Does working remotely improve employee productivity? Evidence from Europe and the United States during the COVID-19 Pandemic

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Abstract

In December 2019, a novel coronavirus strain (SARS-CoV-2) emerged in the city of Wuhan, China. This coronavirus strain also know as COVID-19 drastically changed the world by causing a global pandemic. To prevent the virus from spreading, governments together with a lot of firms implemented working from home or working remotely to minimize physical contact amongst each other. Prior research into productivity and working remotely was mainly focused on analysing the change in productivity when rather simple and isolated tasks were performed from home by a small group of employees. The pandemic however presented an opportunity to research the effects of working remotely on productivity when large groups had to work from home, having to perform difficult tasks from home, having to collaborate and communicate online with their colleagues and therefore creating a entirely different environment and dynamic in which the relationship between working remotely and productivity could be analysed as it is essentially the largest global experiment of remote working in human history Overall literature and research claim that working remotely is associated with reduced stress, increased creativity, better work-life balance, reduction in carbon dioxide and most importantly

increased productivity. The research done in this thesis supports the notion of improved qualitative and quantitative productivity with both models showing that working remotely has a positive significant effect on actual work performance and productivity. It should however be noted that this positive effect is small and almost neglectable, implying that there might actually not be a noticeable difference between working from home and the office. Furthermore, evidence was found for a moderating effect between productivity and remote working caused by technological skills, well-being and organizational commitment.

Table of contents

Chapter 1 - Introduction

In December 2019, a novel coronavirus strain (SARS-CoV-2) emerged in the city of Wuhan, China. This coronavirus strain also known as COVID-19 drastically changed the world by causing a global pandemic. No one initially thought the virus would last this long, however Audi et al. (2020) argue that COVID-19 might even affect us in the long run by becoming a seasonal virus and will not just fade away. The COVID-19 pandemic also caused major workplace disruptions and changed our working life. To prevent the virus from spreading, governments together with a lot of firms implemented working from home or working remotely to minimize physical contact amongst each other. Working remotely is a form of carrying out a job without a specific place of work restrictions usually with the aid of technological tools (Moretti et al., 2020). Italy for instance had the lowest number of remote workers across Europe before the pandemic started with approximately 8% of their total labour employment working from home. During the pandemic however, this number has risen to 69%. Worldwide it is estimated that 81% of the workforce is affected by workplace changes (Savic, 2020).

These changes in our working life may also impact our productivity. Firms needed to adapt quickly to these changing environments and facilitate working remotely, they also needed to set up new ways of communicating online with each other. This sudden change in our work environment may be beneficial for our productivity as we have more freedom, we have more spare time as we do not need to travel to the office, and we spent more time with our family. However, it may also be detrimental to our productivity. Collaboration and sharing ideas between colleagues might be more difficult through an online screen. Furthermore, as the pandemic also means less contact with co-workers, friends or our relatives, depressions may occur and bad housing with loud neighbours might also negatively impact our productivity. Working remotely also impacted global air pollution and carbon dioxide emissions, which was instantaneously reduced for a certain duration of time as we commuted less from home to work by car or public transport (Nishihura & Nimura, 2020). With global warming becoming a bigger problem and with the urge to act sooner rather than later, these positive effects working remotely has on the environment might also imply that governments may enforce or start encouraging working from home more and more.

Prior research into productivity and working remotely was mainly focused on analysing the change in productivity when rather simple and isolated tasks were performed from home by a small group of employees. For example, Bloom (2014) did find evidence that productivity increased when employees worked from home. He conducted a field study on call centre employees of the Chinese travel website which showed that employees working from home were more productive, happier, and less likely to quit their job. This study however was done at one company, one specific department of the company

in one country which makes the external validity questionable. The drastic changes in the workplace caused by the pandemic however offer new possibilities to research the effects of working from home as it is essentially the largest global experiment of remote working in human history. Different departments within firms all had to start working remotely, creating new challenges such as performing more difficult tasks from home, collaborating, and communicating online, dealing with personal well-being and insecurity of losing their jobs due to the pandemic.

These large groups of employees working from home, also performing more difficult tasks and the need to communicate with each other can make previous research outdated and not externally valid nowadays. Therefore, further research is necessary to investigate this new dynamic between working remotely and productivity. This all leads to the following research question:

What is the impact of working remotely on employee productivity?

This study aims to add to the existing literature and further build upon research on working remotely and productivity for different employees working at different departments and firms. The purpose of this research is to find out if there is a relation between productivity and working from home. In specific, this research will focus on different determinants on an individual level which might influence employee productivity. As COVID-19 might become a seasonal virus the findings of this research might give firms some new insights in how to organise remote working and it might give governments opportunities to form regulations and incentives to promote working from home because of the positive environmental impact it could have.

This paper is structured as follows. In the literature review an overview will be given about productivity and determinants of employee productivity. In the data and method section, the data used will be discussed as well as the empirical models used to test the research question. Afterwards the results section will elaborate on the results obtained. Lastly, concluding remarks will be given regarding the significance and limitations with recommendations for further research regarding this topic.

Chapter 2 - Literature Review

Productivity is seen as an indicator of the overall business performance at firms. It is viewed as a vital factor in creating a competitive advantage and a sustainable business model by distinguishing themselves from their competition (Koopman et al., 2002; Mohammed et al., 2019). Fried et al. (2008) define productivity as the ratio of a firm's output to its input. It is seen as an indication of how much output a firm can produce for a certain amount of input. Examples of input include labour, fuel, materials, buildings, and equipment. Likewise, Bernolak (1997) defines productivity as "how much and how well organisations produce from resources used". If one firm produces more or better goods from the same resources, it does that by being more productive. A lot of emphasis has been put on improving productivity through technological progress and managerial effort., for instance by establishing policies which dictate how to acquire and develop human resources to create firm-specific, inimitable assets in the form of abilities, knowledge, and skills (Koch & Rita, 1996).

2.1 Employee Productivity

Organizations and firms strive to improve employee productivity, as profits are directly influenced by the efficiency of their employees (Gummesson, 1998; Sels et al., 2006). There are various advantages to be obtained from higher levels of productivity come with various advantages such as favourable economic growth, profitability, and social progress (Hanaysha 2016). Furthermore, employees who are more productive also enjoy the benefits of better wages, favourable employment opportunities and better working conditions. Finally, more productive firms maximize their organizational competitive advantage through cost reduction and improving their output (Hill et al., 2014). These benefits obtained from higher productivity, makes it worthy of analysis as it is a crucial factor in the long-term success of firms.

In literature a distinction can be made between a qualitative and quantitative measures for productivity. A quantitative way to analyse employee or labour productivity is defining it as the amount of output that is obtained from each employee within a specific period (Hanaysha, 2016). Similarly, Ferreira & Plessis (2009) define employee productivity as time used by employees to actively perform and produce expected outcomes. This argument is strengthened by Sharma & Sharma (2014) who argue that the amount of time workers are physically present is related to employee productivity. Usually, productivity of a given employee will be measured by comparing the average output for workers doing similar work. It can however also be measured by the number of units of a service or a product that an employee handles in a specific period (Hanaysha, 2016).

Another view on measuring labour productivity is presented by Beaton et al. (2009) as they argue that employee productivity can be measured by absenteeism and presenteeism. Where absenteeism is commonly referred to as the number of missed workdays for employees, this definition can however be extended to cover input loss caused by employment status changes, such as reduction in job loss, routine working time and early retirement (Bansback et al., 2012). Presenteeism is defined as productivity loss that occurs when employees come to work ill and therefore perform below par (Cooper & Dewe, 2008). Koopman et al. (2002) came with the Stanford Presenteeism Scale to evaluate the impact health problems have on productivity.

When measuring employee productivity more qualitative, Haynes (2007) suggested that the self-assessed approach which originated from Leaman & Bordass (2000) should also be considered when measuring productivity as they argue that perceived productivity can be considered just as important as actual productivity. As Coker (2011) defined labour productivity as the degree of employees' performance in relation to work quality, attendance, capacity of performance and personal factors, self-assessment makes sense as there are a lot of factors needed to take into account including personal factors to measure employee productivity. This argument of self-assessment is further strengthened by Koopmans et al. (2014) who developed a method to measure actual work performance which is defined as "behaviours or actions that are relevant to the goals of the organization" (Campbell, 1990). They measured the effectiveness of 126 indicators of actual work performance in surveys and identified 23 indicators which were relevant in measuring this performance by self-assessment.

Overall, there seems to be a lack of standardized ways to measure productivity. The above discussion on the concept of employee productivity indicates that it is a key determinant for organizational profitability and success. However, literature does distinct between quantitative and qualitative ways of measuring and observing productivity. This study incorporates the self-assessed approach as the samples used contain employees from multiple firms across multiple countries and therefore is the more suitable.

2.2 Working Remotely and employee productivity

Working remotely is a form of carrying out a job without a specific place of work restrictions usually with the aid of technological tools (Moretti et al., 2020). Following the rapid increase in cases throughout the world, many governments and employers quickly implemented restrictions requiring employees to work from home. Which lead to the largest global experiment in remote working in human history. However, even before the pandemic the number of people working remotely has already been growing in most countries (Owl Labs, 2019).

A typical telecommuter has a college degree and works for a salary in a managerial or professional role at a firm (Sutherland & Janene-Nelson, 2020). Furthermore 75% of the employees that work remotely earn more than $65.000 per year. This in line with what Bartik et al. (2020) found that remote work was also much more common in industries with better educated and paid workers. Furthermore, the majority of remote workers worked from the location of their home (Buffer, 2020).

Multiple studies actually show that working remotely has a positive effect on employee productivity. For example, Bloom (2014) did find evidence that productivity increased when employees worked from home. He conducted a field study on call centre employees of the Chinese travel website Ctrip. For nine months half of the volunteers were allowed to work from home and the other half worked at the office. Performance data and survey responses showed that employees working from home were more productive, happier, and less likely to quit their job. This study however was done at one company, one specific department of the company in one country. Therefore, the external validity is questionable in relation to the scope of this study but does provide one of the first field experiments showing productivity levels are significantly higher when employees perform simple tasks remotely. This positive effect on productivity is supported by Church (2015) who claims that the time an employee saves on commuting to the office can be spent on being productive. Telework approximates that employees who work remotely would save an estimated 15-days of time a year. Church (2015) also highlighted that the difference in productivity between employees who work from home versus in-office employees with various examples. Alpine Access saw an 30% increase in sales and 90% reduction in customer complaints to the employees who worked from home. When Best-Buy implemented their flexible work program their average productivity increased by 35%. British Telecom estimated that their productivity increased by 20% when they started telecommuting and finally American Expess remote workers produced 46% more business and handled 26% more calls than employees who worked at the office (Rapoza, 2013). This increase in productivity for telecommuters is further supported by various papers who claim that working remotely is associated with reduced stress, increased creativity, better work-life balance, reduction in carbon dioxide and increased productivity (Owl Labs, 2019; Russo et al., 2021; Anderson et al., 2015; Bloom et al., 2015; Vega et al., 2015; Baruch, 2000). Taking this into consideration the first hypothesis that will be tested is as follows:

H1: Working from home increases employee productivity

Technology has strongly enabled the possibility of remote working and eventual benefits that come with it (Church, 2015). Many categories of employees can work seamlessly from their home due to improved broadband access. Furthermore, technological tools such as file sharing, email, screen sharing, and video conferencing enabled employees to telecommute (Rapoza, 2013). These

technological options were further developed during the pandemic with the emergence of new technologies to communicate with each other, such as Microsoft Teams, Zoom, GoToMeeting and many more. Nguyen et al., (2020) observed a substantial increase in digital communication between people with video calls and usage of emails respectively growing with 30% and 24%. This increase in digital communication could be beneficial in enhancing communication but it could also be detrimental for people who aren't technologically gifted. Therefore, the following hypothesis will be tested.

H2: Technological skills moderates the effect between working remotely and employee productivity

Literature further recognizes some perceived benefits and challenges when working remotely. One of perceived benefits recognized by literature is a reduction in sick days. It is estimated that 78% of sick days are caused by personal issues and stress. Working remotely allows employees to handle these situations better without having to take an entire day off from work (Hendricks, 2014). Moreover Church (2015) argues that employees are also able to return faster to work when feeling sick as the barrier to return to work is smaller when working from home. Organizations facilitating working from home might also benefit from cost savings, as they can reduce their commuting costs and save on gas. Organizations are also able to save on overhead and variable costs. Research conducted by the organization Telework estimated that employers would annually save more than $10.000 per employee due to increase in productivity, lowered absenteeism, reduced turnover and facility costs. (Rapoza, 2013). Finally, another perceived benefit would be job satisfaction with Bloom (2014) showing that remote workers reported much higher job satisfaction in a field lab experiment. This is supported by the Staples Advantage Study which also showed higher job satisfaction rates from telecommuters. "Home workers reported 25% lower stress levels, 73% said they ate healthier working from home, 76% were more loyal to their company and 80% reported a better work-life balance" (Hendricks, 2014).

