

# Employee Technostress in South Africa’s Hybrid Workplaces: Causes and Coping Mechanisms

Shelley Dowrie  
0009-0007-7391-1998  
Dept. of Information Systems,  
University of Cape Town, Rondebosch,  
7701, South Africa  
Email: dwrsh001@myuct.ac.za

Jean-Paul Van Belle  
0000-0002-9140-0143  
Dept. of Information Systems,  
University of Cape Town,  
Rondebosch, 7701, South Africa  
Email: jean-paul.vanbelle@uct.ac.za

Marita Turpin  
0000-0002-4425-2010  
Department of Informatics,  
University of Pretoria, Lynnwood  
Road, Pretoria, 0001, South Africa  
Email: marita.turpin@up.ac.za

**Abstract**— During the COVID-19 pandemic, South African organisations were forced to provide suitable working conditions for its employees. The increased reliance on technology while working from home resulted in technostress. This paper considers how technostress experiences have evolved under the newly adopted hybrid working model. It investigates the underlying causes of technostress experiences and how employees are currently coping with technostress under the hybrid model. Semi-structured interviews were conducted and supplemented with secondary data provided by respondents who are currently working under a hybrid model and who use ICTs for work purposes. The findings reveal several hybrid working specific causes of technostress, including instances of stressful workstation setups, office disruptions and power outage issues as a result of loadshedding (rolling power blackouts). Stresses related to loadshedding appear to be a specific South African issue. To deal with technostress, employees adopted reactive and proactive coping behaviours driven by problem-focused and emotion-focused coping strategies respectively.

**Index Terms**—technostress, hybrid workplaces, South African organisations.

## I. INTRODUCTION

Technostress escalated once the COVID-19 pandemic forced organisations to impose response plans to resume work as smoothly as possible [3]. Many resorted to work-from-home (WFH) styles where employees had to adapt their current work dynamic with the incorporation of ICTs. This caused an obligated reliance on technology by the employees and the organisations [4]. An increased use of ICTs leads to higher workload demands on employees [5]. This induces the inability to manage these demands therefore stifling the capability to process further information often leading to burnout and technostress [5]. In other words, technostress occurs when there are changes in working conditions that stem from the adoption and use of ICTs. This forces employees to adapt and adjust almost instantaneously [5].

In hybrid working environments, employees are required to find a working dynamic that compliments varying reliance on ICTs between the alternating working locations i.e., at home and at the office. This unanticipated shift in working modes could either cause more technostress amongst employees or alleviate some of the technostress experienced during pure remote working. Due to the adoption of a hybrid working model being relatively new for most organisations, there remains a gap in literature pertaining to the experiences of technostress within this new working environment.

The purpose of this study is to explain the shift of employee technostress experiences along with the underlying causes and coping mechanisms. With this research purpose in mind, the research aims to address the following research questions:

Primary Research Question:

- How has the experiences of employee technostress changed when hybrid workplaces were implemented in South Africa?

Secondary Questions:

- Why are South African employees experiencing technostress in these hybrid workplaces?
- How are South African employees currently coping with such instances of technostress?

## II. LITERATURE REVIEW (ABBREVIATED)

The literature review focusses only on the causes or determinants of technostress due to space limitations. It looks at the standard technostressors: system performance issues, technology demands and lack of digital literacy.

### *The Big Five Technostressors*

Technostress literature has established the five standard technostressors: **techno-overload**, **techno-invasion**, **techno-complexity**, **techno-insecurity**, and **techno-uncertainty**. **Techno-overload** is triggered when ICT users are required to work for longer and at a faster pace when using ICTs [8]. This also deals with the handling of excess features and information when using ICTs for work [2]. **Techno-invasion** requires the employee to be constantly connected and available to respond timeously even outside work hours, leading to an invasion of their personal environment [2]. **Techno-complexity** refers to feelings of incompetency amongst employee when using the ICTs [9]. This is because of the inherent quality of Information Technology (IT) and ICTs [10]. Due to these feelings of appearing inadequate with IT skills, ICT users invest in spending more time and effort to fully understand the particulars of the technology [8]. **Techno-insecurity** refers to ICT users fearing the loss of their jobs in terms of having some sort of technology eventually take over their role or that their fellow colleagues possess a better understanding of the usage of the ICT. Finally, **techno-uncertainty** refers to the constant ICT upgrades that unsettle ICT users forcing them to continually learn and familiarise themselves with the new technology [8].

