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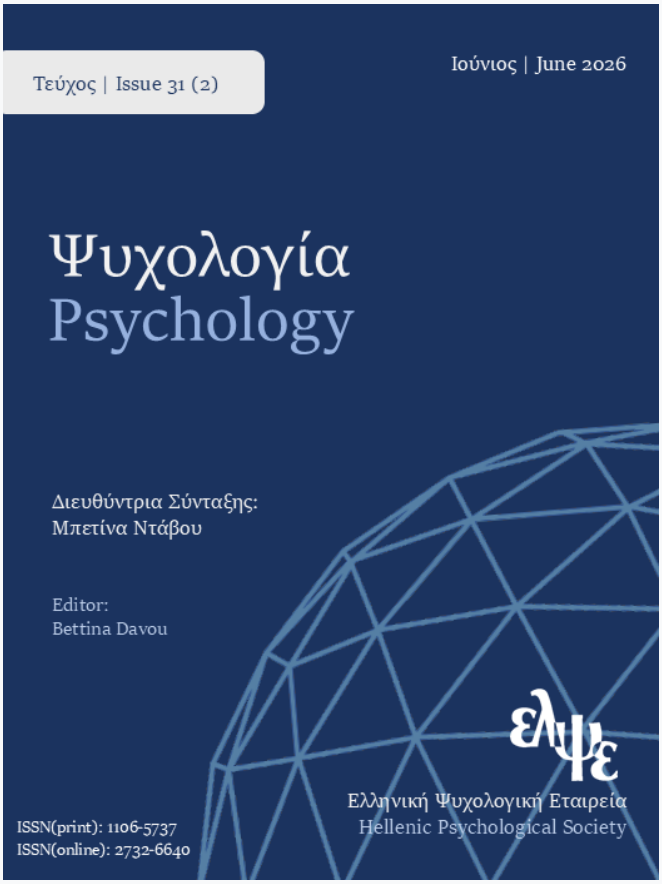

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Digital transformation: The strain of being an “immigrant” in the digital workplace

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KEYWORDS

Digital transformation
Digital immigrants
Digital bureaucracy
Technostress
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ABSTRACT

This paper examines how digital transformation affects the working life of individuals over 50 years old in Greece. It aims to capture how employees experience the changes brought about from the implementation of technological tools and digital processes in their work, and how these changes affect daily life and relationships inside and outside the workplace. Data was collected via eight focus groups with a total of 37 employees and professionals over 50 years of age, from the private and public sector. Among the most interesting findings was that participants seem to perceive digital transformation as an "inevitable evil" that forces them to reject familiar methods that offered them a sense of safety and competence. The findings underline that the acquisition of digital skills tends to be a matter of individual responsibility, self-training and personal investment of time and money in Greece, without adequate support from the workplace/organization. The slow pace of digitization and digitalization processes, fragmentary implementation of digital services, lack of uniform systems and unsatisfactory ergonomics of digital platforms are causing confusion and create a new kind of 'digital' bureaucracy. Within this context, technophobia and technostress develop out of feelings of insecurity and anxiety due to lack of confidence in digital processes, feelings of fear about the irreversibility of digital mistakes, and frustration from having to implement new processes without human/colleague guidance. Good practices have also emerged from the data which are discussed in the final section of the paper.

Over the past decades, societies and economies of several countries have been experiencing a radical transformation, fueled by the digitalization of interaction (including interpersonal, commercial, formal communication/exchanges), through the increasing number of connected devices and data streams (Brynjolfsson & McAfee, 2014; Negreiro & Madiega, 2019; The Enterprisers Project, 2020). Bednarčíková and Repiská (2021) drew a distinction between the terms “digitalization” and “digitization”. The former describes the increased interconnectivity of digital technologies that improve communication, services and transactions between people and organizations, while the latter describes the technical process of converting the analog to digital, and precedes the socio-technical implications of integrating technology into daily life. Digital transformation entails the reshaping of various strands of daily life, ranging from communication and interaction to commerce and access to information (Brynjolfsson & McAfee, 2014; Acemoglu & Restrepo, 2019). The sweeping changes brought about by digital transformation in terms of organizational needs, render it necessary to rethink the organizational structure and the skills of organizational actors to ensure alignment with the demands of the digital landscape and make organizations sustainable. This encompasses enriching skills and retraining employees to be equipped

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with the knowledge and expertise required to exploit emerging technologies within an organization (Dalton, 2023).