However, besides these perceived benefits from working remotely, working from home also comes with some challenges. For instance, manager perception of their employees. A Microsoft whitepaper "Work without Walls" indicated that managers were more comfortable when they were able to witness their employees. The assumption is made that employees working remotely might take advantage of not being seen or controlled and thus not working as much or not as efficiently (Kruse, 2013). This is supported by Russel (2013) who argues that not all employees are able to work from home as it requires self-discipline and avoiding distractions at home. Additionally, some employees might not always have the necessary facilities at home, such as the right equipment, proper space to set up a home office and connectivity differences between employees, with some having decent internet connectivity whereas others might not. Finally, another challenge is work/life balance. Working from home can help to achieve a better work/life balance by spending more time with the

family, it can however also negatively affect this balance as working remotely does not provide a psychical separation between work and home. Employees might also neglect to take breaks and might not be as structured on what time to end their workday (Russel, 2013).

2.3 Factors influencing employee productivity

Factors influencing employee productivity have been well researched in the past, as it directly influences a company's performance and profits as previously mentioned (Gummesson, 1998; Koopman et al., 2002; Mohammed et al., 2019; Sels et al., 2006).

2.3.1 Age

It is a known problem in the past few decades that the workforce is ageing in most industrialised economies across the world (OECD, 2019). It remains uncertain how this pandemic will shape our working habits and environment. It could be plausible that positive perceived effects in the reduction of carbon emission might incentivise governments to promote working from home. Also, the habits of working remotely might create some friction if offices force their workers back to the office. Therefore, it might become a choice in the near future if someone wants to work remotely or not. With an ageing workforce analysing if age has a moderating effect on productivity when working remotely can give us some insights in how firms can handle an ageing workforce. A large notion in literature agrees on the fact that cognitive abilities decline from some stage in adulthood (Skirbekk, 2004). Especially important cognitive abilities decline significantly by the age of 50 such as episodic memory, reasoning, and speed, this can in turn impact how productive an employee is to the company. However, Skirbekk (2004) also argues that experience and higher levels of job knowledge can outweigh this decline in cognitive abilities and make an older employee more productive than a younger employee. It can therefore be argued that productivity might increase for certain low intensive jobs and decrease for highly intensive jobs as cognitive abilities decrease over time. Technology however has strongly enabled the possibility of working from home and eventual benefits that come with it (Church, 2015). Meyer (2011) for instance found that an older workforce was negatively related to technology adoption. This negative relation could entice that an older labour force is not as good as adopting to working remotely as someone younger which would make them less productive. However, one can also think of benefits that come with ageing. Older employees have most likely accumulated more wealth over the years and are living in better conditions than younger employees who just started. This is supported by Grinstein-Weiss et al. (2008) who found a significant increase in net worth as age increased. This could imply that an older labour force has better facilities at home for remote working. This leads the following hypothesis.

H3: Age moderates the effect between working remotely and employee productivity

2.3.3 Employee wellbeing

Due to the coronavirus pandemic governments in various countries imposed necessary lockdowns together with social distancing to limit the spread of infection (Anderson et al. 2020). People who work in essential professions such as healthcare, food chains such as supermarkets, law enforcement or pharmacies were allowed to leave their homes to go to work, other professions if possible were urged to work from home as much as possible. These measures were perceived as drastic by the general population and can have severe consequences on their well-being (Brooks et al. 2020; Lunn et al. 2020). To be able to understand how employee well-being affects work performance and productivity, research has been done by psychologists, sociologists and economists on distress and wellbeing levels on employees (Kersley et al., 2006; Warr, 2002).

According to Steptoe et al. (2015) people's thoughts about the quality or goodness of their lives is linked to the way they perceive their overall life satisfaction or subjective wellbeing. Warr (2002) supports this view by claiming that effective wellbeing is emphasised by the centrality of people's feelings about their lives. Perhaps one of the oldest and widely known theory on this subject is the Human Relations Theory, where job satisfaction is related to higher morale and well-being which in turn leads to higher employee productivity (Strauss, 1968). Krekel et al. (2019) also found a significantly strong positive relation between employees' life satisfaction and employee productivity, which is supported by research done by Coviello et al. (2017) who found that the mood of employees was related to their productivity. Currie (2001) claims that the mental and physical health of the workforce is synonymous to the well-being of an employee. Organisations should strive to create physically safe and stress-free environment to work in to contribute to the overall well-being. This view is supported by Bakke (2005) who argues that promoting an environment that makes work rewarding, exciting, stimulation and enjoyable is positively linked to the employee well-being and can improve financial performance of firms. Based on this the following hypothesis will be tested:

H4: Personal well-being moderates the effect between working remotely and employee productivity

As working consists of a large part of our daily lives, personal wellbeing cannot exist in the workplace or on its own but within a social context (Chartered Institute of Personnel Development (CIPD), 2007). Therefore, our social relations with organisational agents, employments changes and lifestyle all influence our wellbeing (Guest, 1998). This is also the case during the pandemic, where research shows that lockdowns, being quarantined can lead to emotional exhaustion, depression, anger, insomnia, irritability, low mood, loneliness, the fear of getting infected or infecting others and stress (Bai et al., 2004; Hawryluck et al., 2004; Lee et al., 2005; Marjanovic et al., 2007; Reynolds et al., 2008; Sprang & Silman, 2013.) Garfin et al. (2020) also stated that repeated exposure to the outbreak can cause

psychological distress, which then will lead to adverse physical and mental health issues (Holman et al, 2020). With this extra added stress to our daily lives, in order for employers to assist in adding to the personal well-being of the employees they will need to create an environment which allows employees to achieve their full potential to benefit themselves and the firm (Baptiste, 2008).

2.3.4 Employee commitment

Beloor et al. (2017) stated that considering the commitment of employees is an important aspect as it can be used to predict employee's absenteeism, performance, productivity and other behaviours, with job satisfaction having the highest impact on commitment and productivity. Employee commitment is defined in various ways (Baptiste, 2008; Mowday et al., 2013; Reichers, 1985). It can be viewed as an employee's affective reaction to various aspects of the organisation they work for (Cook & Wall, 1980), such as the relationship and feelings of attachment towards the values and goals of the firm and thus acting to achieve these goals for their sake. This is enhanced by Steer (1977) who states that employees act on behalf of the general goals of the organization because of the congruence of their own goals and that of the firm they identify themselves with. As such affective commitment is seen as a positive contribution to an organization's goals (Mowday et al., 1979). Cato & Gordon (2009) also showed that aligning the organisations strategic vision to that of their employees can contribute to the productivity and success of a firm. By aligning the visions, employees would become more inspired and motivated to be more creative which eventually can improve their performance in achieving organizational objectives and goals (Hanaysha, 2016).

An employee commits to an organisation in return for either extrinsic (salary) or intrinsic (job satisfaction, belonging) rewards (Baptiste, 2008). Meyer & Allen (1997) state that employee commitment is a psychological state that characterizes the association with the firm and therefore has implications on their decision to stay employed at the organization. Schweizer & Patzelt (2012) support this way by defining employee commitment as an individual's decision to maintain active in the organisation regardless of the organization climate. Commitment is an internalised employee belief, and it signifies the relationship between partners and the will to proceed with the partnership in the future (Klein et al., (2012). This commitment to the organisation however does dissolve as uncertainty grows. Taking all of the above into consideration leads to the following hypothesis:

H5: Employee commitment moderates the effect between working remotely and employee productivity

Overall, the literature generally agrees that higher employee commitment leads to more productive employees. Cohen (2003) argued that investing in highly committed employees in the organization leads to higher productivity and performance. This view is supported by Brown et al. (2011) who says

that higher levels of employee commitment increase job satisfaction, job performance, overall productivity, and sales as it also decreases absenteeism, intention to leave and employee turnover. This argument is strengthened by Dixit & Bhati (2012) who identified a significant relationship between productivity and employee commitment.

2.3.5 Job satisfaction

Throughout the years the relation between job satisfaction and production has been widely examined in literature (Clark et al. 1997; Freeman 1978). According to Jernigan et al. (2002) job satisfaction is not only related to the satisfaction one enjoys from work but also within the larger organisational context in which their work exists. It is viewed as a positive or pleasurable experience resulting from one's job or their job experiences (Locke & latham, 1990). This is complemented by the views of Fisher et al. (2004) who claim that job satisfaction also includes positive emotions due to rewarding aspects of a job which eventually can lead to improved productivity.

Curie (2001) further suggests that the degree to which an individual is satisfied with their employment terms and conditions and psychical aspects are also related to one's job satisfaction. For example, employees may be satisfied with the company policy, the relationship they share with their colleagues or with their wages. Therefore, job satisfaction is determined by an individual's perception of their total job situation, including company policy, employments terms and condition, physical work environment, degree of autonomy and responsibility (Kersley et al., 2006).

Böckerman & Ilmakunnas (2012) argue that job satisfaction can have a positive effect on performance as it could increase an employee's effort by reducing shirking and absenteeism. This is in line with other literature which suggests a positive correlation between job satisfaction and productivity (Harter et al., 2003; Judge et al., 2001; Wright & Cropanzano, 2000). This all leads to the final hypothesis:

H6: Job satisfaction moderates the effect between working remotely and employee productivity

Chapter 3 - Data and method

To investigate the relationship between working remotely and employee productivity, individual level survey data collected by Prochazka et al. (2020) and Russo et al. (2021) was used. The dataset from Prochazka et al. (2020) consists of 726 responses of people who were employed in Germany, the Czech Republic, Slovakia, or Italy during the COVID-19 pandemic in May 2020 and at the beginning of June 2020. The data was obtained via an online survey which was promoted by social networking, articles in online newspapers, direct emails and in a university newsletter. This survey provided raw data on work-related consequences due to the pandemic, such as information about employees their actual work performance, job satisfaction, well-being and if and how much they worked remotely. The dataset collected by Russo et al. (2021) consists of 192 responses from software professionals in a two-wave longitudinal study during the COVID-19 pandemic in April and May 2020. 132 respondents came from the United States, other countries the respondents came from included 10 European countries, Australia, India, Kuwait, Malaysia, Mexico, Taiwan, and Russia. They covered over 50 psychological, social, situational, and physiological factors that have previously been associated with well-being or productivity. Therefore, it is ideal to assess effectiveness of well-being and work from home productivity. It is however limited to software engineers. This study used two models constructed from these surveys as they both measure productivity and remote work on an individual level. Both models are used to answer the hypotheses and the research question.

What is the impact of working remotely on employee productivity?

3.1 Main variables

Productivity is measured in 2 ways in this study. The first one being actual work performance, which is a qualitative way of measuring productivity as it considers multiple aspects of work performance. Prochazka et al. (2020) used the measure developed by Koopmans et al. (2014) to assess for actual work performance. Since the dataset contains employees from multiple firms across multiple countries perceived productivity is used as a measure. As mentioned in the literature review Haynes (2007) suggested that perceived productivity should be considered just as important as actual productivity. Actual work performance is measured from a scale from 0 to 5, with 0 not performing well and 5 performing excellently. The other way of measuring productivity is also a self-assessment of how participants rate their productivity. Participants were asked to express how many tasks they effectively completed which they were supposed to complete last week expressed in a percentage. This is more of a quantitative measure as it only takes tasks into consideration, Russo et al. (2021) admitted this might be a methodological limitation as it is not backed up by any methodological measure of productivity. Nonetheless, as the dataset contains two waves, the measurement might be consistent.

Productivity is measured as a percentage from 0 to 100. With 0 meaning they did not finish any tasks and 100 meaning they finished all the tasks.

As the survey created by Prochazka et al. (2020) did not provide a measure for well-being, affective irritation was used as a study by Currie (2001) claims that the mental and physical health of the workforce is synonymous to the well-being of an employee. A way of measuring affective irritation was developed by Mohr et al. (2006) where irritation is measured as the subjectively perceived emotional and cognitive strain in occupational contexts. This is measured in a scale from 1 to 5, where 1 is not irritated and 5 is very irritated. The lower the number the better the well-being is of the employee. Russo et al. (2021) did include a measurement for well-being as they used the Satisfaction with Life Scale developed by Diener et al. (1985). Well-being is measured from a scale from 1 to 7, where 1 suggests a bad well-being 7 meaning the respondents overall well-being is great.

As Nguyen et al., (2020) observed a large increase in digital communication between people during the pandemic, it was tested whether technological skills had a moderating effect between working remotely and productivity. Prochazka et al. (2020) did not account for technological skills when designing their survey. They did however include a measure for occupational self-efficacy which was designed by Rigotti et al. (2008). It is defined as a belief in one's abilities to successfully complete a task (Rigotti et al., 2008). As the pandemic practically forced a lot of employees and their colleagues to work remotely, it can be argued that one's self-belief in successfully completing a task is positively correlated with one's technological skills, as these were required to effectively work from home. Therefore, occupational self-efficacy will be used to measure technological skills. This is measured in a scale from 1 to 5, where 1 means someone does not believe in their abilities and 5 meaning someone does believe in their own abilities. Russo et al. (2021) measure technological skills, by asking the participant to evaluate their technological skills on a 7-point Likert scale, with 1 indicating that they do not possess the technological skills needed to work remotely and 7 indicating their technological skills perfectly equip them for working from home.