### System Performance Issues

Technostressors can also extend to system performance issues such as problems with security, usability, and system breakdown [8]. **Security issues** originate from insecure system infrastructure that allow threats which compromise the information involved in that system. Technostress emerges when users are forced to comply with security policies implemented by the organisation which require them to remember passwords and multiple usernames [8]. **Usability issues** stem from poorly designed systems such as bad interfaces, challenges in intuitively navigating around the application/system and in general lack of effectiveness, efficiency and learnability [1]. This causes the users of these system to experience higher cognitive overloads. Finally, **system breakdown** refers to the malfunctioning of ICTs such as error messages [8].

### ICT Use in the Workplace

The “technology demands” predictor signifies the costs employees incur as a result of the effort needed for ICT use. These costs are of psychological and physiological natures [11]. These types of demands involve role ambiguity, ergonomic stress, monotonous ICT activities and general work overload [11]. Role ambiguity occurs when ICT tasks are ill defined [11] which is further claimed to restrain the user’s abilities and development [12]. Demands can also originate from a societal sense whereby employees experience social isolation, role conflict and emotional overload when trying to form human relationships around the usage of ICTs [11]. Technostress has a positive relationship with how often ICTs are used for work purposes. Technostress can also be instantiated by the usage of multiple ICTs at once. This is derived from higher demands or greater pressure on workers to learn and embrace multiple ICTs [5].

## III. PROPOSITIONS

Table I below indicates the research propositions adapted from literature that drove the data collection process:

TABLE I.  
RESEARCH PROPOSITIONS

Research Area	Relationship/Themes	Reference
ICT use in the workplace	Technostress can be induced by having a high dependency on an evolving ICT/Information System in the workplace.	[8]
	If a user possesses high skill levels of digital literacy/skills, he/she will find it relatively easier to learn and adapt to new technologies.	[13]
Technostressors	Techno-complexity, techno-overload, techno-invasion, techno-insecurity and techno-uncertainty lead to technostress.	[2]
	Unreliability of ICTs cause technostress.	[8]
Coping behaviours	Reduce ICT-related stress: Distancing; venting.	[14]
	Establish ICT use demarcations: Time-related use, Separation of use, autonomy.	[14]

## IV. RESEARCH METHODOLOGY

An interpretive philosophy was adopted for this research. Interpretive research assumes that human experiences shape the social realities and invites subjective interpretations of the respondents in the social context, in this case the virtual and

physical workplaces in organisations [15]. As this study adopted an interpretivist paradigm, the most suitable strategy to be adopted was a qualitative one. Qualitative research intends to derive meaning-based forms of data analysis. It enforces the notion of contextual understanding through providing in-depth descriptions of insights that cannot be shown through quantitative measures [16]. This research was conducted over eight months in 2022.

Data was collected through semi-structured interviews [16]. The target audience for this study were employees within organisations that were making use of a hybrid working model and respondents could be conveniently accessed. Twelve respondents were interviewed with ten respondents obtained from the insurance company and two respondents from a university. Table II shows respondent’s job role, IT skill level and their estimate technostress level. *Data saturation was achieved after about 9 interviews.*

TABLE II.  
DESCRIPTIVE SUMMARY OF RESPONDENTS

Role	Skill level	Techno stress level
Client Relationship Manager,	Medium	Medium
Finance Team Leader	Medium	Medium
Section 14 Technical Team Leader	Medium	Low
Business Specialist, MIS	High	Low-Medium
Client Relationship Manager	Medium	Dependent
Corporate Client Services Team Leader	Medium	Medium
Servicing Team Leader	High	Low- Medium
Client Relationship Manager,	Medium	Medium
Social Media Complaints	Medium	Medium-Intense
Complaints Handler	Medium	Medium-Intense
ICTs: Senior Business Analyst	High	Low-Medium
HR Analytics	High	Medium

The analysis took on the form of categorizing themes and patterns that derived at a set of concepts (codes), constructs (categories) and relationships [15]. NVivo was used to perform the thematic analysis. Ethical clearance for the study was obtained from the ethics committee of the university.

