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TECHNOSTRESS AMONG ICT USER WHITE-COLLAR WORKERS AND
COPING SOLUTIONS

Bachelor Thesis

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I have written this Research paper/Bachelor Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

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Introduction

Blake is having emotional exhaustion due to a high amount of work-related messages. Fallon is stressed for being asked to do more work than she can handle due to developed technologies. Raymond thinks he doesn't know enough about technologies to accomplish his job tasks successfully which makes him anxious. Crystal feels stressed due to frequent technological developments in her workplace. Liam's work-life balance is blurred due to the flexibility technologies provide. - All these were examples of technostress experience.

Information and communication technologies (ICTs) have turned into a fundamental component of organizations, regardless of its industry, which brings out many benefits in terms of management effectiveness, production efficiency, and flexibility for both employer and employees (Dos Santos & Sussman, 2000; Kudyba & Diwan, 2002; Tarafdar, D'Arcy, Turel & Gupta, 2015). The development of ICT is aimed at facilitating human life, including business life, by offering attainable communication around the world and access to global information. However, there are also unforeseen outcomes of the ICTs usage, which causes stress among employees and threats the employee endurance, brings complications to their competence, decreases confidence, contribution, productivity, and job satisfaction, damages mental health, and more (Chandra, Shirish & Srivastava, 2019; Jenic & Lamovsek, 2019; Stana & Nicolajsen, 2020; Tarafdar, Maier, Laumer & Weitzel, 2020). The ICTs became the main factor causing a change in many parts of the business: the way tasks are performed and accomplished (instead of personal meeting, ICTs preferred), working forms at the organization (remote work), and communication among employees (Chandra, Shirish & Srivastava, 2019; Tarafdar, Tu, & Ragu-Nathan, 2010).

The term "technostress" was introduced in the 1980s, a period where ICT were not well developed yet. Nowadays, the problem is even more critical as today ICTs advance at a fast pace and get higher usage globally. Individuals facing technostress struggle with accomplishing tasks promptly, gaining competitiveness at the workplace, stabilizing work-life balance, and having psychological issues (Tarafdar, Tu, & Ragu-Nathan, 2010; Kumar, Lal, Bansal, & Sharma, 2013). "In 2007, the syndrome has been recognized as an occupational disease: this requires that in all workplace where a frequent use of digital technologies (ICT, publishing, etc.) does exist, there is the need to include Technostress in the document of work-related risk assessment" (Chiappetta, 2017, p. 358).

In the author's opinion, many employees and organizations aren't well aware of the technostress, hence, considers increasing awareness of technostress, its consequences, and coping solutions is highly important. Furthermore, considering technostress poses a threat to

both employees and organizations, research on how to cope with technostress or prevent its consequences and negative impacts is crucial. In the last ten years, the field has gotten more attention from researchers. On online databases, such as ScienceDirect, JSTOR, and EBSCO Discovery, the number of published articles discussing technostress construct and possible coping solutions has increased in the last decade. Scholars mainly examined the causes and linear relationship of factors affecting technostress, but coping solutions haven't been studied deeply. Many researchers conducted surveys, questionnaire and had meta-analysis for their technostress studies.

This research aims to propose coping solutions based on creators and factors with a moderating role on ICT user white-collar workers' technostress levels, considering this group of individuals will have higher technostress due to constant ICT usage at work. The author believes that the issue is neither the fast development of ICTs nor the higher usage of ICTS; what matters is how to deal with or cope with it.

To achieve the aim of the research paper, the following research tasks are given:

- To give an overview of technostress concept, discuss technostress symptoms and creators with their own consequences;
- To bring out relevant major key findings from previously done studies discussing coping solutions and factors with positive mitigating roles on reducing and preventing negative technostress outcomes;
- To describe the research methodology development – an online survey accounting for a quantitative research method that conducted among ICT user white-collar workers;
- To represent, analyse, and compare findings based on the data gathered via an online survey, identify main technostress dimensions and factors with an impact on technostress levels;
- To draw conclusions and propose coping solutions with technostress based on the findings combined from the literature overview and survey results, as well as the author's assumptions.

The research paper is followed by the theoretical part explaining the technostress concept, stress creators with consequences both on employees and organizations, and bringing out major findings from previously done empirical studies on coping with and reducing technostress. After the literature overview, the empirical part of the research paper presents the quantitative research method – an online survey – and analysis of the research

results. Based on the findings, the author will propose coping solutions accordingly with the findings. For more accurate and better analysis, the author is aiming to reach out to more respondents. It is expected that approximately half of them will complete the survey.

Keywords: technostress, information and communication technologies (ICTs), moderating factors, coping solutions.

1. The theoretical framework for the technostress concept, causes, consequences, and coping solutions

1.1. Concept of technostress, symptoms, and causes

ICTs and technology-related stress at the workplace have been discussed widely in the last few decades and as time passes, but still there is no commonly accepted definition (see Table 1). The American psychologist Craig Brod (1984) was one of the first researchers who proposed possible stress experience due to computer technology among its users and introduced the term "technostress" to describe psychological responses to negative experiences with computers. Craig Brod (1984), defined the term as "a modern disease caused by individual's inability to cope or deal newest computer technologies in a healthy manner" (as cited in Gaudioso, Turel, & Galimberti, 2017, p. 189).

Table 1

Technostress definitions

Author(s)	Year	Definition
Craig Brod	1984	"a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner" (as cited in Gaudioso, Turel, & Galimberti, 2017, p. 189).
Weil & Rosen	1997	"any negative effect on human attitudes, thoughts, behaviors, and psychology that directly or indirectly results from technology" (p.5)
Arnetz & Wilholm	1997	"state of arousal observed in certain employees who are heavily dependent on computers in their work"
Salanova, Llorens, Cifre & Nogareda	2007	"negative psychological state associated with the use or threat of ICT use in the future. This experience is related to feelings of anxiety, mental fatigue, scepticism and inefficacy" (p.1)
Ragu-Nathan, Tu & Tarafdar	2008	"stress experienced by end-users in firms due to use of and greater dependence on ICT" (p. 418)
Wang, Shu & Tu	2008	"reflection of one's discomposure, fear, tenseness, and anxiety when one is learning and using computer technology directly or indirectly that ultimately ends in psychological and emotional repulsion and prevents one from further learning or using computer technology" (p. 3004)

Source: Compiled by the author

The most widely used technostress definition in empirical studies is Brod's (1984) definition. Weil and Rosen (1997) expanded the definition by including "technology" in general. Compared to Weil and Rosen (1997) definition, Brod (1984) emphasized "new computer technologies", describing the problem as an adaptation to the changes and new advancements. In the author's opinion, not all employees are always ready for a new structure or working process changes in the company; it also depends on workplace culture. Some

researchers (Salanova, Llorens, Cifre & Nogareda, 2007; Ragu-Nathan, Tu & Tarafdar, 2008) also specified the type of the technology in their definition – "ICT (information and communication technologies)."

In definitions, scholars approached the term from different perspectives: causes and reflection of technostress. Brod (1984) analyzed the cause of the disease as an individual's lack of knowledge and training, rather than the fast development of technologies. However, Arnetz and Wilholm (1997) and Ragu-Nathan, Tu, and Tarafdar (2008), as the cause of technostress, stated dependency on technologies in their definitions. And a few authors (Weil & Rosen, 1997; Salanova, Llorens, Cifre & Nogareda, 2007; Wang, Shu & Tu, 2008) referred to the negative reflection and effects of computer technology in defining technostress.

"Another factor that has allowed the emergence of Technostress, both in the workplace and in the personal and relational setting, is the role of mobile technology that favors continued use of the information flow without constraints of space and place" (Chiappetta, 2017, p 359). The time and the level of technological development in the 1980s differentiate from today. In the period, when Brod first suggested the term "technostress", he analyzed the responses of employees who were sitting in one place to work on their desktops; no laptops, tablets, or smartphones. Now, the term "technostress" acquires a new meaning.

Existing definitions refer to the expression of technostress from physical, behavioral, (Weil & Rosen, 1997), and psychological (Salanova, Llorens & Cifre, 2007; Wang, Shu & Tu, 2008) sides in response to ICT dependence (Ragu-Nathan, Tu & Tarafdar, 2008), increased computer anxiety (Wang, Shu & Tu, 2008), and ICT driven work changes (Ragu-Nathan, Tu & Tarafdar, 2008). Definitions of technostress can be labelled in three categories: transactional and perceived stress, occupational health, and physical threat (Atanasoff & Venable, 2017). Conversely, although the technostress definitions are similar, there is no agreed-upon definition.

The author defines technostress as "a stress resulting from ICTs due to an individual's inability, lack of knowledge and training, and improperly established organizational culture." In the author's opinion, regardless of technology complexity, with proper knowledge improvement, and customized training, individuals can adapt to even the most advanced ICTs in a healthy manner. Respectively, the author highlights an individual's inability, insufficient knowledge, and workplace culture in the definition, and in the next chapters, the author will cover these factors.

Salanova, Llorens, Cifre & Nogerada (2007) and Wang, Shu & Tu (2008) emphasized expressions such as "anxiety", "mental fatigue", "scepticism", "inefficacy" which are related

to the individual's technostress experience as well as proven symptoms of the technostress syndrome. Identified symptoms also include frustration, increased time pressure and mental load level (Mark, Gudith & Klocke, 2008), insomnia, irritability (Porter & Kakabadse, 2006), lowered productivity (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2007), hypertension, depression, headache, increased heart rate (Chiappetta, 2017) and many more. In the author's opinion, symptoms of technostress and casual stress are similar, almost the same, as technostress is just one branch of stress. What differentiates them is their creators and causes.

Many scholars researched causes of technostress, in other terms technostress creators, and identified five widely-accepted creators: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. In this research, the author approaches techno-creators also as technostress dimensions.