For organizational commitment Prochazka et al. (2020) used the measure constructed by Klein et al. (2014) to asses the actual work commitment which has a scale from 1 to 5, with 1 being not committed and 5 being committed to the organization. The same measure was used in this study. There was no measure for organizational commitment in the survey conducted by Russo et al. (2021).

Job satisfaction was measured by Prochazka et al. (2020) by asking the question to what extend the employee was satisfied with their job from a scale from 0 to 10. With 0 indicating they were not satisfied and 10 indicating they were extremely satisfied. This study used the same measure indicating job satisfaction. In the survey conducted by Russo et al. (2021) job satisfaction can be derived from the

indication whether or not an employee experienced having fun while doing their job. This is measured from a scale from 1 to 7, with 1 not having fun at their jobs and 7 having fun doing their jobs.

3.2 Control variables Prochazka et al. (2020)

When considering control variables in the first model based on the survey conducted by Prochazka et al. (2020), the country where the employee works is considered as the countries in the sample could differ regarding regulations for working remotely or lockdowns. Also technological, cultural or economical differences could also impact the productivity of employees, some countries that are hit harder by the lockdown could face lower productivity levels as compared to countries who felt less consequences due to the pandemic. Pencavel (1991) argued that higher education most probably has a positive effect on labour productivity in the United States and as Bartik et al. (2020) argue that higher educated people more often work from home, education was also be used as a control variable. Education is measured by a categorical variable with the following values: basic elementary/secondary education, high school, university or other. Children might have an impact on productivity and working from home, as children need attention it can distract the parent and influence the productivity of someone working from home. It can also influence the choice to work from home or not, as some parents wish to spend more time with their children. This was measured by the number of children an employee has.

Experience at the current employer might also impact productivity as someone who works longer at the firm might be more productive as it is more familiar with processes within the firm and knows his or her way around the office, this is measured by the number of years an employee works at his current firm. Also, the kind of work an employee did was considered as a control variable. If a worker did rather manual work also referred to as blue-collar work, productivity is determined predominantly by the time and effort invested by the employee, whereas rather intellectual work also referred to as white-collar work, productivity can also depend more on collaboration with colleagues or their mental state. The type of work a person does could also determine whether or not they work remotely as some manual jobs cannot be performed at home, such as manufacturing jobs, whereas white-collar work can be done virtually anywhere if they have a computer and an internet connection. This was measured as a control variable, with 1 indicating they performed rather manual work. 2 indicating they performed intellectual work and 3 indicating the employees performed both manual and intellectual work. In addition to the type of work, this research also controlled for the sector in which the employee was active was used. As in some sectors such as healthcare, employees were not able to work remotely whereas workers working in the IT could more easily work from home. The sector in which an employee works might also have productivity differences as some sectors might receive more investments to innovate and improve productivity while in other sectors less investments are made.

Sector was measured as a categorical variable differentiating between extracting of raw materials, manufacturing, services, public sector, non-government non-profit organization, healthcare, education, and others.

Furthermore, the amount of hours someone works per week could impact working from home and productivity as someone who works less hours might be more inclined to come to the office, whereas someone working 40 hours a week, might occasionally work from home. There might also be a difference in productivity as Pencavel (2015) shows that working more hours a day can be detrimental to productivity suggesting fatigue could play a key role. This was measured by the number of hours an employee works per week. The position an employee has within a firm might have an impact on productivity as well as working remotely, as (Sutherland & Janene-Nelson, 2020) shows that the typical telecommuter has a professional or managerial role within a firm. This experience professionals or managers have at working remotely more often might impact the productivity when working from home, therefore it will be used as a control variable measured by a categorical variable.

Research conducted by Rhoades & Eisenberger (2002) found that perceived organizational support reduces absenteeism and also has a positive effect on performance. This study is used as a way to assess perceived organizational support by Prochazka et al. (2020) in their survey. This was measured by a scale from 1 to 5, with 1 meaning there is no perceived organizational support and 5 meaning the employees perceive organizational support. Moreover, I controlled for gender and age, with a categorical variable for gender and a continuous variable for age. Whether or not someone had equipment, space and software access at home could also play a part in productivity. For instance, if a person does not have a stable internet connection, this could hinder them from performing their jobs. This could also have an impact on whether someone spends more time at the office or not. If an employee does not have the right equipment or proper space to work remotely, chances are that he would choose to go to the office given the choice. Russo et al. (2021) asked three questions about their working conditions at home, which was measured on a 7-point Likert scale, an aggregate score was calculated from these three answers resulting in 1 having bad working conditions at home and 7 having great working conditions at home.

Finally, interaction terms between occupational self-efficacy, age, organizational commitment, irritation, and job satisfaction with working remotely were created to test for moderating effects.

Table 1 gives an overview of all the descriptive statistics for the data collected by Prochazka et al. (2020).

Table 1. Descriptive statistics from Prochazka et al. (2020) survey

Variable	Description	(1) N	(2) Mean	(3) Sd	(4) Min	(5) Max
aperf	Actual work performance	669	3,16	0,81	1	5
honow	Amount of time working remotely	669	7,19	3,78	0	10
ocseff	Occupational self-efficacy	667	3,80	0,71	1	5
age	Age	664	39,89	12,30	19	71
irita	Iritation (affective) measurement for well-being	668	2,44	1,04	1	5
acommit	Organizational commitment	667	3,82	0,86	1	5
satisf	Job satisfaction	668	7,29	2,04	0	10
cwork	In which country they are currently employed in	669	3,26	1,37	1	5
wdiffic	Work difficulty	669	5,10	3,17	0	10
gender	gender	667	1,35	0,48	1	3
educ	Level of education completed	668	2,74	0,56	1	4
nrchild	Number of children	663	0,96	1,34	0	20
experience	Ammount of years worked at the firm	666	10,23	20,73	0,5	475
workload	Ammount of hours worked per week	663	36,24	10,33	0	96
manager	Job position	667	1,43	0,79	1	4
contract	Type of work contract	668	1,25	0,48	1	3
collar	Nature of their work (Blue-collar, white-collar or balanced)	646	2,13	0,41	1	3
sector	In what industry are they active	649	4,67	2,00	1	8
socsup	Social support	665	4,10	0,86	1	5
honow_ocseff	Interaction term between self-efficacy and working remotely	649	27,51	15,42	0	50
honow_age	Interaction term between age and working remotely	664	285,17	177,63	0	650
honow_irita	Interaction term between iritation and working remotely	668	17,58	12,67	0	50
honow_acommit	Interaction term between commitment and working remotely	667	27,61	16,02	0	50
honow_satisf	Interaction term between satisfaction and working remotely	668	52,76	32,33	0	100

3.3 Control variables Russo et al. (2021)

When considering control variables in the second model based on the survey conducted by Russo et al. (2021), a lot of the same control variables were used with similar measurements such as gender, age, education (degree), country, organizational support, hours worked per week and children. However, for children Russo et al. (2021) did differentiate between how many babies (0-1 years old), toddlers (1-3 years old), children (4-11 years old) and teenagers (12-17 years old) the respondent has. To be able to compare both models, a new variable number of children was created by adding these together. The amount of adults the respondent is living with is also measured. This is included as a control variable as living with multiple adults in one house could potentially affect if the employee wants to work from home, if there is enough space to facilitate working remotely for instance. Productivity could also be affected as other adults could potentially distract you, for instance a partner could want to spend more intimate time together even when trying to work. This is measured by the number of adults living in the same household as the respondent.

As Russo et al. (2021) did not have a measure for what job position an employee holds within a firm, a substitute was chosen in the form of income. Higher income usually comes with a better job position. This is measured as a categorical variable for how much income they earn within a year categorized as follows: 4 = < $20.000, 5= $20,000-$40,000, 6= $40,001-$60,000, 7= $60,001-$80,000, 8= $80,001-$100,000, 9= >$100,000. Moreover, distractions the respondent experienced at home is also included as a control variable. These are distractions such as loud neighbours as Haynes (2007) argues that interaction and distraction have the most effect on perceived productivity. This was measured as a scale from 1 to 5, with 1 not being distracted and 5 being distracted at home. Likewise, if someone can focus for a longer period amount of time at home might also have an impact on productivity and working remotely. This was also measured as a scale from 1 to 5, with 1 not being able to focus and 5 being able to focus.

Finally, interaction terms between age, well-being, and job satisfaction with working remotely were created to test for moderating effects. Table 2 gives an overview of all the descriptive statistics for the data collected by Russo et al. (2021).

Table 2. Descriptive statistics from Russo et al. (2021) survey

Variable	Description	(1) N	(2) Mean	(3) Sd	(4) Min	(5) Max
ID	Unique ID given to respondent	380	95,50	54,92	1	190
Wave		380	1,50	0,50	1	2
productivity	Tasks completed	372	51,33	17,76	5	100
time_remote	% time working remotely	372	68,52	39,17	0	100
technological_skills_1	Technological skills	380	4,23	0,84	1	5
age	age	380	36,77	10,74	19	63
well_being	well-being	372	4,22	1,32	1	7
job_satisfaction	job satisfaction	380	4,52	1,52	1	7
Distractions	Distractions at home	372	2,23	1,02	1	5
focus	Focus at home	372	3,31	1,09	1	5
country	Country	380	4,22	4,86	1	17
home_office	Working conditions at home	380	5,67	1,14	1	7
Degree	Level of education completed	380	4,18	0,92	1	7
gender	Gender	380	1,81	0,41	1	3
nr_children	Number of children	380	0,66	0,98	0	5
adults	Living with home many adults (18+ years old)	380	1,28	0,96	0	4
socsupport	Percieved organizational support	361	4,42	1,10	1	6
hoursworked	Amount of hours worked this week	372	37,32	9,64	2	65
income	Income	380	3,55	1,54	1	6
remote_tech	Interaction term between tech. skills and working remotely	372	289,22	177,61	0	500
remote_age	Interaction term between age and working remotely	372	2526,30	1684,96	0	6300
remote_wellbeing	Interaction term between well-being and working remotely	372	289,56	194,52	0	700
remote_funjob	Interaction term between satisfaction and working remotely	372	309,01	212,72	0	700

3.4 Estimation strategy

To test the relationship between productivity and working remotely an Ordinary Least Squares regression (OLS) was used for the Prochazka et al. (2020) dataset. To account for errors being heteroscedastic a robust model was applied and finally to test whether multicollinearity occurred within the variables a correlation matrix was used which can be seen in table 9 in the appendix. This shows that there is no concern for multicollinearity as only the interaction terms show to be correlated with each other. This leads to the following two models that will be tested.