## V. RESEARCH FINDINGS AND ANALYSIS

The themes from the data analysis are discussed below.

### A. Hybrid Working Specific Causes of Technostress

#### a) Non-assigned desk setup (“hot desks”) creates unnecessary technostress

On the days designated to go work at the office, three respondents indicated device configuration issues between the provided monitors and their own laptops. These experiences were also discovered in China [7]. Five respondents complained about insufficient technical support at the office should they encounter tech-related difficulties. Two respondents alluded to occurrences of missing equipment at the office which meant search for appropriate equipment to set up their workstation, delaying the start of their working day. These stresses were more prominent at the start of the hybrid model.

#### b) Office distractions related to ICT use causes stress

Eight respondents expressed that being in office meant having to endure office-based interruptions where otherwise they

wouldn't have experienced while working from home. Three out of the eight claimed that there are challenges with having partial teams present at the office on designated days. Those in-office would have to dial in the rest of the team who are working from home. This meant holding virtual meetings via MS Teams which would create echoes in the office, often distracting other teams and employees who are also in that day. This was claimed to add to stress as it would disturb concentration levels and productivity.

#### c) Power issues creating stress

Seven respondents from the interviews and three instances from the secondary data referred to the disturbances that loadshedding (rolling blackouts) has had on their workstation setup at home and in office resulting in downtime. While most confirmed that their organisation provided adequate support for power outages at home such as an UPS, some referred to the stress of worrying whether there would be enough stored power to last the loadshedding slots, especially under the higher levels of loadshedding. *"My blood pressure almost went up one day because I was panicking. I thought, where am I gonna work?" - OM05*

### B. The Change in Traditional Technostressors under Hybrid Working

#### a) Techno-uncertainty with the adoption of a new ICT/technology when remote working was introduced

Six respondents experienced initial stress familiarising themselves with new systems implemented by their organisation. OM02 experienced communication inconsistencies when liaising with her IT department about the introduction of a new system. She expressed how stressful it was to interpret the technical jargon which created misunderstandings in the requirements for the new system.

Five respondents alluded to the minimal/insufficient technical support and training for new system rollouts. This created stress in a sense that employees were now forced to learn the new systems by themselves. This resulted in them having to factor in time to learn the new systems which meant neglecting work duties for a time period, hence creating more stress. *"There's no training on it. It's like we just learning on the job, like on top of each other, on multiple applications besides all our existing applications." - OM10*

#### b) Techno-overload creating technostress while WFH

Nine respondents indicated feelings of hyperconnectivity while working from home on the designated days which made it easier to be interrupted through application notifications and alerts. This also stems from organisational expectations on employees to be able to respond quickly and often outside of work hours. Three respondents mentioned how using multiple applications at the same time can become overwhelming and stressful especially since sometimes the systems don't easily speak to each other. This is consistent with the belief that using multiple ICTs can instantiate technostress [5].

#### c) Techno-insecurity creating technostress

Experiences of techno-insecurity weren't that significant amongst the sample, with only two respondents referring to feeling insecure about their IT skills. OM10 mentioned the

impact of the imbalance of IT skills within the team that creates stress. This was to do with new employees in the team possessing IT skills that they have gained from experience in other teams/departments which instantiated feelings of insecurity within the old employees who didn't possess such experience. This also made them feel as if it was burdensome when bothering these new employees for IT-related help.

#### d) Techno-invasion distorts work/life balance when WFH

This theme relates to the distortion of work life balance as a result of ICT use for work. Six instances within the secondary data referred to challenges with work life balance under the hybrid working model. In line with [6], nine respondents from the interviews recalled feelings of techno-invasion where they often found themselves logging in after work hours, on weekends and late in the evenings. This was mainly due to having a convenient setup at home which enabled them with the ability to connect or simply the use of laptops which made it easy to resume working when coming back from the office. This meant putting in additional work hours without even realising it. One respondent mentioned the negative impact techno-invasion had on her personal relationships at home. *"Technology has invaded our private space and the lines between your work day and your domestic day have become blurred. That has led to stress in my life." - UCT01*

