: employees (0), self-employed (1)	Bonacini et al. (2021)
Control variable	Geographic area	Dummy: northern Italy (0), rest of Italy (1)	Bonacini et al. (2021)
Control variable	Salary class	Dummy: ≤ 1,000 (0), ≤ 1,500 (1), ≤ 2,000 (2), ≤ 2,500 (3), > 2,500 (4)	Bonacini et al. (2021)

Source: Authors' elaboration.

**Table 3**  
Frequency distribution and descriptive statistics.

Dummies Variables	Freq.	Percent.	Cum.
Gender			
Male (0)	463	47.44	47.44
Female (1)	513	52.56	100.00
Age			
18–31 (0)	148	15.16	15.16
32–43 (1)	343	35.14	50.31
44–55 (2)	372	38.11	88.42
56–67 (3)	113	11.58	100.00
Employment status			
Private employee (0)	536	54.92	54.92
Public employee (1)	378	38.73	93.65
Self-employed (2)	62	6.35	100.00
Geographic area			
Northern Italy (0)	405	41.50	41.50
Central Italy (1)	358	36.68	78.18
Southern Italy and islands (2)	213	21.82	100.00
Salary classes			
≤ 1,000 (0)	30	3.07	3.07
≤ 1,500 (1)	293	30.02	33.09
≤ 2,000 (2)	401	41.09	74.18
≤ 2,500 (3)	134	13.73	87.91
> 2,500 (4)	118	12.09	100.00
Salary choice			
Increase (0)	752	77.05	77.05
Decrease (1)	224	22.95	100.00

Variables	Obs.	Mean	Std dev.	Min.	Max.
Commuting costs	976	170.5902	112.9743	0	880
Out-of-pocket expenses	976	288.332	133.5658	0	990
Meal vouchers	976	4.33709	2.808795	0	7
Overtime payments	976	80.01434	84.44248	0	298
Electricity costs	976	20.89242	11.93924	0	50
Gas costs	976	25.47951	19.37023	0	100
Digital technology costs	976	11.21926	19.98074	0	75
Net benefit	976	−14.59221	129.1192	−393	484
Technostress	976	3.528689	1.171979	1	5
Job satisfaction level	976	2.64959	1.20263	1	5

Source: Authors' elaboration.

#### 5.2. Cost–benefit analysis and multivariate regression analysis

The analysis of the economic benefits of remote working highlighted that, in a month, the savings in commuting costs and out-of-pocket expenses amounted on average to 171 euros and 288 euros, respectively. To verify the reasonableness of these amounts, data on commuting costs were cross-checked with the reported distance to the workplace, the time needed to reach the workplace, and the means of transport used. Of our sample, 84% live no further than 50 km from work (45% no further than 10 km) and spend on average 23 min commuting to work by car (61%), by train (15%), by bus (13%), or by foot (18%). To double-check the out-of-pocket expenditure, we asked for details of individual savings from remote working, including expenditure on accommodation, eating out, laundry, personal expenses, and babysitting.

The savings for eating out were adjusted to take account of the expenses incurred for meals at home. Data from Istat (2020) show that a meal at home costs on average 3.5 euros in the north, 3.8 euros in the centre, and 3.6 euros in the south of Italy.

As for the economic–financial disadvantages, the costs incurred by remote working are related to the increase in electricity and gas costs and the expenses necessary for the provision of digital technologies (a personal computer, internet connection, licences for instant communication platforms, and cloud sharing space). On average, in a month, workers' electricity bill increased by 20 euros, their gas bill rose by 25 euros (in this case, the cost of heating had a strong impact), and the digital technologies' costs increased by 11 euros. Only 3% of the sample did not report an increase of costs.

