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# Remote working burnout: Empirical Study from TOE and Technostress Model

## Research-in-progress

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## Abstract

Work stress and burnout negatively impact the individual and companies. Remote working exacerbates these issues due to the lack of company support and social interactions. Yet, research on identifying factors contributing to stress and burnout in remote workspaces and differentiating the components of stress and burnout in this context is limited. This work presents and empirically evaluates a conceptual framework, based on the Technology – Organization – Environment framework and the technostress theory, which aims to address these gaps. In particular, the model proposed here distinguishes between technostress, work stress, and burnout. Future work to examine the model will use a survey instrument for data gathering, as well as confirmatory factor analysis and partial least squares for analysis.

**Keywords** Remote working, burnout, technostress, work stressors, TOE framework.

## 1 Introduction

Remote working refers to “an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization” (Gajendran and Harrison, 2007, p. 1525). There are two noteworthy dimensions in this definition. First, remote working relates to the change from the workplace to a non-traditional workplace environment, i.e., home (Kelliher and Anderson 2010). Second, remote working utilizes the use of communication technology (i.e., home computers, laptops, smartphones, the Internet, videoconferencing) to connect and work from multiple places (DeSanctis 1984).

The survey by Global Workplace Analytics (2020) reported that 31 percent of participants regularly worked remotely before the Covid-19 pandemic, and the number of employees who have been working at home during the pandemic increased to 88 percent since the pandemic started. The advantages of remote working have been long recognized. Specifically, for the employees, remote working helps to save time and travel costs, provide flexibility in work schedule and parallel working, and broaden working opportunities to a wide range of employees such as the elderly and parents with small children (DeSanctis 1984). For the companies, remote working can help to reduce operational costs, higher productivity, and higher work commitment (DeSanctis 1984). Remote working has become extensively popular due to the impact of the Covid-19 pandemic and social isolation policy. For example, remote working was still an unfamiliar term to the United Kingdom employees until April 2020. The Covid-19 pandemic and social distancing forced 6.8 million employees (approximately 38 percent of UK employees) to work from home (Furnell and Shah 2020). Additionally, the report also highlighted that 68 percent of people working at home were successful in terms of maintaining their productivity and performance; and 72 percent of remote workers can access all necessary facilities (i.e., sit-stand desk, ultra-wide monitor, ergonomic chair) to support their work. A recent survey by Global Workplace Analytics (2021) presented that 82 percent of employees will consider the idea of continually remote working in the post-Covid-19 pandemic because remote working helps to save office costs, increase productivity by reducing absenteeism and extending the continuity of operations.

Although remote working has many advantages, there are several problems related to individuals' well-being, especially when they are forced to work remotely. A recent survey by Apollo Technical LLC (2021) pointed out that 69 percent of employees experienced burnout symptoms during work-from-home. Burnout is explained by Maslach et al. (2001) as “a prolonged response to chronic emotional and interpersonal stressors on the job”. Derived from this definition, remote working burnout can be influenced directly by work stress. Common symptoms of remote working burnout include losing track of tasks and time, being unable to complete tasks on time, getting sleep problems or experiencing insomnia, expressing negative emotion (i.e., anger, anxiety, depression), and physical symptoms (i.e., headaches, illness). There are many stressors related to remote working burnout such as working many hours, unclear job expectation, lacking supports from the organization, lacking colleague communication, the feeling of being isolated, etc... (Apollo Technical LLC 2021). An understanding of the factors affecting remote working burnout helps to improve physical and psychological health for remote workers.

Remote working burnout can be also influenced by technostress – stress caused by the adoption of technology during remote working (Suh and Lee 2017). Remote working requires having many technological devices, and these devices must be updated frequently. Due to the increasing cybersecurity threats, while working at home, workers must comply with all the organizational security policies, i.e., setting complex passwords, changing passwords regularly, using two-factor authentication. This also leads to work overload and technostress.

Remote working has been viewed as a potential alternative working style with many benefits, however, the negative side of remote working has not been explored thoroughly. Prior works on stress and burnout while working remotely are limited. It is important to note that remote workers rely heavily on information and communications technologies (ICTs) to complete their tasks. As such, they can be strained by both working stress and technostress, and consequently, suffer working burnout. The literature on remote working has yet differentiated these stress dimensions, and their impacts on burnout. This study aims to identify the factors affecting remote working stress and burnout, by proposing the following research questions: (i) What factors influence work stressors when remote working?, (ii) What factors influence technostress when remote working?, and (iii) To what extent do work stressors and technostress affect remote working burnout?