The first technostress creator, techno-overload, arises when ICT causes employees to work at a rapid speed while adhering to a strict timetable and handling multiple tasks (Tarafdar, Ragu-Nathan, Ragu-Nathan & Tu, 2007; Tu, Wang & Shu, 2005). Techno-overload also emerges when people are required to alter their work habits by adapting to new advanced technologies (Ragu-Nathan, Tarafdar, Ragu-Nathan & Tu, 2008; Tu, Wang & Shu, 2005). In the author's opinion, although ICT enables fast information transmission and makes many processes simpler, ICT also allows information workload, increased employer expectations from employees, or in other terms, increased demands for employees. For example, a study discovered that employees at a large organization spend on average 29 minutes just reading emails every day, not even mentioning the time spent on responding to those emails (Jackson, Burgess & Edwards, 2006). Increased volume of information and communication flows via ICTs makes employees have technological overload as well as work overload which causes stress and burnout in employees (Barley, Meyerson & Grodal, 2011). In the author's opinion, techno-overload causes low self-efficacy and less confidence for having control loss on the job tasks, which drives job distress (Gaudioso, Turel & Galimberti, 2017) and depression at the workplace. Fatigue also can occur when resources are depleted as a result of a high and sustained workload (Chandra, Shirish & Srivastava, 2019), and in the author's opinion fatigue can adversely impact even basic tasks like data entry due to suffering from tiredness and not being able to stay focused.

ICTs provide flexibility for employees by enabling communication and information flow regardless of time and space, which causes integration of work-home activities ending up in work and life imbalance for the employees. Arising from this situation, the second technostress creator, techno-invasion, refers to an employee position where an individual is

constantly connected to the technologies and feels forced to be available anytime, anywhere including outside of work (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011). In addition to Stana & Nicolajsen (2020), the author also agrees that some employees perceive constant connectivity and availability as an act of showing how they care for the work and how well contributors they are. According to BBC News (2014), nearly ninety per cent of managers in the UK work an extra unpaid day each week due to the use of ICTs after working hours. A study also found that more than seventy per cent of survey respondents are worried about losing their competence and position at a workplace if they reduce their availability and constant connectivity (Tarafdar, D'Arcy, Turel & Gupta, 2015). Techno-invasion causes individuals never be away from work as an employee can work remotely via ICTs, invade personal life by extending working hours into family time, and not be able to put a boundary between the work and home (Ayyagari, Grover & Purvis, 2011; Stich, Tarafdar & Cooper, 2018; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011; Ratna & Kaur, 2016). "Moreover constant connectivity compels employees to focus on current operational tasks and, thus, lack the time for creative thinking and innovation, which often require them to spend much time reflecting" (Chandra, Shirish & Srivastava, 2019, p. 305). Hence, techno-invasion makes employees experience stress, control loss, and frustration (Gaudioso, Turel & Galimberti, 2017; Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011).

Being competitive and having constant development demands from the companies and organizations to use the most recent technology, software, and applications have intensified, while technical capabilities and terminology linked with ICTs have become increasingly sophisticated (Ragu-Nathan, Tarafdar & Tu, 2008). In this circumstance, the third technostress creator, techno-complexity occurs, requiring employees to devote their effort and time to improve their technological skills by learning and understanding the latest ICTs (Chandra, Shirish & Srivastava, 2019; Tarafdar, Ragu-Nathan, Ragu-Nathan & Tu, 2007). In addition to the initial techno-complexity definition, based on the interviewed employees by Stana & Nicolajsen (2020), they emphasize employees also get distressed due to unstated norms and tension that contradict their individual obligations. In the author's opinion, some applications can take months to learn as the complexity of technologies, including individuals' abilities may vary, and these factors can distract them from the tasks, intimidate them, and cause distress at work for losing control over technology and their job. When employees use technologies they consider complex, feelings such as fear, anxiety (Ragu-Nathan, Tarafdar & Tu, 2008), and ambiguity (Ayyagari, Grover & Purvis, 2011) arise. One study states that employees get feelings of frustration and insecurity due to a lack

of knowledge and not well-designed instructions about the right channels for the specific types of communication and not being able to understand the difference between common and compulsory communication via ICTs (Stana & Nicolajsen, 2020). In brief, when employees feel they do not have enough ICTs knowledge to accomplish tasks competently and need much more time to understand technologies and/or applications they consider complex, it leads them to experience technostress due to techno-complexity. According to the author, techno-complexity can negatively impact small actions as well, for example, employees might get afraid of clicking a button with the fear of doing wrong and getting disadvantaged at work.

The fourth technostress creator, techno-insecurity describes situations where employees get the feeling of being threatened about failing at their jobs, due to automation at the workplace from ICTs and/or other people who have more insights about ICTs with upgraded skills (Ragu-Nathan, Tarafdar & Tu, 2008). Employees experiencing techno-insecurity, perceive new technologies as constant intimidation where they are required to update their skills through certain learning for not being replaced by the possible newcomers who might have better skills in newer technologies (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011). In the author's opinion, employees experience a loss of control over their job as a result of technological insecurity, which reduces their comfort level, decreases efficiency and effectiveness, and also leads to unconfidence, fear, and distress. In this situation, "employees will use ICTs only to execute their routine tasks rather than leveraging them to accomplish innovative tasks despite the possibility that they could do" (Chandra, Shirish & Srivastava, 2019, p. 306).

Employees may find it challenging to cope with the ongoing upgrades as firms constantly embrace technology innovations to keep ahead of their competition. Thus, the last technostress creator is techno-uncertainty describing situations where employees are stressed due to continual and frequent technological instalments at the workplace (Tarafdar, Ragu-Nathan, Ragu-Nathan & Tu, 2007). Before developing a foundation of knowledge for a particular software or hardware, a new upgrade occurs requiring employees to settle for another system which makes them feel unsettled, anxious, and frustrated as their knowledge and familiarity become obsolete (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011). When the frequency of rapid changes in technologies and everyday working style get beyond a certain level, it might result in autonomy loss over a job, themselves, and ICTs, overwhelming and distressing employees (Chandra, Shirish & Srivastava, 2019). In the author's opinion, techno-uncertainty leads to lowered motivation for work and learning as

employees might feel unsure about how long will the current or new ICTs be in use, whether they will be upgraded or changed soon, and/or if it is even worth learning it deeply.

Table 2

Definitions of the five widely accepted technostress creators

Technostress creators	Definition
Techno-overload	Employees struggle with technological and information overload, and feel forced to handle more workload due to ICTs
Techno-invasion	Employees feel invaded by ICTs due to constant connectivity due to ICT-enabled flexibility
Techno-complexity	Employees feel challenged and threatened by ICTs complexity and fell forced to devote time for understanding and learning ICTs
Techno-insecurity	Employees feel fear of being replaced due to new ICTs developments and other coworkers who might be more skilled with newer technologies
Techno-uncertainty	Employees feel unsettled due to constant changes and frequent upgrades in ICTs at the workplace

Source: Compiled by the author

In addition to the early discussed five possible technostress creators, Salanova, Llorens & Cifre (2013) divided psychological experience of technostress, dependence on the information and communication technologies, into two types: techno addiction, where compulsive and too much ICTs usage make employees feel distressed, and technostrain, where employees experience fear, scepticism, anxiety, inefficacy, and fatigue due to ICTs usage. The study proposed that techno addiction is a "specific technostress experience due to an uncontrollable compulsion to ICT "everywhere and anytime" and to use it for a long time in an excessive way" (Salanova, Llorens & Cifre, 2013, p. 424) and also, highly related to workaholism where employees tend to work excessively hard and constantly use ICTs. In the author's opinion, techno addiction is similar to techno-invasion as both refer to employee experience of constant connectivity to ICTs, users cannot get away from work, and both invade their personal life.

The four constructs of technostrain experiences are anxiety (where user experiences higher level physiological activity and tension, causing fear, apprehension, or agitation while using ICTs), fatigue (where user experience lower physiological activity as a result of overloaded information), scepticism (refers an attitude that is mainly defined by cynicism which depicts job burnout), and inefficacy (a cognitive component, which is associated with the perceived degrees of ICTs efficacy) (Atanasoff & Venable, 2017). From the author's point of view, the second experience, technostrain has similarities with techno-complexity,

techno-overload, and techno-insecurity where employees experience information overload, fear of clicking the wrong button, uncomfortable with using ICTs, job burnout, and many other situations.

In the research, the author will approach the concept from the five widely mentioned technostress creators rather than technostrain and techno addiction, as the author considers technostress creators more detailed and specified in defining user experience. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here. Compile your text here.

1.2. Overview of empirical literature about coping solutions with technostress and factors mitigating negative technostress outcomes

Few previously done research papers, discussing factors influencing technostress dimensions, possible coping strategies with technostress, were selected to form conclusions regarding the research methods and outcomes reached in empirical studies. Mainly scientific databases, ScienceDirect, Taylor & Francis, EBSCO Discovery, and search engine Google Scholar were used to find the previously done studies. While searching the most common keywords used were "technostress", "coping technostress", and "technostress solutions". Criteria for choosing the specific research papers were the year published, compliance to the keywords, and the most important, the content relevance. When searching filtered by keyword "technostress" between the years 2010-2021 on ScienceDirect, the number of found researches was 236, on Taylor & Francis the number was 155, and on EBSCO Discovery, the result was 320. When searching by keyword narrowed to "coping technostress" for the same year range, the number of studies found on ScienceDirect was 90, Taylor & Francis was 89, and on EBSCO Discovery was 20. Findings matching the criteria were briefly evaluated and the ones with high content relevance were highlighted for further analysis. Starting from the year 2015, the number of research papers were significantly increased, which points out that recently, there has been a surge of interest in the subject. Studies mostly analysed the actuality of technostress, determined the factors affecting technostress levels, and a few studies recommended possible coping solutions and strategies. Many researchers studied the possible mitigating role of personal and organizational factors on technostress reduction. However, specific coping strategies haven't been studied in the same depth. Studies analysed various types of workplaces, such as educational institutions (universities), healthcare institutions, and other organizations. Surveys and questionnaires are the most common

methods (see Table 6) used in studies. For data gathering, most studies involved ICT user employees.

In this section, the author will analyse studies (see Table 6) consisting of high content relevance and highlight their main findings relevant to the topic. Factors considered as important for technostress measurement and coping with the issue will be selected for further analysis in the empirical part, and will be covered in the method of analysis.