In terms of digital technologies, we note that 13% of respondents indicated that they had to buy a PC to work from home and 18% had to

set up a contract for an ADSL or fibre internet connection, while 43% indicated that they already had equipment and therefore did not have to pay any additional costs. Only 176 employees, approximately 20% of the sample, have been provided with a PC by their companies, with no significant difference between the private or the public sector. Instead, 10 employees, all from the private sector, were provided by their companies with a router with a sim card for an internet connection at home. The additional monthly cost of digital technologies was estimated by spreading the cost of purchasing a PC over a 12-month period and adding the cost of internet connectivity (only if contracted to work remotely), the cost of accessing teleconferencing platforms (Zoom, Webex, Teams, Business Skype, etc.), and the cost of purchasing file hosting services.

Other economic–financial disadvantages of remote working arose from the loss of revenue since employees no longer received meal vouchers and overtime payments. Under normal circumstances, meal vouchers are provided by both private and public companies, affecting about 77% of the employees in our sample (707 workers, including 435 private employees), and have a maximum value of 7 euros per day. Considering that an employee works on average for 22 days per month, this means a loss of revenue of a maximum of 154 euros. In addition, economic–financial disadvantage of the overtime payment loss, which on average is around 80 euros per month, has to be considered. Clearly, this category of economic–financial disadvantages does not concern the self-employed.

From the difference between the economic–financial benefits and the disadvantages, we determined the net benefit of remote working. The net benefit takes values greater than 0 when remote work has a positive economic–financial impact on workers as a whole and <0 when it has a negative impact. The average value is –14 euros, with a minimum value of –393 euros (maximum economic loss) and a maximum value of 484 euros (maximum economic gain). Table 4 reports the main results of the cost–benefit analysis, showing the average value of additional costs and reduced costs and revenues. In short, our analysis spotlights the category of workers for whom remote working had a positive economic–financial impact and those for whom the impact was negative.

Later, before conducting the regression analysis, we ran the correlation matrix to understand the correlation between the variables and to detect any chance of multicollinearity. The results, in Table 5, show that there is a relatively low correlation between the variables; this indicates that the multicollinearity issues are negligible (Bowen & De Clercq, 2008).

To improve the performance of the regression model, we

**Table 4**  
Main results of the cost–benefit analysis.

	Positive economic–financial impact	Negative economic–financial impact
N. workers	434	541
% workers	44.47	55.43
Max net benefit	484	–393
Average net benefit	95.99	–103.62
St. dev. net benefit	79.8796	84.04089
Average commuting costs	211	137
Average out-of-pocket expenses	147	94
Average meal vouchers	80	107
Average overtime payments	52	102
Average electricity costs	20	20
Average gas costs	25	26
Average digital technology costs	9	12

Source: Authors' elaboration.

transformed the independent variables geographic area and employment status into dichotomous variables: northern Italy (0)/rest of Italy (1) and employees (0)/self-employed (1). Table 6 reports the results of the multivariate regression models. The value of the R-square (0.9703) is quite satisfactory. To rule out the problem of multicollinearity, the variance inflation factor (VIF) was also tested. If there is a high inter-correlation between the independent variables, model results are unreliable due to multicollinearity. The VIF results for all the variables were below the threshold of 2.5 (mean VIF = 1.37), which rules out a serious multicollinearity problem (Joseph, Barry, Rolph, & Rolph, 2010).

All the independent variables related to the economic–financial factor affecting remote working are strongly statistically significant and display the expected signs. In addition, it is noteworthy that the geographic variable is statistically significant ( $p < 0.01$ ): the negative coefficient suggests that workers from the north derive the greatest economic–financial benefit from remote work. Specifically, northern workers save the most on commuting costs and out-of-pocket expenses, as well as those who have not had to bear the costs of digital technologies because they were already equipped or because their companies have provided them with a PC.

The regression model shows that women ( $p < 0.05$ ), employees (private or public), and younger groups (although not statistically significant) have the greatest economic–financial benefit from remote working. Among the economic–financial disadvantages, the lack of meal vouchers from companies has the greatest impact on the net benefits.

### 5.3. Logistic regression analysis

Table 7 provides the results of the logistic regression models. The chi-square test is 628.29, and the model appears to be highly significant ( $p < 0.01$ ). All the independent variables, except net benefits and employment status, are significant in predicting employees' decision to increase or decrease their salary to continue remote working. The VIF test results for all the variables were less than the cut-off point (mean VIF = 1.35), which confirms the absence of a serious multicollinearity problem.