#### e) Techno-complexity causing technostress

Ten respondents indicated that some of the systems are quite complex to understand at first, sometimes even after the system/application has been used for a while. Four of these respondents referred to instances of system upgrade inconsistencies. Some expressed that the new systems that were introduced were often counterintuitive. *"These programs have to be complex. And as much as they're trying to be user intuitive, they don't often succeed there because they're trying to be different from their competitors." - OM04*

### C. Coping Mechanisms Reduce Technostress

#### a) Proactive Coping Behaviour

Separating personal and work life by using different devices for the different ICT related tasks limits the exposure to work-related ICT tasks outside of work settings. Other forms of ICT use demarcation found in the responses were related to structuring ICT use according to time periods. UCT01 mentioned blocking out a period of time to sort out an IT-related issue or to limit usage of technology by blocking out time in his calendar to avoid using technology. Four respondents alluded to sticking to a routine therefore proactively coping with the technostress. This was described as attempts to come in early to the office to factor in time to deal with a stressful incident should it arise. OM10 stated that: *"You tend to go early so you can get that desk cause other person's gonna take it."* This also linked with trying to find a suitable, adequately equipped desk with the correct devices and cables.

Six respondents mentioned preferring to work longer hours in hopes of reducing future instances of stress, therefore displaying proactive coping behaviours. This shows that by leveraging what once were technostressors (techno-overload and techno-invasion), stress can actually be reduced.

### *b) Reactive Coping Behaviour*

Three responses pertained to reactive coping behaviours such as walking away from the stressful situation, regrouping, and closing all applications. This demonstrates the distancing coping mechanism where employees can temporarily separate themselves from the IT-related task and focus on something else [14]. Five respondents expressed that they would usually resort to venting tactics, a reactive coping behaviour, should they encounter a stressful incident related to using an ICT/ICTs. This was believed to help employees not feel isolated and to see if others are going through similar situations.

## VI. DISCUSSION OF FINDINGS

The descriptive findings uncovered relationships between different characteristics of employees and their corresponding technostress levels.

### *A. Findings around the Standard Technostressors*

While respondents experienced the five standard technostressors, it was clear that they had more issues with them during purely remote working than under the hybrid model.

#### *a) Techno-uncertainty as a technostressor*

There was reference to techno-uncertainty triggers that occurred when new systems were introduced when remote working was initially adopted where the reliance on ICTs spiked. This caused stress related to the initial familiarisation of the new system and the minimal technical support to accompany the new system rollout. This meant employees had to dedicate additional time to learn the new system, potentially outside of work hours therefore increasing stress levels.

#### *b) Techno-overload as a technostressor*

Respondents mentioned experiencing techno-overload with regards to technology-related interruptions while working from home which triggered stress levels. Some also referred to feeling overwhelmed with the use of multiple applications that they deal with daily. This feeling of being overwhelmed could extend to experiences at the office as respondents confirmed that they used the same number of devices and applications at the office as they did at home.

#### *c) Techno-insecurity as a technostressor*

This particular factor was not very suggestive as a trigger of technostress. Only two respondents expressed feeling stressed that fellow employees may cope better with technological demands than themselves.

#### *d) Techno-invasion as a technostressor*

The data showed instances of techno-invasion in the form of extending work hours into an employee's personal time therefore distorting boundaries between work and personal spheres when working from home specifically. This was seen to also diminish work life balance. Some respondents expressed instances of lack of separation of work-related ICTs on different devices which generated stress.

#### *Techno-complexity as a technostressor*

The data suggested employee challenges with system complexity that instantiated feelings of stress. This pointed to IT skills levels struggling to match with systems' expectations

which mainly stemmed from the perceived system complexity that existed, especially in new versions of systems. This can be seen to be a result of the counter intuitiveness expressed by some of the respondents which made the systems seem unfamiliar therefore triggering feelings of stress. Either employees need to be upskilled through training programmes to have their skills match with system expectations or systems need to be more simply designed.

### *B. Findings around the Hybrid-specific Technostressors*

The data suggested that there are also distinctive causes of technostress.