The covid-19 situation will not be discussed in the research due to its complexity, being a recent topic, and possible misinterpretation between the studies written before and after the crisis. In the author's opinion, covid-19 should be analysed separately in terms of its relation with technostress.

Table 3

Overview of the empirical literature about coping solutions with technostress

Author(s)	Year	Main topics	Data and Method
Brivio et al.	2018	Organizational safety culture, positive technology, work well-being	An opinion piece article based on a meta-analysis.
Chandra, Shirish & Srivastava	2019	Curvilinear relationship between technostress and employee innovation	185 senior managers; large corporations; a survey.
Ma, Ollier-Malaterre & Lu	2021	Technostress impact on work-life balance, emotional exhaustion, self-efficacy	2 separate studies from China with a total of 962 valid responses, a questionnaire.
Sumiyana & Sriwidharmanely	2020	Influence of proactive personality on mitigating the technostress	37 master and doctoral students, a laboratory experiment.
Tarafdar, D'Arcy, Turel & Gupta	2015	Impact of organizational culture and managerial leadership in reducing technostress	An opinion piece article based on a meta-analysis.
Tarafdar, Maier, Laumer & Weitzel	2020	The psychological concept of distraction as a coping behavior.	444 Facebook app user, a three-wave survey.
Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan	2011	Creators, consequences, and inhibitors of technostress	233 IS users from governmental organizations in the US, a survey.
Zainun, Johari & Adnan	2020	The moderating role of internal communication on technostress and commitment to change the relationship	225 administrative employees from public HEIs in Malaysia, a survey.

Source: Compiled by the author

Employees' work-life imbalance challenges both employees and organisations, as it leads to employee turnover, talent loss (Cijan, Jenic, Lamovsek & Stemberger, 2019;

Tarafdar, D'Arcy, Turel & Gupta, 2015). As techno-stressors (technostress creators) have evolved into characteristics of numerous jobs in today's workplace, they are considered as job demands (Tarafdar, Cooper & Stich, 2019). For example, techno-complexity insists employees invest additional time and effort to learn the latest technology developments, tools, and applications whether at the workplace or home. Nevertheless, resources can mitigate job demands by both job resources (such as organisational resources contributing to personal growth and development) and personal resources (such as optimism) (Bakker & Demerouti, 2017).

As a personal resource, job self-efficacy is an individual's belief about their abilities to handle specific situations and tasks at work with success (Schaubroeck, Lam & Xie, 2000). Recently, Ma, Ollier-Malaterre & Lu (2021) found that job self-efficacy, by reducing emotional exhaustion, can buffer the negative technostress outcomes on employees' work-life balance, where employees with high job self-efficacy do not need extra time or effort to react to techno-stressors which prevents resource depletion, reduces emotional exhaustion, and can mitigate negative technostress impact on work-life balance. Unlikeness, employees with low job self-efficacy, will see techno-stressors as a threat to their ability to complete their tasks which will lead them to devote more effort and a lot of resources to deal with the situation, resulting in depletion of their resources, higher emotional exhaustion, and blurred work-life boundaries (Ma, Ollier-Malaterre & Lu, 2021). Respectively, Chandra, Shirish, & Srivastava (2019) also state that when the techno-overload level is lower, employees' self-efficacy will be enhanced to handle the technostress by exploring different options, but when the techno-overload level is higher, employees will experience reduced self-efficacy and innovativeness. The author of this research paper, also agrees that employees with higher job self-efficacy will be more encouraged to adopt more effective coping strategies such as problem-solving, handling the problem straight, getting help when needed, whereas employees with lower job self-efficacy will step back, avoid the problems temporarily (Jex, Bliese, Buzzell & Primeau, 2001). Hence, employees who have a work-life balance will have well-being which will lead to greater work engagement, more organisational commitment, and employee turnover prevention. Organisations should consider candidates who have higher job self-efficacy during the recruitment process, and in parallel, improve employees' self-efficacy through specific training, including stress management programs (Ma, Ollier-Malaterre & Lu, 2021).

To prevent blurred work and life boundaries and improve employee well-being, some companies have taken organisational actions, such as establishing restrictions on work-related communication outside the contracted working hours. Following the complaints regarding

work-life imbalance, in Germany, Volkswagen agreed to stop its servers sending emails thirty minutes after the end of working hours to some employees (BBC News, 2012). Furthermore, in 2012, Atos, headquartered in France, took the "Zero Email" initiative by replacing internal emails with a more efficient way, Enterprise Social Networks (ESN) which reduced email flow, from 100 weekly messages per employee in 2011 to less than 40 weekly messages per employee by 2013 (Oettl, Beck, Raufer, Priglmeir, Böhm & Krcmar, 2018). Starting from the beginning of the year 2017, to prevent employee burnout and protect workers' personal life, a new French law established "rights to disconnect" for workers, demanding all the companies, which consist of more than fifty staff members, to establish email restrictions by determining hours when employees should not send or receive emails (Morris, 2017). In the author's opinion, if employees acknowledge the importance of work-life balance, there won't be a necessity for specific restrictions, thus managers should become a better example to their subordinates, and organisations should develop guidelines explaining how to use ICTs, emphasising the importance of work-life balance for an individual.

   Individuals' ability to cope with stress changes according to their traits and the situations in their environment. Sumiyana and Sriwidharmanely (2020) research findings show the positive impact of employees' proactive personality on mitigating negative technostress outcomes on job performance and satisfaction, where individuals experiencing low technostress levels with proactive-transform personality have the highest performance indicators compared to individuals with proactive-confront personalities. The study split the individuals with proactive personality into two types, proactive-confront personality (an individual who challenges negative technostress outcomes from ICTs) and proactive-transform personality (an individual who transforms technostress threats from ICTs into possible opportunities) (Hung, Chen & Lin, 2015), and for their investigation, they use an experimental setting which makes their research even more accurate and stronger compared to the studies with a survey method, by measuring actual technostress. Furthermore, higher technostress causes higher individual creativity, which especially brings more opportunities for the proactive-transform personality users, as they know how to take advantage of workload, overcome information overload to increase productivity, and still manage their performance (Sumiyana & Sriwidharmanely, 2020). Proactive personalities influence the environment rather than being influenced, they take initiative and change the problems into benefits, which allows them to mitigate the unfavourable impacts of technostress on their performance and satisfaction (Zhao, Zhou, Liu, Liu, & Kang, 2016). According to the author of this research paper, proactive personality and job self-efficacy have similar contexts.

Hence, the author considers the coping recommendation by Ma, Ollier-Malaterre & Lu (2021), which is about having job self-efficacy as a criterion during the recruitment process, also acceptable for proactive-personality. Sumiyana and Sriwidharmanely (2020) propose that Information Systems (IS) managers should work together with designers and developers to develop IS accordingly to the users' (employees) personalities and characteristics, facilitate innovativeness, make the applications more flexible to overcome employees' complexity problems and establish policies for proactive personalities to promote their creativity.

   As Zainun, Johari, and Adnan (2020) stated, effective internal communication (intra-organizational or employee communication) is a foundation of building good relationships and a favourable culture in the workplace, and it can boost successful business operations, develop an understanding of possible transformation with a piece of adequate information, and persuade employees to commit to the planned change, which will lead to reduced technostress. The author of this research paper believes that, when employees are well informed about the transformations, the benefits, and opportunities it will bring them, then employees will have more commitment to change, be more supportive in organisational transformations, get more competitive and motivational to acquire new skills and be more encouraged in adopting new technologies. The study found a positive relationship between techno-uncertainty and commitment to change which is justified as uncertainties lead employees to feel unclear and insecure regarding technological changes which makes them more committed to new transformation to escape from the current situation, and another justification is that when employees have higher ambiguity about technology, they are more inclined to seek out high-quality internal communication because this type of information channel creates clarity, which ultimately strengthens their commitment to change (Zainun, Johari & Adnan, 2020). This analysis has been collected from the public sector, higher education institutions where the work is more standardised and technological changes occur systematically, however in the private sector, organisations constantly adopt new advanced technologies, technological changes evolve at a rapid pace. Yet still, in the author's opinion, effective internal communication is even more crucial for private organisations that seek innovativeness and continuously adopt new technologies, as employees can share their problems and concerns, and get detailed information to overcome their uncertainties.

   According to the author, individuals operating in marketing, customer support, and related departments of the organisations, are more connected to ICT, especially social networking sites (SNS), which posits the idea that high probability they will have technostress. Tarafdar, Maier, Laumer & Weitzel (2020) reported that another coping

behaviour for individuals experiencing technostress from SNS is the "distraction" which happens in two ways; one way is when individuals divert their attention by using the same stress-causing SNS but differently as IT has a variety of functionalities, and the other way is when individuals divert their attention by taking actions outside of SNS, such as sport, activities not requiring excessive usage of technology, meeting friends. Thus, distraction can be explained as a behaviour of changing individuals' attention from stress-causing situations to the desired focus, which can also be thought of as a kind of escape according to the author. Taking from the author's own experience, distraction within the same technology or application is related to the constant connectivity, where the individual cannot get away from it, and the likelihood of causing addiction to the same ICTs that creates stress. The stronger habit of using SNS, the higher possibility of using the same SNS as a "distraction", which will induce a stronger relationship between stress caused from SNS and addiction to the same SNS, and respectively the weaker habit of using the SNS, the higher probability of doing non-SNS activities and become less addicted to SNS (Tarafdar, Maier, Laumer & Weitzel, 2020). Individuals must have an understanding of the red line or difference between the distraction from technostress by using the same ICT and addiction to the same ICT, and the role of organisations is crucial in this process. Organisations can arrange seminars on the topic, educate them about possible negative consequences of excessive and inadequate use of ICTs and/or SNS (Tarafdar, Maier, Laumer & Weitzel, 2020), and instruct them on how to prevent technostress and how to deal with it.

Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan (2011) propose technostress inhibitors referred to as coping strategies to reduce technostress rates, and these inhibiting mechanisms are classified into four groups: literacy facilitation, technical support provision, technology involvement facilitation, and innovation support. The inhibitors have been emphasised by many scholars as acceptable solutions to different cases. Literacy facilitation, also called literacy support, refers to the education of employees through training, programs, or specific guidelines, knowledge sharing which will mainly reduce techno-complexity by enlightening working mechanisms and functions on ICTs, boosting the learning process and dropping the number of ICTs related employee mistakes. The second inhibitor, technical support provision is described as a very accessible and responsive technical support insisting experienced professionals who assist the employees, provide guidelines for IT usage, and solves their technological problems (Tarafdar, Tu, Ragu-Nathan & Ragu Nathan, 2011). By this support mechanism, organisations can prevent techno-complexity and techno-uncertainty. For overcoming techno-complexity and techno-invasion, Chandra, Shirish, and Srivastava (2019)

also propose that organisations should periodically counsel the employees, support them with designed training to improve their technical skills and provide them with the most appropriate tools set for the development. On the other hand, technology involvement facilitation refers to a coping strategy where the organisation involves employees in the adaptation and implementation processes of new information systems (IS), informs the employees about reasons for technological change and the possible impact of the change on their working system, and motivates them to test new ICTs (Tarafdar, Tu, Ragu-Nathan & Ragu Nathan, 2011). Being familiar with new technologies before the implementation will help the users get adapted better, even get excited, and reduce their techno-complexity rate. The difference between the technical support provision (TSP) and technology involvement facilitation (TIF) is that TSP assists employees regarding technical problems, however, TIF involves employees in the processes of technological transformation. The last inhibitor, innovation support will help to reduce techno-complexity, techno-uncertainty, and techno-insecurity by encouraging employees to practice, learn, take risks, have team discussions, where open communication is built and failure is a chance for doing better. According to the author of the paper, the working environment which encourages employees to be a team, to support each other, and share knowledge for helping their co-workers to handle the technological struggle will contribute to literacy facilitation and innovation support. Otherwise, employees may form fear of losing competency by knowledge sharing or get used to working just alone, and the situation will increase the tenses and worsen the internal relationship in the organisation.

From a demographic-specific approach, Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan's (2011) findings show that professionals who have greater formal education, have more experience, and confidence in using IT will have lower technostress rates. These professionals can support, instruct and guide other professionals to handle technostress with their experience and knowledge. The situation may also strengthen the supportive relationships in the organisation, and reduce the negative impact of techno-stressors.

Organisational culture means shared way of thinking, rules, guidelines in the organisation, and the safety culture within the organisation is described as "the shared and learned meanings, experiences and interpretations of work and safety—expressed partially symbolically—which guide peoples' actions towards risks, accidents and prevention" (Koch & Richter, 2004, p 705). A properly established organisational safety culture is one of the components in higher employee performance and profits (Buttler, 2016). Organisational safety culture is not about strict rules and guidelines forcing employees to follow, it is about creating an environment where efficient communication, the relationship is established and

the importance of employee well-being, performance, and productivity are taken into consideration for safety and efficiency reasons. Brivio et. al. (2018) consider technostress as a symptom of lacking safety culture and suggest that to reduce technostress, organisations should first start recognizing technostress as a factor impacting employee performance, and then focus on technology, communication, and work sides of the problem by applying the Positive Technology.

Positive Technology is defined as "the scientific and applied approach to the use of technology for improving the quality of our personal experience" (Riva, Banos, Botella, Wiederhold & Gaggioli, 2012, p 70). The approach is explained in three different levels, also called domains; hedonic, eudaimonic, social/interpersonal. Domains are described as the different types of personal experiences.

The hedonic experience explains the situation where technologies are effectively designed and fit the employees' function in the organisation. Hedonic experience will lead to a positive personal experience by overcoming techno-anxiety as ICTs are well designed considering their work and abilities, and also reduce techno-overload by receiving tasks and information that are compatible with their role (Brivio et. al., 2018).

In the author's opinion, regardless of the complexity of technology, employees can be taught how to use it with well-designed training. However, it is highly important to give a reasonable period for learning and development. Organisations should help employees to transform their negative ICTs perceptions and/or expectations into positive emotions. Respectively, the balance between employees' skills and the technology required for the task accomplishment is the main factor in the eudaimonic experience (Brivio et. al, 2018). When the employees perceive technology useful for the work rather than a threat or complex and feel comfortable with using ICTs, then the technostress rate will be reduced by preventing techno-complexity, techno-insecurity, and techno-uncertainty. Chandra, Shirish, and Srivastava (2019) also propose that organisations should train individuals for improving their control over technostress by changing their behaviours and perception of techno-overload from threat to possible opportunity.

Good employee communication within the organisation is essential in building good relationships, establishing favourable organisational culture, and making successful business operations (Zainun, Johari & Adnan, 2020). Additionally, Brivio et. al. (2018) also emphasises that if the safety culture is built via efficient communication, then all organisation members will contribute to the information and safety culture creation which will positively influence their well-being and productivity. On the other hand, Maria, Susana, and Eva

(2013) assert that when an employee shares information, it leaves the other employee with an obligation to compensate, meaning that if one employee helps another employee with technostress, the employee receiving support may feel inefficacious due to reciprocation obligation. According to the author of this research paper, the situation Maria, Susana, and Eva (2013) describe is a result of inefficient communication and improperly established culture. Accordingly, in the social/interpersonal experience of positive technology, individuals come together in the same digital platform with a specific reason to achieve a shared understanding, and in this process, establishing the safety culture by following the same regulations about what, when, and how to communicate with others within the organisation is highly important (Brivio et. al. 2018). Boundaries in time for sending messages will reduce techno-invasion and knowing what is the proper type of communication will reduce techno-overload. Shortly, good communication management is crucial for success.

Considering safety culture which also consists of Positive Technology, will have a positive impact on employee safety, health, performance, and productivity, and also improve the business operations of the organisations. Brivio et. al (2018) recommend that to prevent technostress organisations should adopt the Positive Technology approach both for technology designs and work processes.

If parents are examples for their children, then individuals in higher managerial positions are examples for the employees in the organisation. Compared to many scholars, Tarafdar, D'Arcy, Turel, and Gupta (2015) categorised the coping strategies under managerial positions (senior leaders, IT leaders, and HR leaders) by explaining what each leadership type can do to resist the negative effects of IT. Senior leaders can create a safety culture by being an example with their behaviours, such as not responding to emails after the contradicting hours, following the regulations set for ICTs usage (Tarafdar, D'Arcy, Turel & Gupta, 2015). From the author's own experience, observing the supervisor not responding to the messages during the weekends, created a thought of "weekend is weekend, no work" among the members which is not written on any paper. Chandra, Shirish, and Srivastava (2019) state that mentoring strategy, where seniors and juniors learn from each other, will also help employees to cope with techno-complexity. Employees should be acknowledged of the negative consequences of ICT misuse, technostress, and be encouraged to learn by practising. Senior leaders should consider resource sharing for organising specific events regarding "email-free" hours, technostress awareness, and develop strategic plans for preventing technostress (Tarafdar, D'Arcy, Turel & Gupta, 2015). Not all companies should

have the Zero Email approach as Atos, they just have to ensure that employees have a good understanding of ICTs use and work priorities.

IT leaders have more understanding and control over technologies or ICTs in the organisation. Organisations and IT leaders should avoid one-time training. Systems change continuously which brings out new challenges to the employees. From this perspective, IT leaders should conduct both formal and informal events, discuss employee challenges with IT, their positive and negative ICT experiences, build specific features into ICT applications, implement policies and provide technical support regularly on how to use the applications and self-regulate their IT use (Tarafdar, D'Arcy, Turel & Gupta, 2015). For designing a training program and policies, IT leaders and HR leaders should come along, where HR leaders identify and measure the technostress levels and stressors, and IT leaders cover the topics related to the techno-stressors and coping solutions. Employee engagement in designing policies and programs may also bring benefits. For having an appropriate solution, the problem must be determined right in the first place.

The study suggests that HR leaders should help employees in maintaining work-life balance, establish a healthy understanding of IT use, increase job satisfaction and well-being by implementing appropriate mood-management strategies (Tarafdar, D'Arcy, Turel & Gupta, 2015). In the author's opinion, technostress prevention must be a duty of HR Leaders, measurements should be taken regularly and the efficiency of applied coping strategies should be analysed for the future.

Hence, the literature review makes it crystal clear that technostress can lead to negative consequences for both employees and organisations. As many factors lead to the technostress experiences, many factors also have a mitigating or prevention role. Studies suggest coping strategies in terms of both personal and organisational resources, and most of the researchers emphasize learning and training as an essential element. Overall, the author can generalise that technostress rates depend on the individual's personality and organisational working culture or system, and there are many ways of coping with technostress. The author will not choose a side if individuals or organisations are guilty but definitely agrees that technostress should be a concern of both employees and workplaces, and they should come along to handle the issue.

2. Empirical analysis of technostress experience among ICT user white-collar workers and coping solutions according to the findings

2.1. Methodology for the empirical part

The author of the research paper developed a methodology for further analysis of technostress experiences among ICT user white-collar workers and factors moderating their experience based on the findings from the literature review. This chapter will cover a quantitative research method, an online survey, and its design and conducting processes.

Survey and questionnaire were the most preferred analysis method among the previously done studies, thus the author also decided to continue with an online survey. In this research, an online survey was conducted among white-collar workers who perform in managerial, desk, operational, administrative, and/or professional job positions and use ICT in their work. Aside from being a white-collar worker and using ICT at work, there were no other required qualifications, such as industry or region to be the survey participant. The survey was conducted (see Appendix A) only in English and should take approximately 7-10 minutes of a respondent's time.

Survey questions and topics covered were put together based on the findings from the literature overview. In total 13 question groups were created for the survey. The survey started with introductory questions, which were considered as group 0 questions, covering mainly demographics as Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan (2011) emphasized its effect on individuals' technostress experience. Introductory questions included gender, age, work experience in the same or related field (in years), employee tenure (in years), and the percentage of a workday they use ICT (during working hours). Questions such as name, surname, company, and similar ones were excluded to protect the anonymity of respondents.