Model 1, based on the survey by Prochazka et al. (2020)

H1: Working from home increases employee productivity

Actual work performance = β0 + β1 Remote work+ β2 Control variables + ε

H2: Technological skills moderates the effect between working remotely and employee productivity

*Actual work performance = β0 + β1 Remote work * Oceff + β2 Remote Work + β3 Oceff + β4 Control variables + ε*

H3: Age moderates the effect between working remotely and employee productivity

*Actual work performance = β0 + β1 Remote work * Age+ β2 Remote Work + β3 Age + β4 Control variables + ε*

H4: Personal well-being moderates the effect between working remotely and employee productivity

*Actual work performance = β0 + β1 Remote work * Irritation+ β2 Remote Work + β3 Irritation + β4 Control variables + ε*

H5: Employee commitment moderates the effect between working remotely and employee productivity

*Actual work performance = β0 + β1 Remote work * Commitment+ β2 Remote Work + β3 Commitment + β4 Control variables + ε*

H6: Job satisfaction moderates the effect between working remotely and employee productivity

*Actual work performance = β0 + β1 Remote work * Job Satisfaction+ β2 Remote Work + β3 Job Satisfaction + β4 Control variables + ε*

The dataset collected by Russo et al. (2021) consists of 192 responses from software professionals in a two-wave longitudinal study and is strongly balanced indicating attrition bias is most probably not a problem for this sample. To indicate which model is most efficient in estimating the relationship between productivity and remote work three models were considered. A Pooled OLS model, Fixed Effects model and a Random Effects model. When collecting the sample, a simple random sampling method was used by using Prolific in which they collected a random sample within software professionals (Russo et al., 2021). First a Hausman test was conducted to see whether time invariant characteristics from individuals were correlated to each other. The result from Hausman test was insignificant as can be observed table 7 in the appendix, indicating that there is a correlation between the unique errors and the regressors, therefore a Random Effects model is more efficient than a Fixed Effects model in this case. Finally, to test whether a Pooled OLS or a Random Effects model was more efficient the Breusch and Pagan Lagrangian multiplier test for random effects was used. This Lagrangian multiplier was significant as can be seen in table 8 in the appendix indicating that random effects are present thus a Random Effects model is the most efficient model to use. Finally, to test whether multicollinearity occurred within the variables a correlation matrix was used which can be seen in table 10 in the appendix. This shows that there is no concern for multicollinearity. Therefore Model 2, based on the survey by Russo et al. (2021) looks as follows

H1: Working from home increases employee productivity

$$Productivity_{it} = \beta 0 + \beta 1\ Remote\ work_{it} + \beta 2\ Control\ variables_{it} + \alpha_{it} + \varepsilon_{it}$$

H2: Technological skills moderates the effect between working remotely and employee productivity

$$Productivity_{it} = \beta 0 + \beta 1\ Remote\ work_{it} * Technological\ skills_{it} + \beta 2\ Remote\ work_{it} + \beta 3\ Technological\ skills_{it} + \beta 4\ Control\ variables_{it} + \alpha_{it} + \varepsilon_{it}$$

H3: Age moderates the effect between working remotely and employee productivity

$$Productivity_{it} = \beta 0 + \beta 1\ Remote\ work_{it} * Age_{it} + \beta 2\ Remote\ work_{it} + \beta 3\ Age_{it} + \beta 4\ Control\ variables_{it} + \alpha_{it} + \varepsilon_{it}$$

H4: Personal well-being moderates the effect between working remotely and employee productivity

$$Productivity_{it} = \beta 0 + \beta 1\ Remote\ work_{it} * Well\text{-}being_{it} + \beta 2\ Remote\ work_{it} + \beta 3\ Well\text{-}being_{it} + \beta 4\ Control\ variables_{it} + \alpha_{it} + \varepsilon_{it}$$

H6: Job satisfaction moderates the effect between working remotely and employee productivity

$$Productivity_{it} = \beta 0 + \beta 1\ Remote\ work_{it} * Job\ satisfaction_{it} + \beta 2\ Remote\ work_{it} + \beta 3\ Job\ satisfaction_{it} + \beta 4\ Control\ variables_{it} + \alpha_{it} + \varepsilon_{it}$$

Chapter 4 - Results

For the first hypothesis the relationship between productivity and working remotely was measured. The amount of time working remotely which was measured on a scale from 1 to 10 for model 1 (Table 3) and the time working from home which was measured as a percentage from 0 to 100 for model 2 (Table 4) were considered as the independent variable. As can be seen in Table 3, working remotely has a positive significant effect at a 10% significance level. This means that a 1-point increase in working remotely increases actual work performance with 0.0195 points, ceteris paribus. Table 4 also shows a positive significant effect at 1% significance level. This means that a 1-percentage point increase in working from home increases productivity or tasks completed by 0.0491 percentage points. Both models show a positive significant relationship between working remotely and productivity.

The second hypothesis tested whether technological skills had a moderating impact on working remotely and productivity. Therefore, an interaction between occupational self-efficacy and working remotely was used as the independent variable for model 1 (Table 3) and the interaction term between technological skills and remote work was used as the independent variable for model 2 (Table 4). In Table 3 it can be observed that interaction term between occupational self-efficacy and working remotely was not significant and therefore not supporting a moderating effect. Be that as it may, in Table 4 it can be observed that the interaction term is negative and significant at a 5% significance level. Furthermore, both working remotely, and technological skills showed a significant positive effect at a 1% significance level. To interpret the interaction term Figure 1 shows that higher technological skills is related to higher productivity levels in general. The difference in productivity levels becomes smaller the more someone works at home. The difference is highest when working at the office and lowest when completely working at home.

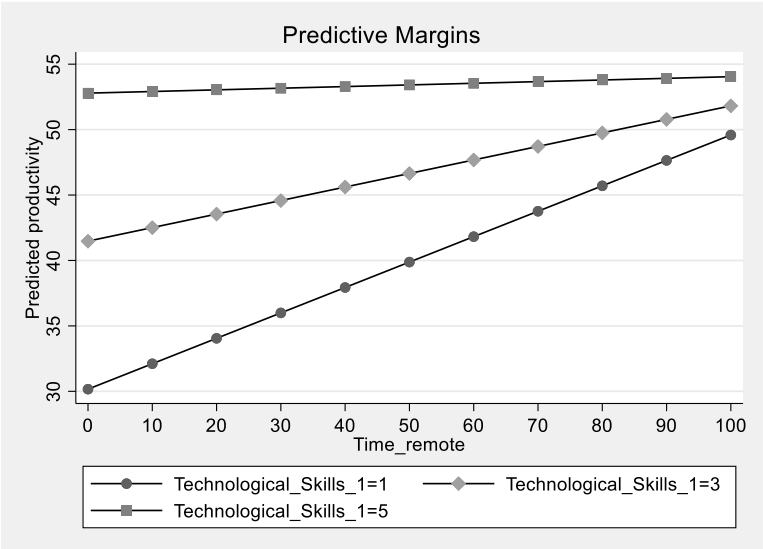

Figure 1. Predictive margins interaction term technological skills and working remotely

In the third hypothesis, it was tested whether age had a moderating effect between working from home and productivity. The interaction term between age and working remotely was considered as the independent variable. Both models from Table 3 and Table 4 however indicate that this interaction term is not significant. Meaning that there is no support that age has a moderating effect between working remotely and productivity.

Moving on to the fourth hypothesis which tested whether well-being had a moderating effect between productivity and remote work. An interaction term between cognitive irritation and remote work was utilized for model 1 (Table 3) and an interaction term between well-being and working remotely was used for model 2 (Table 4). A significant negative effect can be observed for the interaction term at a 10% significance level in Table 3. When looking at Figure 2 we can interpret the effect wellbeing has on productivity taking working remotely into account. It is seen that the effect for working remotely on productivity is positive when irritation is low and subjectively perceived emotional and cognitive strain in occupational contexts is low. Whereas the effect for working remotely on productivity becomes more negative as irritation levels become higher and a high perceived emotional and cognitive strain in occupational contexts is experienced by the employee. Table 4 shows however that the interaction term between well-being and working remotely was not significant therefore not supporting this relationship.

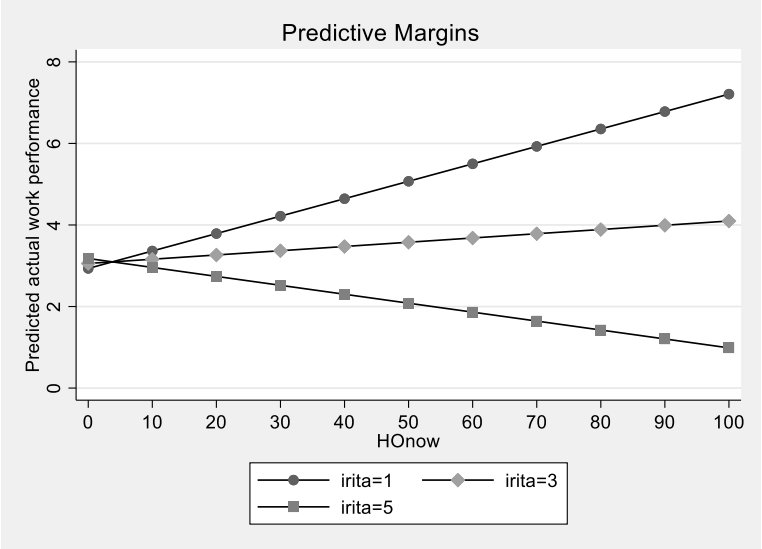

Figure 2. Predictive margins interaction term cognitive irritation and working remotely

With the fifth hypothesis the moderating effect organizational commitment has on working remotely and productivity was investigated. This was done by introducing an interaction term between organizational commitment and working remotely as the independent variable. As only Prochazka et al. (2020) had a measure for organizational commitment, only model 1 (Table 3) was used to test this relationship. The interaction term had a positive significant effect at a 10% significance level. When looking at Figure 3 it can be observed that the effect for working remotely on productivity is positive when organizational commitment is high and that this effect becomes negative when organizational commitment is low. This finding supports that organizational commitment has a moderating effect on remote working and productivity.

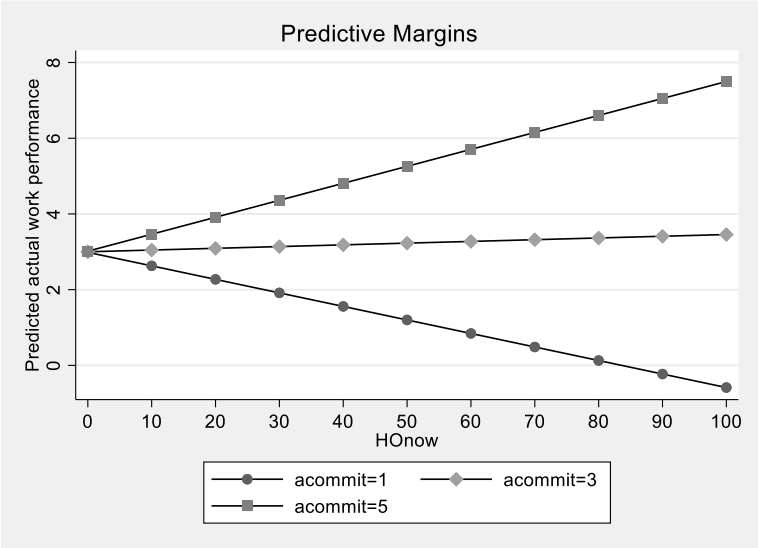

Figure 3. Predictive margins interaction term organizational commitment and working remotely

Finally in the sixth hypothesis it was examined whether job satisfaction had a moderating effect between working from home and productivity. The interaction term between job satisfaction and working remotely was considered as the independent variable. Both models from Table 3 and Table 4 however indicate that this interaction term is not significant. Meaning that there is no support that job satisfaction has a moderating effect between working remotely and productivity.

When adding all the interactions terms in one model it is noticeable that in Model 1 (Table 3) only the interaction between irritation and working remotely is negatively significant at a 10% significance level with a similar coefficient and in Model 2 (Table 4) the interaction between technical skills and working from home is significantly positive at a 5% significance level also having a similar coefficient yielding similar effects.

Table 3. Determinants of productivity Prochazka et al. (2020) survey (Model 1)

Dependant variable: Actual Work Performance

	(H1)	(H2) Interaction tech	(H3) Interaction age	(H4) interaction well-being	(H5) Interaction commitment	(H6) Interaction job satisfaction	All interactions
honow_ocseff		0.0103					-0.00137
		(0.364)					(0.918)
honow_age			0.000714				0.000386
			(0.248)				(0.538)
honow_irita				**-0.0162***			**-0.0169***
				(0.065)			(0.079)
honow_acommit					**0.0201***		0.0239
					(0.079)		(0.125)
honow_satisf						0.00500	-0.00353
						(0.197)	(0.500)
HOnow	**0.0195***	-0.0197	-0.00812	**0.0589****	-0.0559	-0.0164	-0.0134
	(0.051)	(0.651)	(0.740)	(0.013)	(0.211)	(0.587)	(0.837)
OcSEff	**0.127*****	0.0516	**0.127*****	**0.133*****	**0.133*****	**0.129*****	0.150
	(0.009)	(0.587)	(0.010)	(0.006)	(0.007)	(0.008)	(0.177)
Age	0.00331	0.00325	-0.00157	0.00280	0.00337	0.00327	0.000254
	(0.349)	(0.356)	(0.771)	(0.424)	(0.337)	(0.354)	(0.963)
IritA	**-0.0582***	**-0.0600***	-0.0563	0.0610	-0.0530	**-0.0590***	0.0742
	(0.090)	(0.081)	(0.101)	(0.393)	(0.124)	(0.087)	(0.341)
ACommit	**0.148*****	**0.151*****	**0.146*****	**0.140****	0.00749	**0.151*****	-0.0305
	(0.009)	(0.008)	(0.009)	(0.013)	(0.938)	(0.008)	(0.802)
Satisf	-0.00620	-0.00588	-0.00504	-0.00253	-0.00590	-0.0429	0.0245
	(0.769)	(0.782)	(0.812)	(0.904)	(0.779)	(0.203)	(0.551)
WDiffic	-0.000347	-0.000269	0.000263	0.00119	0.0000893	-0.000377	0.00211
	(0.977)	(0.982)	(0.983)	(0.922)	(0.994)	(0.975)	(0.862)
NrChild	-0.00937	-0.00843	-0.00932	-0.00750	-0.00909	-0.00890	-0.00751
	(0.658)	(0.690)	(0.660)	(0.721)	(0.663)	(0.674)	(0.717)
Experience	-0.000971	-0.00100	-0.000958	-0.00105	-0.00102	-0.00106	-0.00104
	(0.236)	(0.217)	(0.258)	(0.201)	(0.220)	(0.205)	(0.220)
Workload	-0.000256	-0.000400	-0.000451	-0.000140	0.000179	-0.000320	0.000342
	(0.951)	(0.924)	(0.914)	(0.973)	(0.966)	(0.939)	(0.935)
Collar=2	**-0.420***	**-0.408***	**-0.429***	**-0.420***	-0.372	**-0.405***	-0.380
	(0.070)	(0.083)	(0.066)	(0.069)	(0.112)	(0.082)	(0.105)
Collar=3	-0.291	-0.281	-0.303	-0.294	-0.248	-0.281	-0.258
	(0.184)	(0.210)	(0.169)	(0.180)	(0.262)	(0.202)	(0.242)
SocSup	-0.0260	-0.0285	-0.0268	-0.0341	-0.0246	-0.0282	-0.0314
	(0.519)	(0.480)	(0.506)	(0.403)	(0.536)	(0.485)	(0.434)
Constant	**2.644*****	**2.962*****	**2.859*****	**2.385*****	**3.140*****	**2.922*****	**2.841*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	640	640	640	640	640	640	640