#### *a) Using hot desks creates unnecessary technostress*

Since some respondents (which was found to exclude most managers) had to secure a desk each time they came into the office on their designated days, the desks often varied in equipment availability. As a result, they had to ensure coming into the office early enough to secure an appropriate desk or to hide some equipment in cupboards to ensure they would be sorted the next time when coming into the office. This was mainly due to the instances of missing equipment such as monitors, adapters, keyboards, cables etc. which meant that the equipment floated around from desk to desk. This implies that should organisations opt to keep hybrid working models, adequate resources in terms of equipment and amenities should be provided for employees on their days in-office so as to mirror their home working stations. In addition, some respondents mentioned how stressful it was to configure and synchronise various devices when coming into the office. There was reference to compatibility issues which can be seen as a direct cause of the lack of equipment availability mentioned already.

#### *b) Office distractions related to ICT use causes stress*

The comparison between working at home and at the office surfaced consistencies across some respondents regarding the disruptive atmosphere of the office. In addition to the usual office disruptions that existed before the COVID-19 lockdown, some respondents found having partial teams present at the office raised some unusual disruptions. This broke their concentration and added to their stress levels.

#### *c) Power issues impacting access to ICTs creates stress*

Loadshedding and electricity/power issues presented challenges for employees to conduct their work using ICTs that demanded sufficient power. While the organisations provided infrastructure support, often the loadshedding schedules were unpredictable and left employees in crisis situations. This meant employees experienced anxiety and stress as they were now unable to complete any work and had to make drastic arrangements to resume work. This is a macro issue specific to South Africa that can't be solved by the organisation itself but it remains crucial to implement as much support as possible to counter the unpredictable instances of loadshedding.

### *C. Findings around Coping Mechanisms*

#### *a) Proactive coping behaviours*

The main coping behaviour was of a proactive nature utilising a problem-focused coping strategy. Most respondents

resorted to proactive tactics like demarcating ICT use according to time and separation of use. Others expressed enforcing a routine to maintain a structure that could mitigate the impacts of a stressful encounter should it occur. Most respondents confirmed that working longer hours actually helped them reduce further anticipated stress. This meant logging onto systems to perform work activities on the weekend in order to reduce work backlog and hence further stress.

#### b) Reactive Coping Behaviours

The data showed how the standard reactive coping behaviours remain prominent when dealing with stress. This referred to emotion-focused coping strategies such as distancing oneself from the stressful situation and venting to others in hopes of reducing feelings of isolation and anxiety.

### VII. CONCLUSION

The purpose of this research was to understand how employee technostress experiences have changed since hybrid models were adopted in South African organisations. The research wanted to find the underlying causes of these new experiences and how employees are currently coping with these new instances of technostress.

The findings suggest that the **standard** technostressors weren't as prevalent in the hybrid working model. These seemed to be more prevalent at the start of implementing the purely WFH approach and decreased somewhat under hybrid. South African employees appear to have adapted under hybrid, pointing to new emerging experiences. **Hybrid-work-specific** causes of technostress include stressful workstation setups upon return to the office on designated days which involved configuration, compatibility, and synchronisation issues along with the lack of equipment on hand. Office distractions caused unwarranted stress for employees in-office. This specifically pertained to virtual meeting noise and related echoes. Lastly, power shortages as a result of loadshedding became a hinderance and contributed to feelings of stress. *The stresses related to loadshedding and power outages appear to be a distinctive South African issue.*

To deal with technostress, employees adopted reactive and proactive coping behaviours driven by problem-focused and emotion-focused coping strategies respectively. **Reactive** behaviours involved distancing from the stressful situation and venting to others. **Proactive** behaviours involved demarcating ICT use through structured time use and separation of use. This included implementing a structured routine and working longer hours to reduce future stressful encounters.

This research had **limitations** with regard to the sample size and representation. A bigger sample size will allow better representativeness. Since the research was a cross-sectional study, technostress experiences under the hybrid model could only be recorded within the early stages of its inception; if the research was conducted over a longer period of time, a more holistic understanding could have been extracted.

**Future research** could compare the three modes of working (purely remote, hybrid and purely on-site) over a longer period of time to uncover more accurate understandings of the

differences in the experiences of technostress. Another recommendation is to expand on the sample size.