Following the introductory part, almost the rest of the survey questions were measured using a 5-point Likert scale: "Strongly Disagree" accounting for 1 and "Strongly Agree" accounting for 5. For one group of questions, only two values "Disagree" and "Agree" were used and ended the survey with two optional open questions. Most of the questions were statements (items) describing technostress situations, respondents' personalities, and other factors. A few examples of statement-type questions are "I have to spend a lot of time during the work reading an overwhelming amount of messages", "I think being reachable anytime and anywhere will increase my status among others". The idea of the Likert scale survey, statement-type of questions (items), including most of the items in the question groups 1-5 evaluating technostress creators (dimensions) among the respondents were taken from Ragu-Nathan, Tarafdar & Tu's (2008) "Technostress Questionnaire".

However, the author also made a few adjustments by combining some questions, changing the words, and adding extra items to the question groups 1-5 for better and accurate analysis. As an example, in the Table 9 adjustments for one group of questions – "uncertainty" group – are presented.

Table 4

Item differences for uncertainty group between this research survey and the original survey

Items used in this research	Ragu-Nathan, Tarafdar & Tu (2008)
There are always new developments in the technologies we use in our organisation.	There are always new developments in the technologies we use in our organisation.
There are constant changes/updates in computer software, hardware, and/or networks in our organisation. Constant changes make me less motivated to learn.	There are constant changes in computer software in our organisation. There are constant changes in computer hardware in our organisation. There are frequent upgrades in computer networks in our organisation.

Source: Compiled by the author

   For the third part of the survey, the author included a few topics from the literature review. Hence, question groups from 6 to 11 covered proactive personality (Sumiyana & Sriwidharmanely, 2020), self-efficacy (Ma, Ollier-Malaterre & Lu, 2021), internal communication (Zainun, Johari & Adnan, 2020), distraction behaviour (Tarafdar, Maier, Laumer & Weitzel, 2020) commitment to change (Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan, 2011; Zainun, Johari & Adnan, 2020), and other factors. Question groups 6-11 give a detailed insight into the possible impact factors on the technostress experience and help in proposing more accurate coping solutions. Items for these question groups were mainly compiled by the author based on the literature overview.

At the end of the survey, respondents were asked to rate their technostress level on a scale of 3 (low, medium, high) and welcomed to write down a few short sentences on what kind of personal actions they take, and also what are their expectations from the company or organisation to prevent and/or reduce technostress.

   The online survey was activated on December 6, 2021, with an expiration date of December 11, 2021. Survey participants were reached via the network chain through ICTs. Considering it was a random sample, it was expected to have at least 100 fully completed responses. Respondents could save and continue filling out the survey later. The survey was created on the LimeSurvey platform. Based on the LimeSurvey statistics, the number of resumed responses was much higher than the completed responses. For further analysis, incomplete responses were eliminated. A total of 258 people entered the survey, but only 115

respondents fully completed the survey. Final results evaluated and main findings have been highlighted in the further analysis. The survey provided a good understanding of technostress experience, techno-creators, respondents' behaviours, and other key factors to recommend coping solutions in reducing and preventing technostress.

For results comparisons and creating relevant graphs, SPSS statistics software was used. As the methods of statistical analysis, non-parametric tests and comparison of means were run to test the possible effects of four individual characteristics (gender, age, work experience, and employee tenure) on technostress dimensions. Additionally, to examine the relationship of technostress with certain factors, bivariate correlations have been done using Pearson correlation coefficients and two-tailed test significance.

Table 5

Sample Characteristics

Variable		Number of respondents	Percentage of the sample (%)
Gender			
	Male	65	56.5%
	Female	50	43.5%
Age			
	<26	60	52.2%
	26-35	26	22.6%
	36-45	22	19.1%
	46-55	2	1.7%
	56-65	5	4.4%
Work experience in the same or related field			
	1-5 years	79	68.7%
	6-10 years	15	13.0%
	11-19 years	21	18.3%
Employee tenure			
	< 1 year	36	31.3%
	1-3 years	39	33.9%
	4-6 years	21	18.3%
	7-10 years	8	7.0%
	10 years +	11	9.6%
ICT usage (during working hours)			
	< 25%	8	7.0%
	25% - 50%	31	27.0%
	50% - 75%	35	30.4%
	75% - 100%	41	35.7%

Notes: Options with no respondent answers haven't been included in the table.

Source: Compiled by the author, based on LimeSurvey results

The split for the gender ratios has been almost balanced (43% females). None of the respondents chose the "Rather not say" option by identifying their gender which is a good

sign for the analysis. Just over half of the sample is aged younger than 26 years old. Due to the fewer number of respondents and more accurate comparative analysis age was recoded, where age range 46-55 (2 respondents) and age range 56-65 (5 respondents) values merged as one: age range 46-65 (7 respondents in total). The majority of the respondents have 1-5 years of work experience indicating they hold entry and middle levels in the industry. Providentially, almost 70% of the respondents emphasised they use ICT at least half of their working hours. This result is highly satisfactory, as ICT usage is one of two main qualifications for conducting research. For more detailed insights about demographics (sample characteristics) see Table 5.

2.2. Survey results

This chapter demonstrates findings from LimeSurvey and SPSS: descriptive statistics, construct reliability, results of technostress creators, etc. Statistical results will give insight into technostress dimensions, effects of demographics, an association of proactive personality, self-efficacy, internal communication, commitment to change, distraction behaviour, and other factors with technostress.

In the last question group of the survey, respondents were asked to rate their technostress level: low, medium, and high. Approximately, 82% of the respondents rated their technostress level as medium or high which shows the topicality of the problem (see Figure 1). Having respondents with low-level technostress is also a positive sign, as it will allow the author to compare the different level groups.
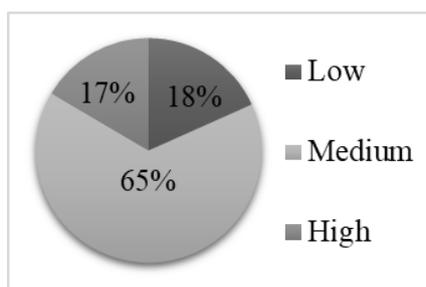

Figure 1. Technostress rate of respondents (%)
Source: author's calculations

Table 6 demonstrates descriptive statistics and Cronbach's alpha of the variables, technostress dimensions. Based on the author's own experience and observations, techno-overload and techno-invasion were already assumed to be more critical among the respondents. With the exception of techno-uncertainty, Cronbach's alpha values for the other four technostress dimensions range from 0.83 to 0.75 which meets the recommended minimum value of 0.7 and indicates good reliability. Standard deviation results also

demonstrate good reliability as values are lower than 1 with a maximum of 0.8. Low Cronbach's alpha value for techno-uncertainty might be due to adjustments to the original items (see Table 4).

The author tested the possible effects of four individual characteristics (gender, age, work experience, and employee tenure) on technostress (techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity) by running non-parametric tests and comparing means tests (see Appendix B). Comparison of means test results shows there is only a slight difference in individual characteristics between technostress groups (techno-creators). Without exception, the p-value for all is greater than 0.05 (5%) which means there is no statistically significant relationship between demographics (age, gender, work experience, and employee tenure) and technostress dimensions. See Appendix C for full table with the measurement items of technostress dimensions.

Table 6

Technostress dimensions (techno-creators) among the survey respondents

	Reliability	Mean	Standard deviation
Techno-overload	0.83	3.48	0.78
Techno-invasion	0.79	3.21	0.79
Techno-complexity	0.83	2.73	0.80
Techno-uncertainty	0.54	3.34	0.78
Techno-insecurity	0.75	2.77	0.72

Source: Compiled by the author based on SPSS results

In addition to techno-creators, other items were also computed for the analysis: proactive personality, lack of self-efficacy, and internal communication. Due to certain inconsistencies between a few variables and context differences, respondents' distraction behaviours (two items), commitment to change (two items), and the other three items were correlated separately. As it can be seen from Table 10, there are many statistically significant relations between technostress dimensions and other factors. Table 10 demonstrates correlation analyses that have at least one statistically significant association result. All significant correlations are considered weak or medium and entirely positive which indicates relationship between variables move in the same direction. Lower self-efficacy and accepting organizational changes for not losing their job have a significant correlation with all five technostress dimensions. Not having any significant negative correlation is unexpected for the author. Accessible IT help desk and proactive personality have a positive association with technostress dimensions which is surprisingly unexpected. Because, these factors were assumed to have a positive moderating role against negative technostress consequences.

Table 7

Correlation analysis of technostress dimensions and possible moderating factors

	Overload	Invasion	Complexity	Uncertainty	Insecurity
Proactive personality	.264**	.176	.117	.220*	.136
Self-inefficacy	.438**	.460**	.466**	.244**	.509**
Internal communication	.155	.168	.214*	.240*	.037
Accepting organizational changes for feeling forced	.433**	.417**	.512**	.287**	.463**
Intending to actively support organizational changes	.195*	.109	.089	.121	-.068
Distraction within the same ICT	.236*	.228*	.248**	.085	.170
Distraction outside the ICT	.130	.064	.198*	.204*	.011
Being reachable anytime will increase my status	.317**	.289**	.120	.276**	.154
Very accessible and responsive IT help desk	.124	.062	.180	.230*	.104
Ignoring stress for feel forced to continue.	.251**	.104	.277**	.154	.304**

*Notes.** correlation is significant at the 0.01 level (2-tailed)*
        ** correlation is significant at the 0.05 level (2-tailed)*

Source: Compiled by the author based on SPSS results

Even though the online survey counts for a quantitative method, open questions provide qualitative data. For the first open question - personally taken actions against technostress - only 54.78% of respondents provided an answer. The number of responses for the second open question - expectations from the organization in coping with technostress - is nearly 48%. Considering there are 115 respondents in total, the result is satisfactory enough. Most common and relevant responses are briefly presented in Table 8.