*Gender, country, contract, sector, manager and education were excluded from the table, but were used as control variables

* p<0.05, **p<0.01, *** p<0.001

Table 4. Determinants of productivity Russo et al. (2021) survey (Model 2)

Dependant variable: Productivity

	(H1)	(H2) Interaction Tech	(H3) interaction age	(H4) interaction well-being	(H6) Interaction job satisfaction	All interactions
remote_tech		**-0.0454****				**-0.0501****
		(0.026)				(0.021)
remote_age			-0.00215			-0.00227
			(0.189)			(0.164)
remote_wel_being				0.00722		0.0140
				(0.581)		(0.300)
remote_satisfaction					-0.00624	-0.00215
					(0.582)	(0.858)
time_remote	**0.0491*****	**0.240*****	**0.128****	0.0183	0.0779	**0.293****
	(0.005)	(0.006)	(0.041)	(0.753)	(0.159)	(0.013)
technological_skills	**2.644***	**5.655*****	**2.718***	**2.672***	**2.632***	**6.091*****
	(0.077)	(0.005)	(0.067)	(0.073)	(0.079)	(0.003)
age	0.175	0.184	**0.323****	0.179	0.173	**0.349****
	(0.137)	(0.116)	(0.047)	(0.129)	(0.141)	(0.032)
well_being	**2.399*****	**2.360*****	**2.282*****	**1.933***	**2.423*****	1.351
	(0.002)	(0.003)	(0.004)	(0.092)	(0.002)	(0.245)
Job_satisfaction	0.384	0.394	0.362	0.395	0.806	0.533
	(0.634)	(0.625)	(0.651)	(0.624)	(0.470)	(0.641)
distractions	-0.115	-0.0756	-0.198	-0.136	-0.124	-0.197
	(0.908)	(0.939)	(0.842)	(0.892)	(0.900)	(0.842)
focus	**2.376*****	**2.492*****	**2.284****	**2.324****	**2.383*****	**2.288****
	(0.008)	(0.005)	(0.011)	(0.010)	(0.008)	(0.011)
Home_office	-1.533	-1.503	-1.530	-1.547	-1.536	-1.523
	(0.162)	(0.169)	(0.160)	(0.157)	(0.162)	(0.162)
Gender = 2	0.946	0.738	0.917	0.980	0.929	0.732
	(0.751)	(0.805)	(0.757)	(0.743)	(0.756)	(0.805)
Gender = 3	-10.26	-10.95	-10.21	-9.854	-10.21	-10.16
	(0.475)	(0.445)	(0.474)	(0.493)	(0.478)	(0.477)
nr_children	1.400	1.439	1.403	1.381	1.397	1.408
	(0.216)	(0.202)	(0.212)	(0.222)	(0.218)	(0.211)
Adults	1.210	1.128	1.143	1.195	1.233	1.030
	(0.289)	(0.322)	(0.314)	(0.294)	(0.281)	(0.365)
socsupport	**3.257*****	**3.237*****	**3.375*****	**3.234*****	**3.236*****	**3.323*****
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hours worked	**0.441*****	**0.425*****	**0.435*****	**0.442*****	**0.435*****	**0.421*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-20.72	**-33.35***	-25.36	-18.81	**-22.45**	**-36.60***
	(0.261)	(0.083)	(0.174)	(0.314)	(0.230)	(0.063)
Observations	361	361	361	361	361	361

*Country, degree and income were excluded from the table, but were used as control variables

* p<0.1, **p<0.05, *** p<0.01

Chapter 5 – Conclusions

Overall literature and research claim that working remotely is associated with reduced stress, increased creativity, better work-life balance, reduction in carbon dioxide and most importantly increased productivity (Russo et al., 2021; Anderson et al., 2015; Bloom et al., 2015; Vega et al., 2015; Baruch, 2000). The research done in this thesis supports the notion of improved qualitative and quantitative productivity with both models showing that working remotely has a positive significant effect on actual work performance and productivity. It should however be noted that this positive effect is small and almost neglectable, implying that there might actually not be a noticeable difference between working from home and the office. The difference in results could be accounted due to the research design. Prior research into productivity and working remotely was mainly focused on analysing the change in productivity when rather simple and isolated tasks were performed from home by a small group of employees within one firm. The pandemic however presented an opportunity to research the effects of working remotely on productivity when large groups had to work from home, having to perform difficult tasks from home, having to collaborate and communicate online with their colleagues and therefore creating a entirely different environment and dynamic in which the relationship between working remotely and productivity could be analysed as it is essentially the largest global experiment of remote working in human history. The difference between literature and the research performed in this thesis that found a small negligible significant effect could also be accounted for the fact that the surveys were collected in April and May of 2020. As lockdowns and working remotely started around March, it could also be that the people were not yet fully adopted to work remotely. Firms had to implement new technologies for communication and the situation was quite uncertain for a lot of employees. The fact that even though the dataset was collected early in the pandemic and people needed to fully adapt results show a positive significant effect might imply that in the long run working remotely has a positive effect on working remotely.

The moderating effect of cognitive technological skills observed in Model 2 (Table 4) implies that higher technological skills are associated with higher levels of tasks completed, the difference in productivity levels becomes smaller the more someone works at home. The difference is highest when working at the office and lowest when completely working at home. The results might be slightly biased in this case, as the sample from Russo et al. (2021) represents software professionals. It could be the case that when these software professionals went to the office, they did not complete any tasks but were there for meetings, collaborations and at home were purely focused on finishing the tasks that they had. Also, the mean of technical skills is 4,23. The scale goes from 1 to 5 therefore the distribution among the sample is skewed heavily towards being technologically skilled. This makes sense amongst

software professionals and therefore this result regarding technology skilled should not be considered externally valid and might only apply to software professionals.

Well-being as moderating effect between productivity and work showed a significant result in Model 1 (Table 3) where cognitive irritation was used as a proxy for wellbeing. . It is seen that the effect for working remotely on productivity is positive when irritation is low. Whereas the effect for working remotely on productivity becomes more negative as irritation levels become higher. This result shows that subjectively perceived emotional and cognitive strain in occupational contexts has a moderating effect between working remotely and actual work performance. This implies that firms should monitor the wellbeing of their employees or perceived emotional and cognitive strain when their employees work remotely. This could be done by managers by regularly talking to the employees to find out how they are doing and if the organisation could mean anything for the employee, if a manager notices that an employee has a highly perceived emotional and cognitive strain, they could look into offering professional psychological advice through a third party to improve wellbeing. It should be noticed however that this moderating relationship was not supported by the second model (Table 4) used.

A similar effect was found when the moderating effect organizational commitment has on working remotely and productivity was examined. it was be observed that the effect for working remotely on productivity is significantly positive when organizational commitment is high and that this effect becomes significantly negative when organizational commitment is low. Therefore, organizations should invest in organizational commitment when their employees work from home. This could be done by improving team building. Once in a while employees could eat lunch together, organise excursions or provide team building workshops. Especially with working remotely, team building might be difficult as employees do not meet in person, therefore within a department a firm could stimulate coming to the office at least one day a week to ensure organizational commitment. As the survey from Russo et al. (2021) did not provide any measurement for organizational commitment, this moderating effect cannot be strengthened by the second model.

Furthermore, no evidence was found for a moderating effect between working remotely and employee productivity caused by personal age or job satisfaction. Individually they all might have an effect on productivity, but not through working remotely.

So, to answer the research question, what is the impact of working remotely on employee productivity? Working remotely has a positive significant effect on actual work performance and productivity. This is supported by both models analysed in this thesis research. Admittedly this effect is almost neglectable however this could be due to the fact people were not yet fully adopted to working from home. Therefore, I would suggest that firms offer the choice to their employees if they

want to work remotely or not. It can save the firm money by lowering their fixed costs for office space and the employees show no decline in productivity. If governments want to reduce carbon emissions, subsidies should be given to firms to incentivize working remotely as a higher productivity also implies a higher GDP (Gross Domestic Product). Environmental problems could be solved, and it could be beneficial for the country.

Furthermore, evidence was found for a moderating effect between productivity and remote working caused by technological skills, well-being and organizational commitment. All three of these were not supported by the other model, with especially questioning the external validity of technological skills due to the fact that in the sample it was heavily skewed towards being technologically skilled. Wellbeing and organizational commitment do not have this problem with both having variation in the sample collected by Prochazka et al. (2020). Therefore, firms should invest in the well-being of their employees and create a strong connection to ensure organizational commitment.

Chapter 6 – Discussion

This research is affected by a few limitations that should be mentioned. The availability of datasets regarding remote working and productivity were scarce, therefore both datasets that were collected for this thesis were not intended for researching productivity for remote workers. This means, that there are still a few important factors which seem important throughout the literature that weren't included or not included fully in this research, such as technological skills or a measure for well-being in the Prochazka et al. (2020) survey and for example organizational commitment in the Russo et al. (2021) survey. This could imply that there is a form of omitted variable bias.

Furthermore, both sample sizes might be insufficiently large to give conclusive evidence about the relationship between productivity and working remotely. With 726 and 192 participants in the Prochazka et al. (2020) and Russo et al. (2021) survey, especially the Russo et al. (2021) seems lacking regarding sample size. It should be mentioned that both datasets do however show the same relationship when not controlling for moderating effects. The sample sizes could however make it difficult to identify significant relationships.

This research might also contain some form of selection bias. As for example the dataset from Russo et al. (2021) only consists of 192 responses exclusively from software professionals and the survey conducted by Prochazka et al. (2020) was promoted by social networking, articles in online newspapers, direct emails and in a university newsletter, which in turn might mainly attract higher educated people. This could imply a form of selection bias being present in this research, which could in turn question the external validity of this research.

Finally, a lot of employees were forced to work remotely due to the pandemic and this wasn't a choice. Both datasets were also collected in the beginning of the pandemic which might imply some of the workers were not yet fully acclimatized to remote working. Therefore, the results might be biased due to this lack of choice and as it was acquired in a period where employees might not have been fully acclimatized to remote working.

Taking all of the above in the consideration the results from this thesis should be considered an early attempt to capture the relationship between productivity and working remotely as the pandemic introduced new dynamics which were hard to capture priorly. Therefore, to improve research into this topic the following suggestions are made. To make sure there is no omitted variable bias, a research should be designed to capture the relationship between productivity and working remotely. Also to account for a sufficient sample size, it is suggested that a large dataset is collected to be able to identify significant relationships. To improve the external validity of research into productivity and remote

working, it is suggested to diversify in professions and diversify in the level of education employees enjoyed and therefore account for selection bias as well. Finally as the period in which it was collected was narrow, future research into this topic should collect multiple waves in a longitudinal research to really capture the effect of working remotely on productivity, as certain people during this survey might all be affected by an external factor, such as the choice to work remotely or not. It might be interesting to compare these initial results with new research regarding this topic as employees right now are more accustomed to work remotely.

Bibliography

Anderson, R. M., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. D. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic?. The lancet, 395(10228), 931-934.

Anderson, A. J., Kaplan, S. A., & Vega, R. P. (2015). The impact of telework on emotional experience: When, and for whom, does telework improve daily affective well-being?. European Journal of Work and Organizational Psychology, 24(6), 882-897.

Audi, A., AlIbrahim, M., Kaddoura, M., Hijazi, G., Yassine, H. M., & Zaraket, H. (2020). Seasonality of Respiratory Viral Infections: Will COVID-19 Follow Suit?. Frontiers in Public Health, 8, 576.

Bai, Y., Lin, C. C., Lin, C. Y., Chen, J. Y., Chue, C. M., & Chou, P. (2004). Survey of stress reactions among health care workers involved with the SARS outbreak. Psychiatric Services, 55(9), 1055-1057.

Bakke, D.W. (2005), Joy at Work: A Revolutionary Approach to Fun on the Job, Penguin Group (USA) Inc., New York, NY.