Addressing these research questions can help organizations understand the employees' stress and burnout during remote working, consequently, providing practical implications in policymaking to reduce requirements and expectations based on technological supports and organisational supports.

## 2 Literature review

### 2.1 Literature on remote working

Remote working attracted scholars' intention over 40 years ago with the name *telecommuting*. Telecommuting was defined as remote working with using of telecommunications facilities (i.e., smartphone, laptop, home computer, the Internet) to perform work from a telework center or home-based (DeSanctis 1984). Kelliher and Anderson (2010) explained remote working is one of the concepts of working with flexibility in schedule. Remote working can be enabled and developed thanks to ICTs support. ICTs play a primary role as a bridge between work and home, which allow teleworkers to take advantage of the usefulness of technology to complete their tasks faster, more effectively, and productively. The use of ICTs helps to accomplish work tasks, connect colleagues and friends, conduct online meetings, and attend online training.

Remote working has been researched vastly to examine its merits to both employees' and organisation's performance (Igbaria and Guimaraes 1999), positive impacts on employees' effectiveness and working quality (Baruch 2000), or autonomy (Kelliher and Anderson 2010). Remote working made employees feel less stress and improve their efficiency (Teo et al. 1998), increase working productivity, save moving time and costs (DeSanctis 1984), balance work-life (Baruch 2000). Hobbs and Armstrong (1998) suggested that remote workers must have many characteristics related to personal disciplines for effective telework such as self-discipline, self-motivation, self-organisation, and adaptability.

The literature on remote working also pointed out several limitations of this working style. DeSanctis (1984) highlighted numerous problems of remote working related to the feeling of being isolated from their colleagues and society, or professional isolation (Cooper and Kurland 2002). Remote working was considered to be a source of stress (Tietze and Musson 2005), have negative impacts on social networks and teamwork because of deficient in social interaction and companionship (Bailey and Kurland 1999), impeded career promotion and progress due to the lack of their visibility in the workplace and the sense of commitment to the company (Teo et al. 1998), and lack organisational supports for work (Tietze and Nadin 2011). Especially, working remotely in home environment has some distinct hindrances such as distractions (i.e., noise, interruption from family members, household chores, and children supervising) (Mills et al. 2001), and the feeling of uncontrollable over teleworkers (Teo et al. 1998). In addition, cybersecurity and cyberthreats have been raised and discussed as serious problems when working from home during the Covid-19 pandemic (Furnell and Shah 2020). Most of the past studies reach an agreement that employees should be trained for security when they work remotely. However, this extra-role requirement might increase the workload, and contribute to work stress and burnout.

### 2.2 The negative side of remote working on the employees

The main potential negative effects of remote working for the employees might include stress and burnout. Stress refers to the psychological and physical reactions of external stimuli, or a result of the sources of stress, or stressors, which influence individuals (Le Fevre et al. 2003). Lazarus and Cohen (1977) depicted stressors as the differences between environmental demands and internal requirements. Adapted from Beaudry and Pinsonneault (2005), in the context of remote working, environment demands refer to a home environment with distractions, while teleworkers need a professional environment as an internal standard for effective working. Therefore, the lack of a professional environment when working remotely might cause working stress. Accordingly, remote working stress can include two main dimensions, which are work-home conflicts and work overload. Besides, another stressor might originate from the use of ICTs. The technology paradox leads to teleworkers being more dependent on digital devices (Srivastava et al. 2015). Hence, remote workers are expected as "always-on" that are easily connected and overloaded.

Burnout was likely another problem that employees can deal with when working remotely. Leiter and Maslach (1988) defined burnout as "a syndrome of emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment, which can occur among individuals who work with people in some capacity". Michel (2016) illustrated that burnout is a stress-psychological coping, which happens when individuals perceive work overload. Accordingly, burnout is a type of coping behavior, especially to stress.