The rapid digitalization of contemporary life, including work and public transactions, brings the debate on the digital divide and inequalities to the fore. Although, according to the Organization for Economic Co-operation and Development (OECD, 2017), technological devices, characterized by ever-increasing computing power that accelerate digital transformations, are available to the public at increasingly affordable prices, digital inequalities have not been eliminated. Hargittai (2008) describes digital inequalities as going beyond the ownership of technological devices or access to digital services. She refers to quality of connections and specifications of equipment, the ability to use it independently, and training in the use of technology which includes issues of user safety. Furthermore, the alignment of business and information technology has become a critical concern, highlighting the need to develop and align the workforce to navigate the digital age (Muñoz & Avila, 2019). Similar inequalities have also been identified in terms of the gendered dimension of use (Arroyo, 2020) and are already emerging as important areas for action for the equal inclusion of men and women in the transforming labor market (European Council, 2019; Usca et al., 2021).

At the individual level, these inequalities are often subjectively experienced as reduction in job and life satisfaction and in productivity due to cognitive and emotional exhaustion, poor concentration, irritability, feelings of insecurity and of losing one's job, and other symptoms of technostress (La Torre, Esposito, Sciarra, & Chiappetta, 2018).

Digital "immigrants"

A digital "immigrant" is a person who grew up before the proliferation of the Internet-related tools and applications and needed to adapt to the use of technology in all aspects of life (Prensky, 2001). It's a term defining a generational distinction created by technological change. Digital immigrants vs. digital natives (meaning individuals that are symbiotic to technological evolution) faced (or still face) challenges in workplace and everyday life due to the implementation of technological transactions. This distinction remains debatable (indicatively see, Helsper & Eynon, 2010) as it addresses a whole population with single-dimensional criteria (i.e. the level of familiarization with technology); nevertheless, it remains a useful metaphor for the disorientation that older people may have experienced, when they found themselves symbolically displaced to a completely new, unfamiliar space, which they were not equipped to navigate.

The feelings of discomfort and the resulting stress caused by the digital demands affect older individuals more than younger ones (Shu et al. 2011), as life expectancy and age limits for employment increase, and aspects of the digital transformation of workplace reach older employees. In 2024, Greece introduced favorable amendments to the employment status of retired citizens to encourage continued employment. Digitalization and, maybe more significantly, digitization, may force some workers to retire earlier, under the pressure of having to acquire new skills and qualifications. Hægeland et al. (2007) showed a higher probability of voluntary retirement of workers over 60 years old, when their organizations implemented new technologies. As Antonopoulou (2023, p. 7) states "changes especially in the work environment usually create trends of temporary or permanent destabilization", so that even when technologies are adopted to facilitate work, some groups of workers experience negative feelings, even fear of being replaced by machines. The adoption of digitized practices can contribute to degradation of employment opportunities for large groups of workers (Frey & Osborne, 2013). Research (see indicatively Fuchs et al., 2018) on older employees' reactions to digital transformation practices records difficulties in adapting to the new digital reality, usually related to lack of training in the required digital skills and a sense of inadequacy in using technology. It is therefore necessary that employees over the age of 50 will receive assistance in handling the psychological burdens they experience from trying to adapt to the digital demands, as well as the required training required to respond to them appropriately. The digitalization of work

processes could benefit older individuals, as it would allow them to extend their working lives in terms more adapted to the life situation in which they currently stand (Komp-Leukkunen et al., 2022). Digitally literate older employees and professionals can benefit from digitalized work conditions as their job tasks may become less physically demanding, i.e. may not involve going to the physical workplace (Dropkin et al., 2016). In addition, digital work technologies can help older employees monitor and manage their health, for example by reminding them when to take breaks from work (Nagarajan & Sixsmith 2023). These practices can enhance the productivity of older individuals, making it easier for them to stay active in the workplace (Lee et al., 2020).