Bansback, N., Zhang, W., Walsh, D., Kiely, P., Williams, R., Guh, D., ... & Young, A. (2012). Factors associated with absenteeism, presenteeism and activity impairment in patients in the first years of RA. Rheumatology, 51(2), 375-384.

Baptiste, N. R. (2008). Tightening the link between employee wellbeing at work and performance. Management decision.

Bartik, A. W., Cullen, Z. B., Glaeser, E. L., Luca, M., & Stanton, C. T. (2020). What jobs are being done at home during the COVID-19 crisis? Evidence from firm-level surveys (No. w27422). National Bureau of Economic Research.

Baruch, Y. (2000). Teleworking: benefits and pitfalls as perceived by professionals and managers. New technology, work and employment, 15(1), 34-49.

Beaton, D., Bombardier, C., Escorpizo, R., Zhang, W., Lacaille, D., Boonen, A., ... & Tugwell, P. S. (2009). Measuring worker productivity: frameworks and measures. The Journal of rheumatology, 36(9), 2100-2109.

Beloor, V., Nanjundeswaraswamy, T. S., & Swamy, D. R. (2017). Employee commitment and quality of work life–A literature review. The International Journal of Indian Psychology, 4(2), 175-188.

Bernolak, I. (1997). Effective measurement and successful elements of company productivity: The basis of competitiveness and world prosperity. International Journal of Production Economics, 52(1-2), 203-213.

Bloom, N. (2014). To raise productivity, let more employees work from home. Harvard Business Review, January–February.

Bloom, N., Liang, J., Roberts, J., & Ying, Z. J. (2015). Does working from home work? Evidence from a Chinese experiment. The Quarterly Journal of Economics, 130(1), 165-218.

Böckerman, P., & Ilmakunnas, P. (2012). The job satisfaction-productivity nexus: A study using matched survey and register data. ILR Review, 65(2), 244-262.

Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. The lancet, 395(10227), 912-920.

Brown, S., McHardy, J., McNabb, R., & Taylor, K. (2011). Workplace performance, worker commitment, and loyalty. Journal of Economics & Management Strategy, 20(3), 925-955.

Buffer. (2020). State of Remote Work 2020. https://lp.buffer.com/state-of-remote-work-2020

Campbell, J. P. (1990). Modeling the performance prediction problem in industrial and organizational psychology.

Cascio, W. F. (2000). Managing a virtual workplace. Academy of Management Perspectives, 14(3), 81-90.

Cato, S. T., & Gordon, J. (2009). Relationship of the strategic vision alignment to employee productivity and student enrolment. Research in Higher Education Journal, 7, 1-20.

Clark, A., Georgellis, Y., & Sanfey, P. (1997). Job satisfaction, wage changes and quits: evidence from Germany (No. 9711). School of Economics, University of Kent.

Chartered Institute of Personnel Development (CIPD) (2007), Rewarding Work – The Vital Role of Line Managers, change agenda, CIPD, London.

Cherian, J., & Jacob, J. (2013). Impact of self efficacy on motivation and performance of employees. International journal of business and management, 8(14), 80.

Church, N. F. (2015). Gauging Perceived Benefits from 'Working from Home' as a Job Benefit. International Journal of Business and Economic Development (IJBED), 3(3) https://www-proquest-com.eur.idm.oclc.org/scholarly-journals/gauging-perceived-benefits-working-home-as-job/docview/1815724040/se-2?accountid=13598

Cohen, A. (2003). Multiple commitments in the workplace: An integrative approach. Psychology Press.

Coker, B. L. (2011). Freedom to surf: the positive effects of workplace Internet leisure browsing. New technology, work and employment, 26(3), 238-247.

Cook, J. and Wall, T. (1980), "New work attitude: measure of trust, organisational commitment and personal need non-fulfilment", Journal of Occupational Psychology, Vol. 53, pp. 39-52.

Cooper, C., & Dewe, P. (2008). Well-being—absenteeism, presenteeism, costs and challenges. Occupational medicine, 58(8), 522-524.

Coviello, D., Deserranno, E., Persico, N., & Sapienza, P. (2017). Effect of mood on workplace productivity. mimeo.

Currie, D. (2001), Managing Employee Well-Being, Chandos Publishing (Oxford) Limited, Oxford.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. Journal of personality assessment, 49(1), 71-75.

Dixit, V., & Bhati, M. (2012). A study about employee commitment and its impact on sustained productivity in Indian auto-component industry. European journal of business and social sciences, 1(6), 34-51.

Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. Journal of Applied psychology, 71(3), 500.

Enterprise Surveys, The World Bank. (2021). Survey Methodology for Enterprise Surveys - World Bank Group. The World Bank. https://www.enterprisesurveys.org/en/methodology

Ferreira, A., & Du Plessis, T. (2009). Effect of online social networking on employee productivity. South African Journal of Information Management, 11(1), 1-11.

Fisher, C., Harris, L., Kirk, S., Leopold, J. and Leverment, Y. (2004), "The dynamics of modernisation and job satisfaction in the British National Health Service", Review of Public Personnel Administration, Vol. 24 No. 4, pp. 304-18.

Freeman, R. B. (1977). Job satisfaction as an economic variable (No. w0225). National Bureau of Economic Research.

Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. Health Psychology, 39(5), 355-357. http://dx.doi.org/10.1037/hea0000875

Grinstein-Weiss, M., Yeo, Y. H., Zhan, M., & Charles, P. (2008). Asset holding and net worth among households with children: Differences by household type. Children and Youth Services Review, 30(1), 62-78.

Guest, D. (1998), "Is the psychological contract worth taking seriously?", Journal of Organisational Behaviour, Vol. 19, pp. 649-64.

Gummesson, E. (1998). Productivity, quality and relationship marketing in service operations. In Handbuch Dienstleistungsmanagement (pp. 843-864). Gabler Verlag, Wiesbaden.

Hanaysha, J. (2016). Testing the effects of employee empowerment, teamwork, and employee training on employee productivity in higher education sector. International Journal of Learning and Development, 6(1), 164-178.

Hanaysha, J. (2016). Improving employee productivity through work engagement: Evidence from higher education sector. Management Science Letters, 6(1), 61-70.

Harter, J. K., Schmidt, F. L., & Keyes, C. L. (2003). Well-being in the workplace and its relationship to business outcomes: A review of the Gallup studies.

Hawryluck, L., Gold, W. L., Robinson, S., Pogorski, S., Galea, S., & Styra, R. (2004). SARS control and psychological effects of quarantine, Toronto, Canada. Emerging infectious diseases, 10(7), 1206.

Haynes, B. P. (2007). Office productivity: a shift from cost reduction to human contribution. Facilities, 25(11), 452-462. http://dx.doi.org.eur.idm.oclc.org/10.1108/02632770710822562

Hendricks, D. (2014, July 15). 5 Ways Telecommuting Saves Employers Money. NBC News. https://www.nbcnews.com/business/business-news/5-ways-telecommuting-saves-employers-money-wbna55644620

Hill, C. W., Jones, G. R., & Schilling, M. A. (2014). Strategic management: Theory & cases: An integrated approach. Cengage Learning.

Holman, E. A., Garfin, D. R., Lubens, P., & Silver, R. C. (2020). Media Exposure to Collective Trauma, Mental Health, and Functioning: Does It Matter What You See?. Clinical Psychological Science, 8(1), 111-124.

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. Psychological bulletin, 127(3), 376.

Kersley, B., Alpin, C., Forth, J., Bryson, A., Bewley, H., Dix, G. and Oxenbridge, S. (2006), Inside the Workplace: Findings from the 2004 Workplace Employment Relations Survey, Routledge, Taylor & Francis Group, London.

Klein, H. J., Molloy, J. C., & Brinsfield, C. T. (2012). Reconceptualizing workplace commitment to redress a stretched construct: Revisiting assumptions and removing confounds. Academy of management review, 37(1), 130-151.

Koch, M. J., & Rita, G. M. (1996). IMPROVING LABOR PRODUCTIVITY: HUMAN RESOURCE MANAGEMENT POLICIES DO MATTER. Strategic Management Journal (1986-1998), 17(5), 335. https://www-proquest-com.eur.idm.oclc.org/scholarly-journals/improving-labor-productivity-human-resource/docview/231197495/se-2?accountid=13598

Koopman, C., Pelletier, K. R., Murray, J. F., Sharda, C. E., Berger, M. L., Turpin, R. S., ... & Bendel, T. (2002). Stanford presenteeism scale: health status and employee productivity. Journal of occupational and environmental medicine, 44(1), 14-20.

Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., De Vet, H. C., & Van der Beek, A. J. (2014). Construct validity of the individual work performance questionnaire. Journal of occupational and environmental medicine, 56(3), 331-337.

Krekel, C., Ward, G., & De Neve, J. E. (2019). Employee wellbeing, productivity, and firm performance. Saïd Business School WP, 4.

Kruse, K. (2013, May 12). Top 10 Benefits of Working From Home (Survey Results). Forbes. https://www.forbes.com/sites/kevinkruse/2012/12/18/benefits-working-from-home/?sh=1d6ec2f81d4c

Leaman, A., & Bordass, B. (2006). Productivity in buildings: the 'killer'variables. In Creating the productive workplace (pp. 181-208). Taylor & Francis.

Lee, S., Chan, L. Y., Chau, A. M., Kwok, K. P., & Kleinman, A. (2005). The experience of SARS-related stigma at Amoy Gardens. Social science & medicine, 61(9), 2038-2046.

Locke, E. A., & Latham, G. P. (1990). Work motivation and satisfaction: Light at the end of the tunnel. Psychological science, 1(4), 240-246.

Lunn, P. D., Belton, C. A., Lavin, C., McGowan, F. P., Timmons, S., & Robertson, D. A. (2020). Using Behavioral Science to help fight the Coronavirus. Journal of Behavioral Public Administration, 3(1).

Marjanovic, Z., Greenglass, E. R., & Coffey, S. (2007). The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey. International journal of nursing studies, 44(6), 991-998.

Meyer, J. (2011). Workforce age and technology adoption in small and medium-sized service firms. Small Business Economics, 37(3), 305-324.

Meyer, J.P. and Allen, N.J. (1997), Commitment in the Workplace: Theory, Research, and Application, Sage Publications, London.

Mohammad, J., Quoquab, F., Halimah, S., & Thurasamy, R. (2019). Workplace internet leisure and employees' productivity. Internet Research, 29(4), 725-748. http://dx.doi.org.eur.idm.oclc.org/10.1108/IntR-05-2017-0191

Mohr, G., Müller, A., Rigotti, T., Aycan, Z., & Tschan, F. (2006). The assessment of psychological strain in work contexts. European Journal of Psychological Assessment, 22(3), 198-206.

Morales, C., Cory, C., & Bozell, D. (2001).A comparative efficiency study between a live lecture and a Web-based live-switched multi-camera streaming video distance learning instructional unit. Proceedings of the 2001 Information Resources Management Association International Conference, Toronto, Ontario, Canada, 63-66.

Moretti, A., Menna, F., Aulicino, M., Paoletta, M., Liguori, S., & Iolascon, G. (2020). Characterization of Home Working Population during COVID-19 Emergency: A Cross-Sectional Analysis. International Journal of Environmental Research and Public Health, 17(17), 6284. http://dx.doi.org.eur.idm.oclc.org/10.3390/ijerph17176284

Mowday, R.T., Steers, R.M. and Porter, I.W. (1979), "The measurement of organisational commitment", Journal of Vocational Behaviour, Vol. 14 No. 2, pp. 224-47.

Mowday, R. T., Porter, L. W., & Steers, R. M. (2013). Employee—organization linkages: The psychology of commitment, absenteeism, and turnover. Academic press.

Nguyen, M. H., Gruber, J., Fuchs, J., Marler, W., Hunsaker, A., & Hargittai, E. (2020). <? covid19?> Changes in Digital Communication During the COVID-19 Global Pandemic: Implications for Digital Inequality and Future Research. Social Media+ Society, 6(3), 2056305120948255.

Nishiura, H., & Mimura, N. (2021). Research Agenda of Climate Change during and after the Coronavirus Disease 2019 (COVID-19) Pandemic.

Obdulio, D. L. (2014). How management can improve corporate culture in order to have an effective work environment. Trade Publication, 75(8), 14.

OECD. (2019). Ageing and Employment Policies WORKING BETTER WITH AGE. https://www.oecd.org/els/emp/Brochure%20OW%2028-08.pdf

Oliver, J.J., (2016), "Benchmarking workforce productivity in the creative industries", Strategic HR Review, Vol. 15 no. 1, pp. 36-38.

Owl Labs. (2019). 2019 State of Remote Work Report. https://resources.owllabs.com/state-of-remote-work/2019

Pencavel, J. (1991). Higher education, productivity, and earnings: A review. The Journal of Economic Education, 22(4), 331-359.