As shown in Table 3, only 22.95% of the sample is willing to take a salary cut. The logistic analysis shows that, if the job satisfaction increases, the probability that the employee will choose to take a pay cut increases by 196% (odds ratio = 2.96, 95 %CI = 2.262 to 3.888). It is well known that job satisfaction is not easy to achieve for employees and that, when it can be achieved, people are even willing to sacrifice a portion of their salary for it. This result is consistent with the hypothesis put forward and with the findings of Hsiao and Lin (2018), who showed that higher skill levels tend to lead to better job satisfaction and suggested that higher pay does not lead to higher job satisfaction. In other words, employee satisfaction stems from high levels of competencies and the employees' occupation and that employees find that the salary is not strongly related to satisfaction, which means that a good salary cannot improve job satisfaction.

It is confirmed that higher technostress reduces the probability of choosing a wage cut by 76.37%. High levels of technology use can increase the workload, pace, multitasking, and interruptions, leading to stress in the long run. This happened during the pandemic era with the emergence of technostress among workers as a result of the exponential increase in the use of digital technologies and platforms (Chesley, 2014). Hypotheses 1 and 2 are confirmed.

The psychological–behavioural variables are those that have the greatest influence on the decision to reduce wages, confirming that the non-economically quantifiable aspects need to be considered seriously when deciding to adopt remote working. The variables net benefit and employment status are not statistically significant, and therefore hypotheses 3 and 6 are not confirmed.

Being in a younger age group, having a higher pay grade, and residing in central or southern Italy increase the probability that an employee will choose to take a pay cut by 60%, 75%, and 138%,



**Table 5**  
Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11
1 Age	1.000										
2 Gender	0.0220	1.000									
3 Employment status	0.2914	0.1442	1.000								
4 Geographic area	-0.1148	-0.1359	0.0514	1.000							
5 Commuting costs	0.0613	0.0676	0.0362	0.0225	1.000						
6 Out-of-pocket costs	0.0438	0.0709	0.0092	0.0283	0.4193	1.000					
7 Meal vouchers	-0.1924	0.2500	-0.2605	-0.0006	0.1333	0.1731	1.000				
8 Overtime pay	-0.0798	0.1191	0.0268	0.0238	0.1225	0.2449	-0.0951	1.000			
9 Digital tech. costs	0.0404	0.0375	-0.0056	-0.0383	0.0478	0.0419	-0.0074	-0.0076	1.000		
10 Electricity costs	0.0675	0.0442	0.0667	0.1308	0.2501	0.2425	0.0120	-0.0674	0.0566	1.000	
11 Gas costs	0.0877	0.0003	0.0755	-0.0874	0.1961	0.2024	-0.0646	0.0210	0.0534	0.228	1.000

Source: Authors' elaboration.

**Table 6**  
Multiple linear regression results.

Net benefit	Coef.	Std err.	t	P >  t	Lower 95%	Upper 95%
Gender	3.420899**	1.614716	2.12	0.034	0.2521348	6.589664
Age	-1.125491	0.8424952	-1.34	0.182	-2.778827	0.5278448
Geo. area	-9.618277***	1.558836	-6.17	0.000	-12.67738	-6.559174
Employ. status	-3.139479	3.313537	-0.95	0.344	-9.642058	3.363099
Commuting	0.0997133***	0.0092379	10.79	0.000	0.0815846	0.117842
Out-of-pocket	0.8577461***	0.0081334	105.46	0.000	0.8417849	0.8737073
Meal vouchers	-22.50859***	0.300218	-75.02	0.000	-23.09736	-21.91982
Overtime pay	-0.9858046***	0.0095311	-103.43	0.000	-1.004509	-0.9671005
Digital tech.	-0.9668573***	0.0360329	-26.83	0.000	-1.037569	-0.8961453
Electricity	-1.165533***	0.0647346	-18.00	0.000	-1.29257	-1.038496
Gas	-0.9883353***	0.389836	-25.35	0.000	-1.064838	-0.9118327
_cons	-36.36426	2.822917	-12.88	0.000	-41.90403	-30.82449
Obs.	976					
R-squared	0.9703					
Adj. R-squared	0.9700					
F (11, 964)	2862.73					
Prob > F	0.0000					

\*\*\* p < 0.01, \*\* p < 0.05.