### REFERENCES

- [1] C. Sellberg and T. Susi, "technostress in the office: a distributed cognition perspective on human-technology interaction," *Cognition, Technology & Work*, vol. 16, no. 2, pp. 187-201, 2014/05/01 2014, doi: 10.1007/s10111-013-0256-9.
- [2] M. Tarafdar, C. L. Cooper, and J.-F. Stich, "The technostress trifecta - techno eustress, techno distress and design: Theoretical directions and an agenda for research," *Information Systems Journal*, vol. 29, no. 1, pp. 6-42, 2019, doi: <https://doi.org/10.1111/isj.12169>.
- [3] M. H. R. Bussin and C. Swart-Opperman, "COVID-19: Considering impacts to employees and the workplace," 2021, COVID-19; employee impact; workplace impact; pandemic; performance vol. 19, 2021-08-20 2021, doi: 10.4102/sajhrm.v19i0.1384.
- [4] K. Khuzaini and Z. Zamrudi, "technostress among marketing employee during the COVID-19 pandemic: Exploring the role of technology usability and presenteeism," *JEMA: Jurnal Ilmiah Bidang Akuntansi dan Manajemen*, vol. 18, no. 1, pp. 36-60, 2021, doi: <https://doi.org/10.31106/jema.v18i1.10050>.
- [5] L. Camarena and F. Fusi, "Always Connected: Technology Use Increases technostress Among Public Managers," *The American Review of Public Administration*, vol. 52, no. 2, pp. 154-168, 2022/02/01 2021, doi: 10.1177/02750740211050387.
- [6] I. Savolainen, R. Oksa, N. Savela, M. Celuch, and A. Oksanen, "COVID-19 Anxiety—A Longitudinal Survey Study of Psychological and Situational Risks among Finnish Workers," *International Journal of Environmental Research and Public Health*, vol. 18, no. 2, p. 794, 2021. [Online]. Available: <https://www.mdpi.com/1660-4601/18/2/794>.
- [7] Y. Wang *et al.*, "Returning to the Office During the COVID-19 Pandemic Recovery: Early Indicators from China," presented at the Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems, Yokohama, Japan, 2021. [Online]. Available: <https://doi.org/10.1145/3411763.3451685>.
- [8] A. S. Nisafani, G. Kiely, and C. Mahony, "Workers' technostress: a review of its causes, strains, inhibitors, and impacts," *Journal of Decision Systems*, vol. 29, no. sup1, pp. 243-258, 2020/08/18 2020, doi: 10.1080/12460125.2020.1796286.
- [9] P. Spagnoli, M. Molino, D. Molinaro, M. L. Giancaspro, A. Manuti, and C. Ghislieri, "Workaholism and technostress During the COVID-19 Emergency: The Crucial Role of the Leaders on Remote Working," (in English), *Frontiers in Psychology*, Brief Research Report vol. 11, 2020-December-23 2020, doi: 10.3389/fpsyg.2020.620310.
- [10] I. Hwang and O. Cha, "Examining technostress creators and role stress as potential threats to employees' information security compliance," *Computers in Human Behavior*, vol. 81, pp. 282-293, 2018/04/01/ 2018, doi: <https://doi.org/10.1016/j.chb.2017.12.022>.
- [11] L. Atanasoff and M. A. Venable, "technostress: Implications for Adults in the Workforce," *The Career Development Quarterly*, vol. 65, no. 4, pp. 326-338, 2017, doi: <https://doi.org/10.1002/cdq.12111>.
- [12] X. Zhao, Q. Xia, and W. Huang, "Impact of technostress on productivity from the theoretical perspective of appraisal and coping processes," *Information & Management*, vol. 57, no. 8, p. 103265, 2020/12/01/ 2020, doi: <https://doi.org/10.1016/j.im.2020.103265>.
- [13] R. Berger, M. Romeo, G. Gidion, and L. Poyato, "Media use and technostress," in *INTED2016 Proceedings*, 2016: IATED, pp. 390-400, doi: <https://doi.org/10.21125/inted.2016.1092>.
- [14] M. Tarafdar, H. Pirkkalainen, M. Salo, and M. Makkonen, "Taking on the "dark side"—Coping with technostress," *IT professional*, vol. 22, no. 6, pp. 82-89, 2020, doi: 10.1109/MITP.2020.2977343.
- [15] A. Bhattacharjee, *Social science research: Principles, methods, and practices*. 2012.
- [16] T. Azungah, "Qualitative research: deductive and inductive approaches to data analysis," *Qualitative Research Journal*, vol. 18, no. 4, pp. 383-400, 2018, doi: 10.1108/QRJ-D-18-00035.