Pencavel, J. (2015). The productivity of working hours. The Economic Journal, 125(589), 2052-2076.

Prochazka, J., Scheel, T., Pirozek, P., Kratochvil, T., Civilotti, C., Bollo, M., & Maran, D. A. (2020). Data on work-related consequences of COVID-19 pandemic for employees across Europe. Data in brief, 32, 106174.

Rapoza, K. (2013, February 20). One In Five Americans Work From Home, Numbers Seen Rising Over 60%. Forbes. https://www.forbes.com/sites/kenrapoza/2013/02/18/one-in-five-americans-work-from-home-numbers-seen-rising-over-60/?sh=45b329125c1d

Reichers, A. E. (1985). A review and reconceptualization of organizational commitment. Academy of management review, 10(3), 465-476.

Reynolds, D. L., Garay, J. R., Deamond, S. L., Moran, M. K., Gold, W., & Styra, R. (2008). Understanding, compliance and psychological impact of the SARS quarantine experience. Epidemiology & Infection, 136(7), 997-1007.

Rigotti, T., Schyns, B., & Mohr, G. (2008). A short version of the occupational self-efficacy scale: Structural and construct validity across five countries. Journal of Career Assessment, 16(2), 238-255.

Rothmann, S. (2008). Job satisfaction, occupational stress, burnout and work engagement as components of work-related wellbeing. SA journal of industrial psychology, 34(3), 11-16.

Russo, D., Hanel, P. H., Altnickel, S., & van Berkel, N. (2021). Predictors of well-being and productivity among software professionals during the COVID-19 pandemic–a longitudinal study. Empirical Software Engineering, 26(4), 1-63.

Savić, D. (2020). COVID-19 and work from home: Digital transformation of the workforce. Grey Journal (TGJ), 16(2), 101-104.

Schweizer, L., & Patzelt, H. (2012). Employee commitment in the post-acquisition integration process: The effect of integration speed and leadership. Scandinavian journal of management, 28(4), 298-310.

Sels, L., De Winne, S., Delmotte, J., Maes, J., Faems, D., & Forrier, A. (2006). Linking HRM and small business performance: An examination of the impact of HRM intensity on the productivity and financial performance of small businesses. small business economics, 26(1), 83-101.

Sharma, M. S., & Sharma, M. V. (2014).Employee Engagement to Enhance Productivity in Current Scenario. International Journal of Commerce, Business and Management, 3(4), 595-604.

Skirbekk, V. (2004). Age and individual productivity: A literature survey. Vienna yearbook of population research, 133-153.

Sprang, G., & Silman, M. (2013). Posttraumatic stress disorder in parents and youth after health-related disasters. Disaster medicine and public health preparedness, 7(1), 105-110.

Steptoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. The Lancet, 385(9968), 640-648.

Strauss, G. (1968). Human relations—1968 style. Industrial Relations: A Journal of Economy and Society, 7(3), 262-276.

Sutherland, L., & Janene-Nelson, K. (2020). Work Together Anywhere: A Handbook on Working Remotely-Successfully-for Individuals, Teams, and Managers. John Wiley & Sons.

Tehrani, N., Humpage, S., Willmott, B., & Haslam, I. (2007). What's Happening with Well-being at Work? Change Agenda, Chartered Institute of Personnel and Development, London.

Vega, R. P., Anderson, A. J., & Kaplan, S. A. (2015). A within-person examination of the effects of telework. Journal of Business and Psychology, 30(2), 313-323.

Warr, P. (2002), Psychology at Work, Penguin Group Books, Pakefield

Wright, T. A., & Cropanzano, R. (2000). Psychological well-being and job satisfaction as predictors of job performance. Journal of occupational health psychology, 5(1), 84.

Appendix

Table 5. Determinants of productivity Prochazka et al. (2020) survey (Full Model 1)

Dependant variable: Actual Work Performance

	(H1)	(H2) Interaction ocseff	(H3) Interaction age	(H4) interaction well-being	(H5) Interaction commitment	(H6) Interaction job satisfaction	All interactions
honow_ocseff		0.0103					-0.00137
		(0.364)					(0.918)
honow_age			0.000714				0.000386
			(0.248)				(0.538)
honow_irita				-0.0162*			-0.0169*
				(0.065)			(0.079)
honow_acommit					0.0201*		0.0239
					(0.079)		(0.125)
honow_satisf						0.00500	-0.00353
						(0.197)	(0.500)
HOnow	0.0195*	-0.0197	-0.00812	0.0589**	-0.0559	-0.0164	-0.0134
	(0.051)	(0.651)	(0.740)	(0.013)	(0.211)	(0.587)	(0.837)
OcSEff	0.127***	0.0516	0.127***	0.133***	0.133***	0.129***	0.150
	(0.009)	(0.587)	(0.010)	(0.006)	(0.007)	(0.008)	(0.177)
Age	0.00331	0.00325	-0.00157	0.00280	0.00337	0.00327	0.000254
	(0.349)	(0.356)	(0.771)	(0.424)	(0.337)	(0.354)	(0.963)
IritA	-0.0582*	-0.0600*	-0.0563	0.0610	-0.0530	-0.0590*	0.0742
	(0.090)	(0.081)	(0.101)	(0.393)	(0.124)	(0.087)	(0.341)
ACommit	0.148***	0.151***	0.146***	0.140**	0.00749	0.151***	-0.0305
	(0.009)	(0.008)	(0.009)	(0.013)	(0.938)	(0.008)	(0.802)
Satisf	-0.00620	-0.00588	-0.00504	-0.00253	-0.00590	-0.0429	0.0245
	(0.769)	(0.782)	(0.812)	(0.904)	(0.779)	(0.203)	(0.551)
CWork=3	0.0901	0.0913	0.0843	0.0869	0.0818	0.0808	0.0802
	(0.359)	(0.352)	(0.393)	(0.376)	(0.408)	(0.412)	(0.419)
CWork=4	0.206**	0.208**	0.202*	0.206**	0.199*	0.201*	0.199*
	(0.044)	(0.042)	(0.050)	(0.044)	(0.053)	(0.050)	(0.055)
CWork=5	-0.0346	-0.0386	-0.0386	-0.0428	-0.0613	-0.0474	-0.0675
	(0.784)	(0.760)	(0.760)	(0.737)	(0.627)	(0.708)	(0.597)
WDiffic	-0.000347	-0.000269	0.000263	0.00119	0.0000893	-0.000377	0.00211
	(0.977)	(0.982)	(0.983)	(0.922)	(0.994)	(0.975)	(0.862)
Gender=2	-0.0898	-0.0812	-0.0836	-0.0785	-0.0828	-0.0855	-0.0706
	(0.194)	(0.248)	(0.227)	(0.255)	(0.230)	(0.219)	(0.310)
Gender=3	0.324	0.322	0.339	0.290	0.354	0.341	0.321
	(0.415)	(0.394)	(0.395)	(0.450)	(0.378)	(0.374)	(0.425)
NrChild	-0.00937	-0.00843	-0.00932	-0.00750	-0.00909	-0.00890	-0.00751
	(0.658)	(0.690)	(0.660)	(0.721)	(0.663)	(0.674)	(0.717)
Experience	-0.000971	-0.00100	-0.000958	-0.00105	-0.00102	-0.00106	-0.00104
	(0.236)	(0.217)	(0.258)	(0.201)	(0.220)	(0.205)	(0.220)
Workload	-0.000256	-0.000400	-0.000451	-0.000140	0.000179	-0.000320	0.000342
	(0.951)	(0.924)	(0.914)	(0.973)	(0.966)	(0.939)	(0.935)
Contract=2	-0.128	-0.125	-0.131	-0.116	-0.119	-0.127	-0.108
	(0.233)	(0.246)	(0.224)	(0.280)	(0.268)	(0.237)	(0.318)
Contract=3	0.212	0.213	0.236	0.252	0.235	0.224	0.286

	(0.070)	(0.083)	(0.066)	(0.069)	(0.112)	(0.082)	(0.105)
Collar=3	-0.291	-0.281	-0.303	-0.294	-0.248	-0.281	-0.258
	(0.184)	(0.210)	(0.169)	(0.180)	(0.262)	(0.202)	(0.242)
Sector=2	-0.0903	-0.113	-0.0990	-0.112	-0.134	-0.115	-0.149
	(0.802)	(0.756)	(0.789)	(0.759)	(0.719)	(0.752)	(0.697)
Sector=3	-0.0818	-0.112	-0.0820	-0.123	-0.121	-0.109	-0.149
	(0.817)	(0.753)	(0.822)	(0.730)	(0.740)	(0.760)	(0.691)
Sector=4	-0.0108	-0.0394	-0.0222	-0.0372	-0.0463	-0.0312	-0.0685
	(0.976)	(0.912)	(0.951)	(0.918)	(0.899)	(0.931)	(0.855)
Sector=5	-0.350	-0.384	-0.349	-0.365	-0.381	-0.372	-0.382
	(0.372)	(0.332)	(0.385)	(0.359)	(0.345)	(0.346)	(0.358)
Sector=6	0.0849	0.0491	0.0916	0.0590	0.0529	0.0782	0.0330
	(0.827)	(0.900)	(0.818)	(0.881)	(0.894)	(0.842)	(0.936)
Sector=7	-0.147	-0.177	-0.156	-0.169	-0.197	-0.172	-0.213
	(0.683)	(0.627)	(0.674)	(0.643)	(0.597)	(0.637)	(0.577)
Sector=8	-0.0962	-0.132	-0.0932	-0.122	-0.149	-0.119	-0.163
	(0.787)	(0.713)	(0.800)	(0.736)	(0.686)	(0.742)	(0.668)
Manager=2	0.0482	0.0497	0.0480	0.0504	0.0493	0.0517	0.0490
	(0.544)	(0.532)	(0.547)	(0.528)	(0.537)	(0.516)	(0.543)
Manager=3	-0.0412	-0.0140	-0.0285	-0.0314	-0.0228	-0.00186	-0.0337
	(0.922)	(0.973)	(0.945)	(0.938)	(0.955)	(0.996)	(0.931)
Manager=4	-0.0886	-0.0842	-0.0986	-0.0972	-0.0783	-0.0886	-0.0913
	(0.529)	(0.550)	(0.487)	(0.499)	(0.577)	(0.530)	(0.528)
SocSup	-0.0260	-0.0285	-0.0268	-0.0341	-0.0246	-0.0282	-0.0314
	(0.519)	(0.480)	(0.506)	(0.403)	(0.536)	(0.485)	(0.434)
Educ=2	0.0394	0.0335	0.0329	0.0506	0.00283	0.0365	0.00689
	(0.843)	(0.870)	(0.865)	(0.806)	(0.988)	(0.854)	(0.972)
Educ=3	-0.0682	-0.0767	-0.0768	-0.0530	-0.106	-0.0726	-0.0974
	(0.733)	(0.709)	(0.695)	(0.799)	(0.587)	(0.715)	(0.627)
Educ=4	-0.156	-0.167	-0.182	-0.145	-0.206	-0.161	-0.213
	(0.541)	(0.523)	(0.471)	(0.582)	(0.404)	(0.526)	(0.403)
Constant	2.644***	2.962***	2.859***	2.385***	3.140***	2.922***	2.841***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	640	640	640	640	640	640	640

* p<0.1, **p<0.05, *** p<0.01

Table 6. Determinants of productivity Russo et al. (2021) survey (Full Model 2)