### 3 Research model and hypothesis development

#### 3.1 Technology – Organization – Environment (TOE) framework and technostress model

This study applies the Technology – Organization – Environment framework to explain the factors that impact remote working burnout. The TOE framework was first developed by Tornatzky et al. (1990) to explain the adoption of technology or decisions at the organizational – level, which is affected by three aspects of the firm, namely, (1) technological aspect, (2) organizational aspect, and (3) environmental aspect. According to Tornatzky et al. (1990), the technology aspect contains available IT resources, technology providers, existing technology, and technology diffusion. The organizational aspect includes all resources and characteristics related to the firm. The environment aspect mentions the firms' realm, in which the firm manages the business and its industry, competitors, and local government. Based on the TOE framework, this research endeavors to explain the factors that impact remote working stress and burnout, including factors categorized in the groups of technological aspect, organizational aspect, and home environment aspect.

The technostress model can explain the mechanism underlying the remote-working stress. Technostress was defined as “a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner” (Brod 1984, p. 16). There are five technostress creators, namely, (1) techno-overload, (2) techno-invasion, (3) techno-complexity, (4) techno-insecurity, and (5) techno-uncertainty (Tarafdar et al. 2007). Techno-overload refers to the stress from the pressure of a higher workload and faster working speed. Techno-invasion refers to the stress from “always-on” status that individuals are expected to always be connected anytime and anywhere. Techno-complexity refers to the stress from the difficulties of technical practices, which make users obtain new knowledge about technological applications by spending more time and putting more effort to enhance the skills. Techno-insecurity refers to the stress from the fear of peer pressure in technology advances. Techno-uncertainty refers to the stress from the pressure of updating the continuous improvement in technology.

#### 3.2 Technology

In the context of remote working, technologies relate information systems and relevant software which were settled by the company and employees to serve remote working. Technology, therefore, includes technologies for communication (e.g., video conference, instant messaging), task-performance (e.g., business planning systems, cloud computing, project management tools), and security technology (e.g., VPN, anti-virus, and anti-malware software). In this research, *complexity*, *usefulness*, and *reliability* as technological characteristics that are proposed to impact technostress creators. Complexity refers to “the perceived degree of difficulty of understanding and using a system” (Gangwar et al. 2015). Perceived usefulness refers to “the degree to which a person thinks that using a system enhances his/her performance” (Schillewaert et al. 2005). Reliability is defined as “the ability to perform the promised service dependably and accurately” (Jiang et al. 2002). Technology might cause mixed effects on employees' technostress. Specifically, while technology usefulness and reliability can support employees to work efficiently, technology complexity possibly creates extra-role tasks and technostress. The related hypotheses were presented as follows:

*H1. Technology usefulness has a negative effect on technostress creators.*

*H2. Technology reliability has a negative effect on technostress creators.*

*H3. Technology complexity has a positive effect on technostress creators.*

#### 3.3 Organisation

Organisational factors affecting employees' stress might include IT supports and resources and security requirements. IT supports refers to “perceptions of the organisation's use of IT resources to facilitate various organisational activities from operation, business process, innovation, to decision-making” (Kettinger et al. 2015). Whereas, security requirements, or “the pressure to spend time and effort in learning and understanding IT to comply with the organisation's security requirements” (Pham et al. 2019), might create extra-role tasks, consequently, cause both technostress and work stress. The hypotheses are presented as:

*H4. IT supports and resources have negative effects on (a) technostress creators, and (b) work stressors.*

*H5. Security requirements have positive effects on (a) technostress creators, and (b) work stressors.*

### 3.4 Environment

Remote employees work in a non-professional workplace, therefore, might typically deal with the problems of distraction and social isolation. Distraction from the home environment refers to objects which disturbed remote workers from concentration, while social isolation refers to living without companionship, social support, or social connectedness (Hawthorne 2008). Both factors can reduce work concentration and cause work stress.