Table 8

Main points from the respondents' answers to the open questions

Personally taken actions	**Expectations from the organization/company**
Going out, walking, sleeping, meditation, reading, asking for help, technology detox, short breaks, workouts, developing technological skills, turning off Wi-Fi, deleting apps, restricting notifications.	Prevent additional unnecessary burden on employees, help to stabilize work-life balance, gym and/or sports perks, training, more user-friendly technologies, fewer video calls, recreation room, psychological support, clear expectations and guidelines for the given tasks, employee-friendly environment, fair work distribution, gamification, work management apps, get rid of instant messages, restricting email responses after working hours

Source: Compiled by the author based on LimeSurvey Responses

2.3. Discussion

Compared to Ragu-Nathan, Tarafdar, & Tu (2008) the statistical results of this research demonstrate an insignificant association between demographics (gender, age, work, experience, and employee tenure) and technostress dimensions. Ragu-Nathan, Tarafdar, & Tu (2008) found females experience less technostress than males, as well as older people, and considered it might be sample-specific as females and older employees might have had higher employee tenure with the organisation. In this research, employee tenure was also insignificant to the respondents' technostress dimensions. Expecting a positive relationship of greater employee tenure on reducing technostress, the author assumed a possible significant relationship between work experience and technostress, however, the results showed otherwise – no significant relationship. As Ragu-Nathan, Tarafdar, & Tu (2008) indicated in their research, these findings might be sample-specific.

As expected, self-inefficacy has a highly significant relationship with all five technostress dimensions. The weakest association of self-inefficacy is with techno-uncertainty and with techno-insecurity has a medium association. The lower self-efficacy (or higher self-inefficacy) the higher the technostress level. Individuals with weaker self-efficacy feel unconfident about their abilities, have blurred work-life balance, experience resource depletion, and have higher emotional exhaustion. Respectively, respondents with techno-insecurity, techno-complexity, and techno-invasion feel threatened by ICTs, have the necessity to devote more resources for task accomplishment, and have personal time invaded by work-related tasks. However, higher self-efficacy will reduce emotional exhaustion, prevent resource depletion, and help stabilise work-life balance. Hence, Ma, Ollier-Malaterre & Lu (2021) research findings correspond with the results of this research. Thus, to handle technostress and its consequences, self-efficacy of employees should be improved. Furthermore, organizations might set certain level of self-efficacy as a criterion during the recruitment process; including this factor in the candidate's personality test assessment. Additionally, organizations should constantly improve current and new employees' job self-efficacy via literacy facilitation, customized training and/or with other type of learning and development methods.

The author assumed individuals with proactive personality and strong self-efficacy will have a relatively similar relationship on technostress levels. However, research results show as both strong proactively personality and weak self-efficacy have a positive impact on technostress dimensions. Even though the correlation is weak, the research results show differently, as proactive personality positively related to techno-overload and techno

uncertainty. Sumiyana & Sriwidharmanely (2020) and Chandra, Shirish, & Srivastava (2019) findings state that at a certain level of techno-overload and techno-uncertainty, technostress has a positive relationship with employee innovation as their creativity escalates, they don't approach techno-stressors as a threat but an opportunity, and find a way to cope with the environment, especially employees with proactive personality. Meantime, Sumiyana & Sriwidharmanely (2020) and Chandra, Shirish, & Srivastava (2019) also state that when the technostress increases, employees will become more vulnerable and experience failure. Hence, organisations should continuously encourage, educate employees to transform triggering situations into benefits in chaotic times. Proactive employees will perform better at mitigating negative technostress consequences, thus, organisations should train this personality on employees via literacy facilitation that Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan (2011) proposed. Additionally, similar to self-efficacy, organizations may include certain level of proactive personality as an expected qualification from the candidates during the recruitment proceses.

The second factor positively relating to all five technostress dimensions is the commitment to change for feeling forced ("I accept the organisational transformations due to feeling forced to keep my position"). With zero doubt, the author was expecting this result. Because, when employees don't feel comfortable questioning the organisational transformations and perceive it as a threat to their job security, they will be inclined to experience techno-insecurity, including other technostress dimensions. For example, employees with techno-complexity struggle to handle many other complexities, thus, they will avoid another complex situation by just accepting new transformations and keeping their role safe. Thus, the author recommends that the organisations should establish a safety culture where employee opinions and concerns are taken into consideration (Brivio et. al., 2018). Internal communications should also be improved, employees should get updated about the upcoming transformations, informed about its benefits and impacts to the working system. The author believes that if the organizations explain benefits and outcomes of the organizational transformation, employees will be more committed to changes. In that case, when employees commit to the organisational transformation it will be because of their own interests, not for feeling forced, which will reduce technostress.

Compared to commitment to change for feeling forced, commitment to change with the individual's own intention also has a positive association with the technostress dimension and only with techno-overload. The author's justification for this association is that employees who have a higher workload are going to have more willingness to look for

ways to reduce their overload, increase efficiency and save time. That's why individuals with techno-overload will have the intention to support digital transformation because they will expect the new transformation to smooth their work, increase their performance, and bring other advantages.

The research results also show a positive association of efficient internal communication with techno-uncertainty and techno-complexity. Correspondingly, Zainun, Johari, & Adnan (2020) research discovered the same positive relationship with techno-uncertainty and proposed two justifications which the author also supports. The first justification refers to a circumstance where employees feeling uncertain due to technological changes strive to get away from the current situation which makes them committed to new transformations. And the second justification is that techno-uncertainty leaves many doubts and questions, therefore, to get clarifications employees tend to take an active part in internal communication. Similarly, for techno-complexity, the author believes that the more employees face technological struggle, the more they seek advice, hence, employees start approaching their colleagues for help which ultimately enhances communication among co-workers within the organization. In these circumstances, the author believes that only communication among co-workers will be enhanced such as idea sharing, helping each other, or being able to ask help needed etc.

Another finding the research brings out is that individuals ignoring stress for feeling forced to continue are more inclined to experience techno-overload, techno-complexity, and techno-insecurity. Individuals with techno-overload are pressured by being asked to handle more work under tight schedules, and individuals with techno-complexity seek extra time to upgrade their skills for accomplishing their tasks. Not to mention, employees experiencing techno-insecurity are mostly worried about their position in the organisation, they prioritise their job security rather than handling stress. For these reasons, they feel forced to avoid stress, so they can perform their job responsibilities primarily and not lose their position. In reality, avoiding stress will just harden their task completion. The author agrees with Galluch (2015) that individuals' admission of experiencing stress instead of acting as if nothing is wrong is a vital step against technostress. The author thinks that for reducing technostress, creating awareness is the first step. Thus, organizations should create awareness of technostress, inform them about its consequences, and also provide them with coping solutions to handle technostress. Employees should be informed about the consequences of not taking actions against technostress on time, so, instead of ignoring stress, they can act on time, and prevent technostress.

Tarafdar, Maier, Laumer, & Weitzel (2020) found the distraction within social network sites (SNS) has a positive association with addiction to the same SNS, and the author considers the same association for ICT. This distraction habit transforms into addiction causing constant connectedness which leads to techno-invasion. Correspondingly, the workload, stress, or struggle might be caused by different channels of ICT which means diverting attention by using the same ICT but in a different way may not guarantee an effective way to cope with techno-overload or techno-complexity. Going forward and back within stress-causing ICT won't be a solution unless the employee is well acknowledged about the effective use of ICT. The author believes that distractions within the same ICT will be a coping solution when employees know how to differentiate various ICT functions and use them in a healthy manner. Otherwise, as the research findings show there will be a positive relationship between distraction behaviour within the same ICT and technostress dimensions: techno-overload, techno-invasion, and techno-complexity. Thus, it is crucial that employees are taught about the red lines between distraction within same ICT and addiction to the ICT. As coping solutions, organizations should design trainings where these aspects of ICTs are explained, and effective use of ICT is well acknowledged.

Moreover, distraction by having different activities also has a positive association with techno-complexity and techno-uncertainty. The positive relationship of techno-complexity with both two types of distraction behaviour is a little confusing. Employees experiencing techno-complexity mainly need assistance in understanding technologies, strive for learning and guidance. In that case, employees might feel more anxious for each minute not spent on learning, which will lead to even higher techno-complexity. However, the author cannot justify the positive association with techno-uncertainty. It was expected to have a negative association, where distraction diverts the employee's attention from constant changes happening in the organisation, which would reduce techno-uncertainty.

Interestingly, accessible and responsive IT help desk has a positive relationship with techno-uncertainty in this research. The author was expecting a negative significant relationship with techno-complexity, where the IT help desk plays a moderating role by handling technical issues, guiding and training employees. On the other hand, considering the IT department is the one updating the systems, implementing new developments in the workplace technologies, employees with techno-uncertainty might perceive the IT department as very fast operating and responsive and confuse it with the IT help desk. However, the author still doesn't see a moderating role of a high-quality IT help desk in

boosting techno-uncertainty. This result contradicts with Tarafdar, Tu, Ragu-Nathan & Ragu Nathan (2011) proposals.

Beyond the factors discussed in the literature overview, based on own observations and experience, the author was curious to examine the possible relationship of an ideology "being reachable anytime and anywhere increases employee's status" with technostress, especially techno-overload and techno-invasion dimensions. Unsurprisingly, there is a positive association. Because, employees with this ideology, don't put a border between their work and personal time, allow business conversations after working hours, and involve in higher workload or information flow, which directly lead to techno-invasion and techno-overload. As Tarafdar, D'Arcy, Turel, and Gupta (2015) emphasised, senior and HR managers should set the lines, be an example with their behaviours, and establish an environment with healthy thoughts. Furthermore, organization may promote definitions for specific terms, such as what does competence mean in their organization. With this, the author believes that this ideology will lose its popularity among the employees, and eventually reduce technostress. However, the relationship with techno-uncertainty in theoretical words is inexplicable for the author.