Source: Authors' elaboration.

**Table 7**  
Logistic regression results.

Salary choice	Odds ratio	Std err.	z	P >  z	Lower 95%	Upper 95%
Gender	0.3266592***	0.1089713	-3.35	0.001	0.1698791	0.6281308
Age	0.4027049***	0.0729311	-5.02	0.000	0.2823785	0.5743044
Geographic area	2.381128***	0.7881034	2.62	0.009	1.244666	4.555254
Employment	1.664624	1.022278	0.83	0.407	0.4995478	5.546964
Net benefit	1.000233	0.0011887	0.20	0.844	0.9979062	1.002566
Salary class	1.758147***	0.2329004	4.26	0.000	1.356117	2.279361
Job satisfaction	2.965998***	0.409697	7.87	0.000	2.262525	3.888198
Technostress	0.2363634***	0.0340182	-10.02	0.000	0.1782675	0.3133921
_cons	0.5822606	0.4330583	-0.73	0.467	0.1355294	2.501505
Obs.	976					
LR chi <sup>2</sup>	658.07					
Prob > chi <sup>2</sup>	0.0000					
Pseudo R <sup>2</sup>	0.6258					
Log likelihood	-196.7163					

\*\*\* p < 0.01.

Source: Authors' elaboration.

respectively. Hypotheses 5, 7, and 8 are confirmed. These findings are in line with the literature; in particular, they confirm that, for young people, flexibility plays an important role in their decision to take or leave a job and even to forgo part of the salary (Angelici & Profeta, 2020; Gallup, 2017). It is also confirmed that workers with higher salaries are more willing to give up part of their wage to continue working remotely. This is in line with the study by Mas and Pallais (2017) and Bonacini et al. (2021).

Contrary to hypothesis 4, the probability of cutting the salary decreases (by 68%) if the worker is a woman. This result is in contrast to

the study by Wiswall and Zafar (2018). The results of our study show that it is men who are more willing to reduce their salary to continue working remotely. Men derive the greatest benefits from remote work as they have greater satisfaction with home, social life, and leisure. Angelici and Profeta (2020) found, in their analysis, that men spend much more time on housework and care activities after the introduction of remote working. Hypothesis 4 is not confirmed.

## 6. Conclusions

The research focused on Italy as an interesting case study to understand the potential impact on the labour market of the financial implications for workers and the need to upgrade their technological skills to meet the challenge of digital transformation arising from such a structural change. Italy was one of the countries most affected by the COVID-19 pandemic, and at least 3 million workers (i.e., about 13% of the total workforce) started working remotely (Barbieri, Basso, & Scicchitano, 2022; Bonacini et al., 2021). Before the COVID-19 crisis, Italy was the European country with the lowest share of telework (Eurofound, 2017), and it faced a massive increase in this new form of work over a very short period of time, without precise legislation and adequate policies. Our findings, although based on Italian data, can be useful for policy makers in other industrialized countries to rethink production processes with a more intensive and stable use of remote work.

Based on a mixed-methods sequential exploratory design, to achieve the research objective, we examined a sample of 976 workers in Italy. This study showed that remote working – for the majority of workers (55% of the sample) – has a negative and significant economic–financial impact due to the additional costs incurred for digital technology and platforms (e.g., a personal computer, internet connection, licences for instant communication platforms, and cloud sharing space) and for utilities as well as non-payment of overtime and meal vouchers; these costs are higher than the savings in commuting costs and out-of-pocket expenses. Furthermore, this research emphasized that psychological–behavioural variables, such as job satisfaction and technostress, are essential in the choice of remote working post-COVID-19. Despite its greater diffusion and the opportunities that remote work offered workers during the COVID-19 pandemic, its implementation does not conform to theory or optimal canons. Because it requires organizational and managerial transformation, it is not enough to change the workplace to reap the innovative benefits of this form of work. Many companies, which have been forced to do so by adversity, have not been able to implement a model that can deliver the expected benefits. Some of the negative effects that have been seen are certainly due to firms' lack of capacity and resources. In particular, the costs incurred by workers for digital technologies and platforms show that companies have not been able to provide their employees with the technologies to enable them to work remotely.