*H6. Distraction from the home environment has a positive effect on work stressors.*

*H7. Social isolation has a positive effect on work stressors.*

### 3.5 Stress and burnout relationships

There is a rich body of literature highlighting the relationships between technostress and the psychological outcomes (i.e., strain, burnout) (Tarafdar et al. 2007), work productivity (Tu et al. 2005), and organizational commitment (Ahmad et al. 2012). The technostress model by Tarafdar et al. (2007) suggested that technostress might aggravate the role stress (i.e., work stressors), and both stressors jointly have negative impacts on employees' outcomes such as productivity and performance. ICTs, including both physical devices and supporting software, become the main facility for communication, updates, report, and training. Once employees obtain troubles with ICTs, their work might be affected, i.e., being stuck, behind schedule, or even task failed. This study, therefore, postulates three hypotheses as follows:

*H8. Technostress creators have a positive effect on work stressors.*

*H9. Technostress creators have a positive effect on remote working burnout.*

*H10. Work stressors have a positive effect on remote working burnout.*

The hypothesis and conceptual model are visualized in Figure 1 below.

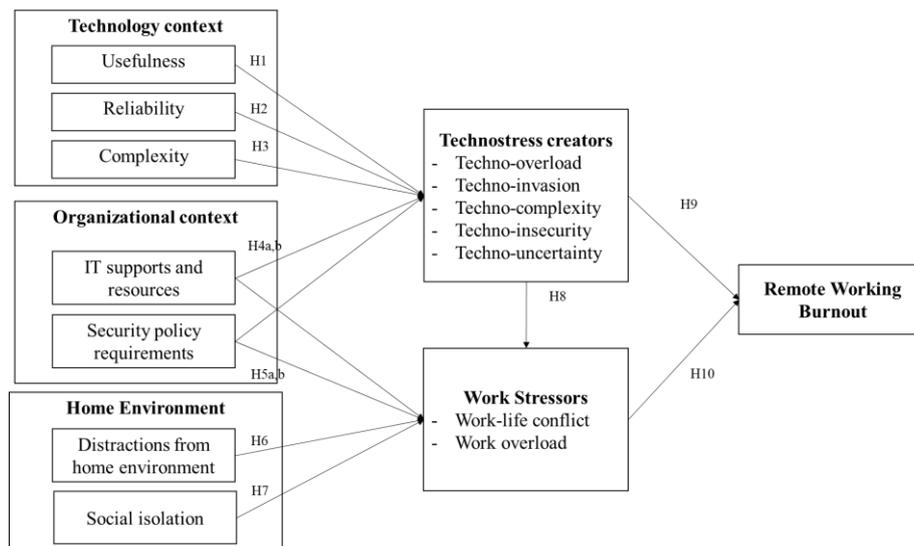


Figure 1: Research model: Relationships between TOE factors, stress, and remote working burnout

## 4 Proposed method

This study will apply a quantitative approach by using a designed questionnaire-based survey to test the conceptual model and hypotheses. The measurements of 15 constructs, which consist of 58 questions items, were adapted from previous studies, for example, technology complexity and usefulness adapted from Gangwar et al. (2015), technology reliability adapted from Jiang et al. (2002), perceived organisational IT supports adapted from Kettinger et al. (2015), security policy requirements adapted from Pham et al. (2019), distractions from home environment adapted from Seddigh et al. (2014), social isolation adapted from Ranjan and Yadav (2019), technostress dimensions adapted from (Chandra et al. 2019; Tarafdar et al. 2007), work-life conflict and work overload adapted from Ayyagari et al. (2011), and remote working burnout adapted from Maslach (1982).

The sample size is expected to be at least 300 respondents (Hair et al. 2014), who have worked remotely for at least 6 months during the Covid-19 pandemic in Vietnam. There are some screening questions about their experience, feeling, and technologies used when working remotely before the main measurement survey. Confirmatory factor analysis (CFA) will be applied to verify the dimensions and the measurement scales of each construct. Partial least squares structural equation modelling (PLS-SEM) will be employed to test the causal model (Hair et al. 2014).

## 5 Conclusion

Given that remote working will become the norm after the Covid-19, it is critical to examine the negative side of remote working. This study, by integrating the TOE and technostress models, provides a comprehensive framework to understand the working stress and burnout while remote working. From the theoretical perspective, this research contributes to technostress literature by integrating the TOE framework and technostress model to explain factors impacting technostress and work stressors. This research also sheds light on the effects of a non-traditional working environment on stress and remote working burnout.

The findings will provide practical implications for organisational leaders to adjust their work policies and offer supports for remote workers, such as cyber security supports and trainings.

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