According to the OECD report (2019) across Europe and other regions, the upcoming technological and organizational revolution is expected to be driven by a significant number of older people. Based on a previous OECD report (2017), around 40% of the workforce is not sufficiently equipped to participate efficiently in digitized work. Therefore, it is considered important to recognize the different needs for worker categories, to provide digital skills training and to develop policies that focus on retraining workers and equipping the workforce to successfully integrate into the digital world of work and society (Athreya & Mouza, 2017; Borghans & ter Weel, 2002; Goldin & Katz, 2010; Mitzer et al., 2010; Van Deursen et al., 2015), increase their employability, and upgrade their job status (Goldin & Katz, 2010).

Supporting the training of older than 50 employees will not only benefit them, but it will also help European countries to fully exploit the potential of their workforce and ensure better conditions for economic prosperity and social inclusion for all citizens (European Commission, 2021). Population ageing reduces the size of the labor force and places financial pressure on pension systems. Policy makers seek to address the impact through extended working lives. This can be achieved either by preventing individuals from leaving the workforce prematurely by increasing the state retirement age, or by encouraging retirees to work while receiving pension benefits (Phillipson 2019; Van Yperen & Wörtler 2017). Due to the wide range of strategies, the age groups targeted by these practices vary widely from people in their 40s and 50s, who are still working, to people in their 60s who are approaching retirement age, to people in their 70s who have already retired (Phillipson 2019; Harris et al. 2018).

Technostress, technophobia, and employee well-being

Even before the expanded digitalization of the workspace, researchers had pointed to "a modern disease of adaptation caused by the inability to cope with new computer technologies in a healthy manner" (e.g. Brod 1984, p.6 as cited by Nastjuk et al., 2024, p. 361). *Technostress*, a particular type of stress attributed to digital technologies, refers to the sense of anxiety that a person feels when s/he must implement and use technological tools and digital applications/platforms. Although there is substantial disagreement over the definition of stress, as well as lack of an adequate taxonomy of stressful situations (Breznitz & Godberger, 1993), stress is generally conceived as the experience of an event, which is called a *stressor,* that is perceived as endangering a person's physical or psychological well-being. Nolen-Hoeksema, et al. (2016) refer to three main types of stressors, namely *controllability, predictability* and *duration*. Events that are perceived as out of one's control can even lead to *learned helplessness* (Seligman, 1975), a state of resignation and apathy. Predictability refers to the degree of awareness of the possible occurrence of an event, while the duration of a negative event is also perceived as a strong stressor. Negative events which last longer are more likely to inflict psychological or physical damage, than shorter events. The unfamiliar digital environment can become a high stressor for the employee and is also unpredictable if the necessary skills to navigate in it are missing; in terms of duration, the digital demands do not stem from a single event but are posed by a constantly changing condition of life. As a result, older individuals have to cope with all three types of stressors. Tarafdar et al. (2007) have suggested five categories of stressors contributing to technostress, which also seem to affect older than 50 employees: (a) techno-overload, deriving from digital environments which drive employees to work harder; (b) techno-invasion, i.e. the penetration of

digital technologies into employees' personal lives; (c) techno-complexity inherent in digitalization, that imparts a sense of incompetence among employees; (d) techno-uncertainty, originating from constant changes in and upgrades of digital devices; and (e) techno-insecurity, derived from the fear of losing one's job due to continuous demand to deal with the frequent changes of digital environments and technologies.

Technostress has been studied through the Transactional Theory of Stress (TTS, Lazarus & Folkman, 1984), where the use of technology is considered the environmental demand and stress arises from the individual's perception that the demand exceeds his/her resources and capabilities (Zhao et al., 2020). Technostress decreases both job satisfaction and organizational commitment, but Ragu-Nathan et al.'s (2008) research also indicated *technostress inhibitors*, i.e. organizational mechanisms that reduce technostress, and can increase both satisfaction and commitment. Zhao et al. (2020) studied the degree of technostress in relation to the individual's appraisal of a task as challenging. Their research indicated that techno-complexity and techno-insecurity were negatively correlated to the challenge appraisal outcome; beyond a certain level of complexity and insecurity the challenge appraisal can be replaced by hindrance appraisal, due to the higher cognitive load and the perceived difficulty in achieving the goals of job demands. Moreover, techno-invasion was also not associated with a hindrance appraisal outcome. In China, where Zhao et al.'s research took place, constant communication on work issues during off-job time with the use of ICT is considered a cultural norm. However, techno-invasion is also not associated with a challenge appraisal outcome. Techno-overload is appraised as a challenge, i.e. benefits personal gain, rather than a hindrance. Researchers interpret the techno-overload beneficial approach as a notion that humans should follow the rhythm of technological progress and not the other way around. Techno-uncertainty was positively associated with both the challenge and the hindrance appraisal outcome. The research conducted by Zhao et al. (2020) is useful as it provides a more elaborate approach on the matter of technostress, by filtering the possible stress creators and pointing out the non-unidirectional relationship between technology and employees' reactions.