The increase in harmful behavioural syndromes, such as overwork, burnout, and technostress, is also due to poor management in terms of worker control. Unfortunately, this superficial implementation has had a negative impact on workers, not only in economic–financial terms, and has led them to view this way of working as imperative in the event of an emergency but not as stable enough to be proposed again once the pandemic is over.

### 6.1. Theoretical contributions

The theoretical contributions of this study are manifold. In general terms, this research improves the existing literature both on the managerial issues connected to digital transformation, with interdisciplinary elements linked to psychological aspects, and on corporate finance topics connected to the economic–financial impacts of remote working. In this regard, previous studies have explored several aspects of remote working, highlighting its advantages and disadvantages (e.g., Kelliher & de Menezes, 2019). Many of these elements are directly or indirectly linked to certain variables with economic–financial impacts on employees, such as productivity, employee retention, and salary class (e.g., Allen et al., 2015; Mas & Pallais, 2017; Moen et al., 2011). However, the advantages and critical aspects of remote work cannot all be monetized, especially during a pandemic, and there are some elements that are more related to the relational–psychological sphere of the employees. Based on these considerations, on one side, we contribute to the remote working debate, highlighting the economic–financial impacts of this

flexible form of work for employees and self-employers during the period of the COVID-19 pandemic. On the other side, we highlight workers' perception of remote working from the points of view of both digital technologies (personal computer, internet connection, licenses for instant communication platforms, and cloud sharing space) and relational–psychological aspects with colleagues and family members.

### 6.2. Managerial implications

The findings of our study allow us to develop managerial implications. First, we help various organizations to evaluate the use of remote working, providing an interpretation linked to the economic–financial but also the psychological–relational aspects of the workers. Second, we reveal the costs and benefits that workers sustain/obtain through remote working, also highlighting behavioural elements that can curb or encourage their choice in the future (post-COVID-19 pandemic). Third, we draw attention to possible implementation and consolidation strategies of remote working, after the COVID-19 pandemic as well, based on digital technology development. Specifically, the strategic use of new technologies, also for delegation purposes (Soga, Laker, Bolade-Ogunfodun, & Mariani, 2021), can increase the quality of communication and technology fluency. Furthermore, our results suggest that remote working risks exacerbating some labour market inequalities, especially in the case of a lack of effective regulations. Finally, also education policies can fill potential knowledge gaps and improve technological and digital skills to take advantage of the myriad opportunities that home working offers.

### 6.3. Limitations and research agenda

The results of our research should be seen in light of the following limitations, which open up future research opportunities. Given the importance of the psychological–behavioural variables that emerged in our analysis, it would be appropriate to extend the study to some elements that were not directly considered in this research, such as the factors responsible for technostress associated with the introduction of remote working as well as the positive aspects perceived by workers. In addition, it would be useful to control the characteristics of the workplace and the classification of occupations, that is, managerial, white-collar, and blue-collar occupations.

To improve the implementation of digital transformation and support the transition to remote working, future research may focus on micro-level data analysis to capture the specifics of each organization, put people back at the centre of attention, and ensure that the needs of all stakeholders (employers and employees) are met. Remote working must mean more than saving on accommodation costs or commuter fares as digital technologies and collaborative systems allow people to reach their full potential.

#### *CRediT authorship contribution statement*

**Enrico Battisti:** Writing – review & editing, Writing – original draft, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Simona Alfiero:** Writing – review & editing, Writing – original draft, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Erasmia Leonidou:** Visualization, Validation, Supervision, Investigation, Formal analysis, Data curation, Conceptualization.

#### **Declaration of Competing Interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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