Dependant variable: Productivity

	(H1)	(H2) Interaction Tech	(H3) interaction age	(H4) interaction well-being	(H6) Interaction job satisfaction	All interactions
remote_tech		**-0.0454****				**-0.0501****
		(0.026)				(0.021)
remote_age			-0.00215			-0.00227
			(0.189)			(0.164)
remote_wel_being				0.00722		0.0140
				(0.581)		(0.300)
remote_satisfaction					-0.00624	-0.00215
					(0.582)	(0.858)
time_remote	**0.0491*****	**0.240*****	**0.128****	0.0183	0.0779	**0.293****
	(0.005)	(0.006)	(0.041)	(0.753)	(0.159)	(0.013)
technological_skills	**2.644***	**5.655*****	**2.718***	**2.672***	**2.632***	**6.091*****
	(0.077)	(0.005)	(0.067)	(0.073)	(0.079)	(0.003)
age	0.175	0.184	**0.323****	0.179	0.173	**0.349****
	(0.137)	(0.116)	(0.047)	(0.129)	(0.141)	(0.032)
well_being	**2.399*****	**2.360*****	**2.282*****	**1.933***	**2.423*****	1.351
	(0.002)	(0.003)	(0.004)	(0.092)	(0.002)	(0.245)
Job_satisfaction	0.384	0.394	0.362	0.395	0.806	0.533
	(0.634)	(0.625)	(0.651)	(0.624)	(0.470)	(0.641)
distractions	-0.115	-0.0756	-0.198	-0.136	-0.124	-0.197
	(0.908)	(0.939)	(0.842)	(0.892)	(0.900)	(0.842)
focus	**2.376*****	**2.492*****	**2.284****	**2.324****	**2.383*****	**2.288****
	(0.008)	(0.005)	(0.011)	(0.010)	(0.008)	(0.011)
Home_office	-1.533	-1.503	-1.530	-1.547	-1.536	-1.523
	(0.162)	(0.169)	(0.160)	(0.157)	(0.162)	(0.162)
Gender = 2	0.946	0.738	0.917	0.980	0.929	0.732
	(0.751)	(0.805)	(0.757)	(0.743)	(0.756)	(0.805)
Gender = 3	-10.26	-10.95	-10.21	-9.854	-10.21	-10.16
	(0.475)	(0.445)	(0.474)	(0.493)	(0.478)	(0.477)
nr_children	1.400	1.439	1.403	1.381	1.397	1.408
	(0.216)	(0.202)	(0.212)	(0.222)	(0.218)	(0.211)
Adults	1.210	1.128	1.143	1.195	1.233	1.030
	(0.289)	(0.322)	(0.314)	(0.294)	(0.281)	(0.365)
socsupport	**3.257*****	**3.237*****	**3.375*****	**3.234*****	**3.236*****	**3.323*****
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hours worked	**0.441*****	**0.425*****	**0.435*****	**0.442*****	**0.435*****	**0.421*****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country=2	-0.747	-0.693	-0.617	-0.832	-0.732	-0.706
	(0.797)	(0.812)	(0.831)	(0.775)	(0.802)	(0.807)
Country=3	2.570	2.460	2.471	2.465	2.673	2.194
	(0.416)	(0.435)	(0.431)	(0.435)	(0.399)	(0.486)
Country=4	35.69***	35.20***	35.43***	35.79***	35.60***	35.08***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Country=6	1.665	1.811	1.966	1.604	2.026	2.159
	(0.885)	(0.875)	(0.864)	(0.889)	(0.861)	(0.850)

Country=7	1.924	2.225	2.364	1.788	1.972	2.513
	(0.857)	(0.834)	(0.823)	(0.867)	(0.854)	(0.813)
Country=8	-4.343	-4.471	-4.118	-4.461	-4.371	-4.459
	(0.668)	(0.658)	(0.682)	(0.659)	(0.666)	(0.657)
Country=11	-4.496	-3.780	-4.878	-4.725	-4.118	-4.425
	(0.669)	(0.719)	(0.641)	(0.653)	(0.697)	(0.673)
Country=13	-7.971	-8.879	-7.499	-7.584	-8.187	-7.784
	(0.466)	(0.416)	(0.491)	(0.489)	(0.455)	(0.475)
Country=14	-2.012	-1.947	-1.906	-2.091	-2.002	-1.938
	(0.751)	(0.758)	(0.762)	(0.741)	(0.753)	(0.758)
Country=15	0.434	0.827	0.502	0.386	0.488	0.873
	(0.924)	(0.856)	(0.912)	(0.933)	(0.915)	(0.848)
Country=17	-7.955	-7.978	-7.918	-7.860	-8.025	-7.770
	(0.577)	(0.575)	(0.576)	(0.581)	(0.574)	(0.583)
Degree=2	8.506	8.139	8.304	8.926	8.299	8.652
	(0.588)	(0.603)	(0.594)	(0.569)	(0.598)	(0.579)
Degree=3	4.001	4.117	3.757	4.326	3.827	4.464
	(0.799)	(0.793)	(0.810)	(0.783)	(0.808)	(0.775)
Degree=4	6.524	6.495	6.348	6.836	6.365	6.883
	(0.672)	(0.673)	(0.678)	(0.657)	(0.680)	(0.653)
Degree=5	9.741	9.643	9.453	10.04	9.588	9.888
	(0.531)	(0.534)	(0.541)	(0.518)	(0.538)	(0.522)
Degree=6	4.014	3.667	3.663	4.216	3.753	3.590
	(0.804)	(0.820)	(0.819)	(0.794)	(0.817)	(0.823)
Degree=7	4.291	3.699	5.329	4.501	4.645	5.280
	(0.848)	(0.868)	(0.811)	(0.841)	(0.836)	(0.813)
Income=2	-2.712	-2.765	-2.811	-2.867	-2.537	-3.131
	(0.583)	(0.575)	(0.567)	(0.562)	(0.609)	(0.525)
Income=3	1.341	1.388	1.372	1.225	1.516	1.247
	(0.784)	(0.776)	(0.777)	(0.802)	(0.757)	(0.798)
Income=4	1.420	1.471	1.301	1.238	1.680	1.085
	(0.785)	(0.777)	(0.801)	(0.812)	(0.748)	(0.834)
Income=5	-0.873	-0.778	-0.939	-1.064	-0.690	-1.171
	(0.868)	(0.882)	(0.857)	(0.839)	(0.896)	(0.823)
Income=6	-6.430	-6.191	-6.585	-6.532	-6.227	-6.479
	(0.228)	(0.244)	(0.214)	(0.220)	(0.245)	(0.222)
Constant	-20.72	**-33.35***	-25.36	-18.81	**-22.45**	**-36.60***
	(0.261)	(0.083)	(0.174)	(0.314)	(0.230)	(0.063)
Observations	361	361	361	361	361	361

* p<0.1, **p<0.05, *** p<0.01

Table 7. Hausman (1978) specification test	
	Coef.
Chi-square test value	7,37

P-value	0,2876

Table 8. Breusch, Pagan (1980) Lagrange Multiplier Test

	Coef.
Chi-square test value	22,66
P-value	0,0000

Table 9. Correlation matrix survey Prochazka et al. (2020)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(2
(1) aperf	1,00																							
(2) honow	0,02	1,00																						
(3) ocseff	0,15	-0,02	1,00																					
(4) age	0,10	-0,01	0,08	1,00																				
(5) satisf	0,11	0,03	0,20	0,10	1,00																			
(6) irita	-0,12	0,01	-0,23	-0,12	-0,24	1,00																		
(7) acommit	0,17	0,06	0,14	0,23	0,60	-0,14	1,00																	
(8) cwork	0,08	0,02	-0,04	0,22	0,06	-0,02	0,16	1,00																
(9) wdiffic	0,00	-0,07	-0,07	0,18	0,02	0,15	0,14	0,22	1,00															
(10) gender	-0,01	-0,13	0,08	0,00	0,02	-0,01	-0,03	0,04	-0,08	1,00														
(11) nrchild	0,03	-0,01	0,05	0,48	0,03	0,01	0,05	0,07	0,03	0,06	1,00													
(12) experience	0,02	0,02	0,04	0,31	0,07	-0,07	0,09	0,12	0,02	-0,01	0,14	1,00												
(13) workload	0,04	-0,09	0,03	-0,01	0,04	0,01	0,03	0,10	0,04	0,21	-0,03	0,01	1,00											
(14) contract	-0,06	0,08	-0,05	-0,10	-0,06	0,05	-0,06	-0,27	-0,06	-0,21	-0,03	-0,08	-0,55	1,00										
(15) collar	0,01	-0,20	0,01	0,05	0,07	0,01	0,09	0,06	0,09	0,02	0,01	0,02	-0,02	-0,01	1,00									
(16) sector	-0,01	0,08	-0,07	0,19	0,03	-0,02	0,10	-0,01	0,07	-0,08	0,03	0,03	-0,03	0,03	-0,09	1,00								
(17) manager	0,04	-0,09	0,10	0,12	0,15	-0,06	0,19	0,12	0,18	0,10	0,02	0,02	0,12	-0,07	0,07	0,13	1,00							
(18) socsup	0,00	0,07	0,04	-0,15	0,33	-0,18	0,12	-0,09	-0,08	0,02	-0,11	-0,05	-0,05	0,00	0,02	-0,09	-0,04	1,00						
(19) educ	-0,07	0,21	0,00	-0,11	-0,01	0,09	-0,02	-0,10	0,01	-0,03	-0,04	-0,06	0,05	-0,01	-0,14	0,14	0,06	0,09	1,00					
(20) honow_ocseff	0,07	**0,93**	0,31	0,01	0,09	-0,06	0,08	0,00	-0,09	-0,12	0,00	0,04	-0,07	0,05	-0,19	0,06	-0,06	0,08	0,21	1,00				
(21) honow_age	0,08	**0,83**	0,02	0,47	0,07	-0,07	0,17	0,13	0,02	-0,14	0,22	0,16	-0,08	0,00	-0,13	0,15	-0,01	-0,01	0,14	**0,79**	1,00			
(22) honow_irita	-0,08	**0,73**	-0,13	-0,10	-0,11	0,62	-0,06	-0,02	0,05	-0,08	0,00	-0,04	-0,07	0,12	-0,14	0,05	-0,10	-0,08	0,22	**0,62**	**0,54**			
(23) honow_acommmit	0,10	**0,90**	0,02	0,08	0,25	-0,06	0,43	0,10	-0,01	-0,14	0,01	0,06	-0,08	0,04	-0,15	0,12	-0,01	0,10	0,18	**0,85**	**0,81**			
(24) honow_satisf	0,08	**0,86**	0,06	0,03	0,48	-0,10	0,31	0,06	-0,05	-0,11	0,00	0,06	-0,06	0,03	-0,14	0,08	-0,02	0,22	0,17	**0,83**	**0,74**			

,00

Table 10. Correlation matrix survey Russo et al. (2021)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(1) ID	1,00																						
(2) Wave	0,02	1,00																					
(3) productivity	0,02	0,05	1,00																				
(4) Time_remote	0,00	0,75	0,05	1,00																			
(5) Technological Skills	-0,02	-0,01	0,16	0,00	1,00																		
(6) Age	-0,17	0,01	0,05	0,01	0,03	1,00																	
(7) well_being	-0,01	0,07	0,26	0,02	0,22	-0,09	1,00																
(8) Job_satisfaction	0,09	0,02	0,21	-0,04	0,28	-0,12	0,28	1,00															
(9) Distractions	-0,01	-0,02	-0,19	-0,01	-0,13	-0,13	-0,25	-0,08	1,00														
(10) Focus	-0,03	-0,02	0,33	-0,03	0,17	0,05	0,26	0,22	-0,46	1,00													
(11) country	0,03	0,00	-0,01	-0,03	-0,01	-0,37	-0,04	0,18	0,01	0,11	1,00												
(12) home_office	-0,01	0,01	0,06	0,04	**0,48**	0,10	0,17	0,23	-0,19	0,18	0,01	1,00											
(13) Degree	-0,10	0,02	0,09	-0,02	0,07	0,26	0,05	0,04	-0,11	0,01	-0,08	0,00	1,00										
(14) Gender	-0,02	0,00	0,03	-0,02	0,03	0,11	0,05	-0,12	-0,03	-0,03	0,11	0,08	0,03	1,00									
(15) nr_children	0,01	-0,01	0,10	-0,04	0,04	0,16	0,00	0,05	0,22	-0,02	-0,10	0,03	0,11	0,11	1,00								
(16) Adults	0,09	-0,01	-0,02	0,01	0,00	-0,13	-0,03	0,05	0,09	-0,11	0,16	0,04	-0,07	0,11	0,03	1,00							
(17) socsupport	-0,01	-0,11	0,32	-0,11	0,32	-0,04	0,38	0,39	-0,24	0,33	0,06	0,30	0,01	-0,02	0,03	0,01	1,00						
(18) Hoursworked	0,04	-0,01	0,19	-0,06	-0,11	-0,09	0,03	0,08	-0,05	0,14	0,10	-0,07	0,01	0,16	-0,03	-0,12	0,05	1,00					
(19) Income	0,00	-0,01	0,03	-0,04	-0,01	0,24	0,06	-0,02	-0,07	-0,02	-0,39	-0,07	0,05	0,05	0,14	-0,01	0,09	0,21	1,00				
(20) remote_tech	-0,01	**0,69**	0,09	**0,93**	0,32	0,03	0,08	0,05	-0,05	0,04	-0,03	0,19	0,01	-0,02	-0,02	0,00	0,00	-0,10	-0,04	1,00			
(21) remote_age	-0,07	**0,65**	0,05	**0,86**	0,03	**0,45**	-0,04	-0,10	-0,08	0,00	-0,19	0,08	0,10	0,03	0,04	-0,07	-0,10	-0,10	0,06	**0,81**	1,00		
(22) remote_wellbeing	0,02	**0,68**	0,18	**0,86**	0,10	-0,05	**0,46**	0,10	-0,11	0,11	-0,04	0,11	0,01	0,00	-0,02	0,00	0,08	-0,03	0,00	**0,83**	**0,70**	1,00	
(23) remote_satisfaction	0,06	**0,65**	0,14	**0,82**	0,14	-0,06	0,16	**0,46**	-0,05	0,08	0,06	0,14	0,00	-0,07	-0,01	0,04	0,09	-0,02	-0,03	**0,82**	**0,67**	**0,79**	1,00