When it comes to the survey participants' open questions answers, the author divides personally taken actions into two groups: actions taken inside the organisation and actions taken outside the organisation. Some activities might be accomplished both in and out of the organisation, such as meditation, reading, etc. Organisations should provide a recreation room for employees, where they can have nice coffee breaks, chats with co-workers enhancing internal communication, mini reading corner, and rest. Furthermore, the organisations might purchase certain workout machines or a few budget-friendly equipment for the office, as well as cooperate with gyms so employees may practice physical exercises to reduce stress. Even though the author considers having a proper sleeping schedule as the worker's responsibility, allowing workers to take naps during work might also reduce stress, exhaustion, and fatigue. As an action for outside the organisation, alongside walking and other entertainment, employees may have technology detox (staying away from technology for a period of time) days on their non-business days. Considering most of the workplaces and technostress experiencing workers operate via ICTs, implementation of this solution would be hard to achieve at the organisation, or on business days.

Respondents' expectations from their organisations to cope with technostress are mainly in three routes. The first route addresses learning and development on upgrading technological skills, well-being, how to stabilise work-life balance and reduce technostress.

From the beginning of the research, the author assists the importance of education and learning in coping with technostress. The organisation should create awareness of technostress, design relevant training programs, and make sure it doesn't cause any extra stress on employees. The first route has similar content with the literacy facilitation from technostress inhibitors proposed by Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan (2011). The second route is about a working system where employees expect to have fair workload distribution, not impose unnecessary burdens on workers, and provide guidelines for given tasks. In the author's opinion, to reduce technostress, especially techno-overload, organisations should adopt user-friendly work management apps, customise ICT in accordance with employee demands, and give detailed instructions for the tasks. Lastly, the third route concerns internal communication, which requires organisations to have a more reasonable number of video calls and meetings, get rid of instant messages, not disturb employees after the contradicting hours by respecting their privacy; in short, setting clear communication guidelines. For a matter of clarification, by saying internal communication the author refers to any work-related communication both verbal and written, including the conversation among the co-workers. Each organisation should have a safety culture with clearly set communication guidelines describing what, when, and how to communicate within the organisation. To prevent techno-invasion, as many respondents also mentioned, organisations should restrict sending emails after non-business hours. This might be done via automation of the communication technologies and/or apps or via a shared rule that every employee follows. Furthermore, organisations should reduce the amount of repetitive, disruptive, and instant messages to prevent techno-overload.

To conclude, the author believes that each organization should establish a safety culture, including efficient communication. Efficient internal communication also leads employees to have higher commitment to change which will reduce technostress, as well as increase productivity, efficiency, performance, and satisfaction. Additionally, the author insists that organizations should pay extra attention to the employees' personalities, such as proactive personality and job self-efficacy. Continuous learning and training is as important as previously mentioned factors. Organizations should design training programs covering topics from awareness creation of technostress to coping solutions. To generalise, the author considers technostress inhibitors proposed by Tarafdar, Tu, Ragu-Nathan & Ragu-Nathan (2021) acceptable for reducing technostress, however before applying any implementation HR department should analyse the situation, determine the problems and then act

accordingly. The author also supports Tarafdar, D'Arcy, Turel, and Gupta (2015) in terms of responsibilities Senior, HR, and IT leaders should take.

Conclusion

There is a known technological development since the period the term technostress proposed, the 1980s. Today, the technostress issue is even more pressing because ICTs are advancing at a rapid pace and are being used more widely around the world. Different researchers interpreted the issue from slightly different approaches; technological advancements, the psychological response, environment in organisation, and etc. Yet still, there is no agreed definition for the term. In the author's opinion, regardless of how chaotic the technostress situation is, with adequate learning, organisational support, employees can handle its negative outcomes. Hence, the author defined technostress as "a stress resulting from Information and Communication Technologies (ICTs) due to an individual's inability, lack of knowledge and training, and improperly established organisational culture."

The amount of literature discussing technostress increased rapidly in the last decade, especially after the 2010s. Literature about technostress mainly concerns its causes, consequences, factors mitigating technostress outcomes, and coping solutions. Most researchers have done their studies in relation to five widely accepted technostress creators also called causes and dimensions, are techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity. To reduce and prevent technostress, many studies emphasised the importance of learning and development referring to employee training about technostress outcomes, proper use of ICT in and out of the workplace, adaptation to technological advancements, and improvement of specific personality traits (proactivity, and etc.). Additionally, organisational culture, efficient internal communication, and technical support were also among commonly recommended coping strategies with technostress. Only a few studies described coping strategies from a leadership perspective, explaining the role of certain departments (HR, IT, and etc.) in handling technostress within the organisation.

For the empirical analysis, online survey counting for quantitative methods was used. The online survey was conducted among ICT user white-collar workers to identify technostress dimensions they experience and factors impacting their experience. The survey was designed only in English and reached out to individuals via a network chain. In total, out of 258 participants, only 115 of them fully completed the survey.

Among five technostress dimensions, participants mostly experience techno-overload, techno-invasion, and techno-uncertainty. Furthermore, the results show that individuals' personalities, internal communication, distraction behaviours, commitment to change, and other organisational factors are significantly related to technostress. The author also found that individuals who ignore stress for feeling forced to continue and consider being available

anytime, anywhere will increase employee status are inclined to have higher experience. Hence, to reduce technostress, it's necessary that organisations establish a safety culture, efficient internal communication, provide employees with specific learning programs, and have fair workload distribution. Employees should be encouraged to speak up about their concerns, feel comfortable to question events impacting their work. Learning programs on how to use ICT efficiently, handle negative technostress consequences, and adopt new technologies should be given to employees continuously. Additionally, organisations should set clear communication guidelines and/or restrict work-related communication after business hours to prevent work-life imbalance.

Overall, this research paper creates awareness of technostress and contributes to this topic by providing detailed information about how personal and organisational factors mitigate technostress among ICT user white-collar workers. This study describes coping solutions and the importance of actions of both employees and organisations in handling technostress outcomes.

For further research, the author recommends a long-term experiment where the effectiveness of specific coping solutions is tested with real cases. In terms of short-term analysis, this research might be specified to a certain group of professionals, such as customer support employees, IT workers, and many more.

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APPENDIX A

Questionnaire of the online survey

Technostress: stress related to Information and Communication Technologies

Introductory message:

Hello,

I kindly ask you to fill out this survey which is conducted as a part of a bachelor student's thesis work and is aimed at analyzing technostress experiences among information and communication technologies (ICT)* user white-collar workers and bringing out coping solutions based on the findings.

The survey should take an average of 7-10 minutes of your time. There are a few questions regarding demographics to find out its relevance to technostress experience, however, to protect your anonymity, questions about your identity (name, surname, etc.) are eliminated.

*ICT - computer, laptop, tablet, phone, email, messaging, any software programs you use on computer/laptop, digital work platform, Microsoft Office, and many more.

In case you have any questions, don't hesitate to contact me.

Best regards,
Hokuma Mammadzada
mammadzadahokuma@gmail.com

Introductory questions (question group 0)
Question 1: What is your gender?
Male
Female
Rather not say

Question 2: What is your age range?
<26
26-35
36-45
46-55
56-65
65+

Question 3: What is your work experience in the same or related field?

1-5 years

6-10 years

11-19 years

Question 4: What is your employee tenure in the company?

*A tenured employee is someone who has worked for the same company or organization for a number of years.

<1 year

1-3 years

4-6 years

7-10 years

10 years+

Question 5: What percentage of a workday (during working hours) do you use ICT?
<25%
25%-50%
50%-75%
75%-100%

Items (5-point: Strongly Disagree – Strongly Agree)	Source
Techno-overload (question group 1)	
I am forced by this technology to work much faster.	Ragu-Nathan, Tarafdar & Tu (2008)
I am forced by this technology to do more work than I can handle.	Ragu-Nathan, Tarafdar & Tu (2008)
I am forced by this technology to work with very tight time schedules.	Ragu-Nathan, Tarafdar & Tu (2008)
I am forced to change my work habits to adapt to new technologies.	Ragu-Nathan, Tarafdar & Tu (2008)
I have higher workload or information overload due to high number of messages.	Compiled by the author
I have to spend a lot of time during the work reading an overwhelming amount of messages.	Compiled by the author
Techno-invasion (question group 2)	
I spend less time for my personal life due to this technology.	Ragu-Nathan, Tarafdar & Tu (2008)
I have to be in touch with my work even during vacation due to this technology.	Ragu-Nathan, Tarafdar & Tu (2008)
I have to sacrifice a part of my vacation and weekend time to keep current on new technologies.	Ragu-Nathan, Tarafdar & Tu (2008)
I feel my personal life is being invaded by this technology.	Ragu-Nathan, Tarafdar & Tu (2008)
I spend time checking messages after working hours.	Compiled by the author
Techno-complexity (question group 3)	
I do not know enough about this technology to handle my job satisfactorily.	Ragu-Nathan, Tarafdar & Tu (2008)
I need a long time to understand and use new technologies.	Ragu-Nathan, Tarafdar & Tu (2008)
I do not find enough time to study and upgrade my technology skills.	Ragu-Nathan, Tarafdar & Tu (2008)
I find new recruits to this organization know more about computer technology than I do.	Ragu-Nathan, Tarafdar & Tu (2008)

I often find it too complex for me to understand and use new technologies.	Ragu-Nathan, Tarafdar & Tu (2008)
Techno-uncertainty (question group 4)	
There are always new developments in the technologies we use in our organization.	Ragu-Nathan, Tarafdar & Tu (2008)
There are constant changes/updates in computer software, hardware, and/or networks in our organization.	Ragu-Nathan, Tarafdar & Tu (2008)
Constant changes make me less motivated to learning.	Compiled by the author
Techno-insecurity (question group 5)	
I feel constant threat to my job security due to new technologies.	Ragu-Nathan, Tarafdar & Tu (2008)
I have to constantly update my skills to avoid getting a disadvantaged position or being replaced at work.	Ragu-Nathan, Tarafdar & Tu (2008)
I feel threatened by coworkers with newer or upgraded technology skills.	Ragu-Nathan, Tarafdar & Tu (2008)
I do not share much of my knowledge with my coworkers for fear of being replaced.	Ragu-Nathan, Tarafdar & Tu (2008)
I feel there is less sharing of knowledge among coworkers for fear of being replaced.	Ragu-Nathan, Tarafdar & Tu (2008)
Other factors (question group 6)	
IT help desk is very accessible and responsive.	Compiled by the author
My organization gives me enough time to adapt to the changes.	Compiled by the author
I think being reachable anytime and anywhere will increase my status among others.	Compiled by the author
Proactive personality (question group 7)	
I handle the problems straight without postponing them.	Compiled by the author
I always try to transform problems into possible opportunities.	Compiled by the author
I ask for help before wasting too much of my resources, time, and effort on a problem.	Compiled by the author
I am more of a group influencer rather than being influenced by the environment.	Compiled by the author
Self-inefficacy (question group 8)	
There are moments I had emotional exhaustion caused by this technology at work.	Compiled by the author
Sometimes I feel job-related difficulties are piling up so high that I cannot overcome them.	Compiled by the author
Sometimes I feel unconfident about my ability to handle my job demands.	Compiled by the author
I feel I need more resources to handle my job tasks or demands.	Compiled by the author
Internal communication (question group 9)	
Communication in our organization is highly efficient.	Compiled by the author
I am well instructed about what, how, and when communicate within internal organization.	Compiled by the author
I am highly welcomed to share my problems and concerns within the organization.	Compiled by the author

Commitment to change (question group 10)	
I intend to actively support and participate in the change process towards a digitally transformed workplace.	Compiled by the author
I accept the organizational transformations because I feel forced to keep my position.	Compiled by the author

Distraction behavior (question group 11), (*2-point; Disagree – Agree)	
*An example situation to option 1: reading overwhelming emails makes you stressed, thus you divert yourself by using the same platform for sending emails instead of answering the inbox.	
*An example situation to option 2: reading overwhelming emails makes you stressed, thus you divert yourself by taking actions outside the same platform.	
When I feel stressed due to using the specific ICT, I divert my attention from that stress using the same ICT, but for a different purpose.	Compiled by the author
When I feel stressed due to using the specific ICT, I divert my attention from that stress by having totally different activities.	Compiled by the author
I ignore the stress, because I feel forced to continue.	Compiled by the author

Closing questions (question group 12)
Question 1: How would you rate your personal level of technostress?
Low
Medium
High

Question 2 (open question): What kind of actions do you personally take to overcome or reduce technostress?
* The answer of 1-3 short sentences would be highly appreciated.

Question 3 (open question): What are your expectations from the company to reduce or prevent technostress?
* The answer of 1-3 short sentences would be highly appreciated.

End message: Thank you for your time in completing the survey! Your responses matter a lot and will help me develop a further analysis of my research. I would appreciate it if you share the survey with your friends and colleagues to fill out.

APPENDIX B

Comparison of means and non-parametric tests results of demographics across technostress

dimensions

Gender		Overload	Invasion	Complexity	Uncertainty	Insecurity
Male	Mean	3.4179	3.1262	2.6492	3.2872	2.6923
	N	65	65	65	65	65
	Std.	.827	.863	.860	.788	.738
Female	Mean	3.5667	3.3400	2.8320	3.4133	2.8720
	N	50	50	50	50	50
	Std.	.724	.700	.720	.781	.691
p-value		.410	.161	.219	.728	.341

Notes: the significance level is .050

Source: Compiled by the author based on SPSS results

Age		Overload	Invasion	Complexity	Uncertainty	Insecurity
<26 years	Mean	3.5111	3.2233	2.6367	3.2333	2.7833
	N	60	60	60	60	60
	Std.	.663	.878	.737	.767	.733
26-36 years	Mean	3.6154	3.3692	3.1692	3.5385	2.9385
	N	26	26	26	26	26
	Std.	.625	.650	.827	.712	.706
36-45 years	Mean	3.3106	2.9909	2.5364	3.3636	2.6636
	N	22	22	22	22	22
	Std.	1.061	.770	.757	.829	.640
46-65 years	Mean	3.2857	3.3429	2.4857	3.4762	2.3714
	N	7	7	7	7	7
	Std.	1.239	.670	.971	1.034	.852
p-value		.808	.493	.045	.407	.332

Notes: the significance level is .050

Source: Compiled by the author based on SPSS results

Work Experience		Overload	Invasion	Complexity	Uncertainty	Insecurity
1-5 years	Mean	3.5063	3.2025	2.7241	3.3122	2.7924
	N	79	79	79	79	79
	Std.	.659	.830	.748	.734	.703
6-10 years	Mean	3.6333	3.4533	2.9733	3.4667	2.9067
	N	15	15	15	15	15
	Std.	.907	.867	1.047	1.118	.938
11-19 years	Name	3.2857	3.1143	2.5714	3.3651	2.5905
	N	21	21	21	21	21
	Std.	1.084	.618	.813	.714	.605
p-value		.403	.289	.617	.837	.410

Notes: the significance level is .050

Source: Compiled by the author based on SPSS results

Employee tenure		Overload	Invasion	Complexity	Uncertainty	Insecurity
<1 year	Mean	3.4769	3.1056	2.7222	3.2407	2.7833
	N	36	36	36	36	36
	Std.	.752	.919	.808	.857	.771

1-3 years	Mean	3.4786	3.2821	2.7077	3.2735	2.7692
	N	39	39	39	39	39
	Std.	.701	.742	.769	.653	.693
4-6 years	Mean	3.2698	3.0762	2.7810	3.3968	2.8190
	N	21	21	21	21	21
	Std.	1.033	.933	.834	.834	.693
7-10 years	Mean	3.7917	3.5250	2.9000	3.5417	3.0000
	N	8	8	8	8	8
	Std.	.660	.490	.991	.733	.991
10 years+	Mean	3.6970	3.4182	2.6000	3.6667	2.4727
	N	11	11	11	11	11
	Std.	.702	.340	.839	.919	.476
p-value		.403	.554	.990	.674	.538

Notes: the significance level is .050

Source: Compiled by the author based on SPSS results

APPENDIX C

Analysis of technostress dimensions

	Mean	Standard deviation
Techno-overload (Reliability = 0.83)	3.48	0.78
I am required by this technology to work much faster.		
I am required by this technology to do more work than I can handle.		
I am required by this technology to work with very tight time schedules.		
I am required to change my work habits to adapt to new technologies.		
I have higher workload or information overload due to high number of messages		
I have to spend a lot of time during the work reading an overwhelming amount of messages.		
Techno-invasion (Reliability = 0.79)	3.21	0.79
I spend less time for my personal life due to this technology.		
I have to be in touch with my work even during vacation due to this technology.		
I have to sacrifice a part of my vacation and weekend time to keep current on new technologies.		
I feel my personal life is being invaded by this technology.		
I spend time checking messages after working hours.		
Techno-complexity (Reliability = 0.83)	2.73	0.80
I think I do not know enough about this technology to handle my job satisfactorily.		
I need a long time to understand and use new technologies.		
I do not find enough time to study and upgrade my technology skills.		
I find new recruits to this organization know more about computer technology than I do.		
I often find it too complex for me to understand and use new technologies.		
Techno-uncertainty (Reliability = 0.54)	3.34	0.78
There are always new developments in the technologies we use in our organization.		
There are constant changes/updates in computer software, hardware, and/or networks in our organization.		
Constant changes make me less motivated to learn.		
Techno-insecurity (Reliability = 0.75)	2.77	0.72
I feel a constant threat to my job/position due to new technologies.		
I have to constantly update my skills to avoid getting a disadvantaged position or being replaced at work.		
I feel threatened by coworkers with newer or upgraded technology skills.		
I do not share much of my knowledge with my coworkers for fear of being replaced.		
I feel there is less sharing of knowledge among coworkers for fear of being replaced.		

Source: Compiled by the author based on SPSS results

Resümee

TEHNOSTRESS JA SELLEGA TOIMETULEK VALGEKRAEDEST IKT
KASUTAJATE NÄITEL

Hokuma Mammadzada

Info- ja kommunikatsioonitehnoloogiad (IKT) on muutunud organisatsioonide jaoks põhikomponendiks, tuues töötajatele kaasa mitmeid eeliseid, nagu näiteks lihtsam suhtlus, tõhusam juhtimine, kiirem toimimine ja paindlikkus. Neil eelistel on aga „oma hind" juhul kui ei rakendata õigeid meetmeid IKT-ga seotud probleemide ennetamiseks. Käesolevas uurimistöös uuritakse tehnostressi fenomeni, mida autor määratleb kui IKTst tulenevat stressi, mis on tingitud indiviidi suutmatusest, teadmiste ja väljaõppe puudumisest ning probleemidest d organisatsioonikultuuris. Tehnostress kujutab endast ohtu nii töötajatele kui ka organisatsioonidele, mõjutades negatiivselt töö- ja eraelu tasakaalu, innovatsiooni, pädevust, töötajate tulemuslikkust, vaimset tervist, töö tõhusust ja palju muud. Seetõttu on vaja tõsta teadlikkust tehnostressist ja uurida tehnostressiga toimetuleku võimalusi.

Käesolev uuring analüüsib erineva taustaga töötajate enesetõhususe, sisekommunikatsiooni, tööd segavate jt tegurite seoseid tehnostressi liikidega. Uurimistööks valiti kvantitatiivne meetod (veebiküsitlus). Uuringus osales 115 töötajat erinevatest organisatsioonidest. Veebiküsitlus viidi läbi valgekraedest IKT kasutajate seas, arvestades, et see grupp inimesi kogeb tõenäolisemalt suuremat tehnostressi, kuna peavad oma töös kasutama pidevalt IKTd.

Uurimistulemused näitavad seoseid tehnostressi ja proaktiivne isiksuse, enesetõhususe, sisekommunikatsioone, muutustele pühendumise ning tähelepanu häirivate tegevuste vahel. Lisaks leidis autor, et inimesed, kes eiravad stressi ja peavad pidevat „kättesaadavust" töötaja staatuse tõstmise viisiks, kogevad kõrgemat tehnostressi. Tulemuste põhjal järeldatakse, et organisatsioonid peaksid looma tõhusa sisekommunikatsiooni, piirama tööalast suhtlust pärast töövälist aega, looma organisatsiooni ohutuskultuuri, pakkuma õppimist ja arengut ning tagama õiglase töökoormuse jaotuse oma töötajate vahel.

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13/01/2022