In Nastjuk et al.'s (2024) metanalysis along with the technostress creators, the *psychological* and *behavioral outcomes* of technostress were investigated. Psychological outcomes are described as cognitive and affective reactions to technostress, such as burnout and exhaustion, while behavioral outcomes refer to conscious or unconscious individual actions and to the motives of specific behaviors, such as decreased productivity and performance. The metanalysis showed that the demands of technological environment are overwhelmingly appraised as threatening, although sometimes may also be considered as beneficial, i.e. for learning new skills and evolving. Nastjuk et al.'s (2024) findings are in accordance with those of Zhao et al. (2020) regarding techno-uncertainty, a factor which is not appraised by default as a technostress creator. Individuals seem to understand the need for constant skill updating following the technological changes.

Technostress has, also, been studied through the Job Demands-Resources Model (JD-R model, Demerouti et al., 2001), which is widely used to explain occupational psychological health. According to the JD-R model the interaction between job demands and job resources affects motivation, performance and the well-being of employees (Bakker & Demerouti, 2007; Truța et al., 2023), while job resources have a motivational role and a positive effect on employee well-being (Bakker & Demerouti, 2007). Truța et al. (2023) investigated technostress regarding academic's work, utilizing the JD-R model, and pointed out the mediating role of technostress to self-efficacy, core self-evaluations and work well-being. A detrimental effect of the technological changes in organizations was also detected by Hang et al. (2022) in a sample of bank employees in Pakistan. Their study pointed out the importance of literacy mechanisms, that can act as technostress inhibitors and enhance the employee's confidence in new technology.

While technostress is a psychosomatic condition affecting the individual, *technophobia* is defined as a fear or dislike of modern technology (Nimrod, 2018) accompanied with anxiety and discomfort toward new technologies, and it is not always associated to technostress (Martínez-Corcoles et al., 2017). Osiceanu (2015)

describes two components of technophobia: fear of using technology and concerns regarding the effects of technology on society. As Khasawneh (2018) notes, there is no consensus in the definition of technophobia, and is often confused with computer phobia/anxiety. He proposes the following definition:

> Technophobia is an irrational fear and/or anxiety, that individuals form as a response to a new stimulus that comes in the form of a technology, that modifies and/or changes the individual's normal or previous routine in performing a certain job/task. Individuals may display active, physical reactions (fear) such as avoidance and/or passive reactions (anxiety) such as distress or apprehension. (p.98)

Technophobia is mainly associated with the "gray divide" (Nimrod, 2018), i.e. the digital divide between younger and older users. Focusing on the cognitive and social factors underlying the phenomenon, other researchers (e.g. Brosnan, 1998) support that technophobia affects large segments of the population regardless of age. Technophobic individuals adopt an avoidance pattern regarding the use of technology; they rarely use technological tools and digital applications (Nimrod, 2018; Osiceanu, 2015). Nimrod (2018) distinguishes between three levels of age-related differences: (a) connectivity and frequency of ICT use, (b) type and complexity of use, (c) varied benefits of ICT use. Technophobia is usually measured with Sinkovics's (2002) scale, which consists of three components: fear of personal failure, human versus machine ambiguity, and convenience when using technology. Although there is little research on technophobia, more recently some researchers have attempted to develop instruments of assessing technophobia and technophilia (Martínez-Corcoles et al., 2017), and to define technophobia subdimensions (i.e., techno paranoia, techno fear, techno anxiety, cybernetic revolt, communication devices avoidance; Khasawneh, 2018). Technophobia includes emotions (e.g. fear or aversion) towards advanced technology or complex devices and is often associated with attitudes towards technology (e.g. that it will replace humans or that privacy will be lost), and with lack of digital literacy.

What seems to emerge from the relatively limited number of studies on technophobia conducted to date, briefly reviewed above, is that although technophobia and technostress are connected to certain common feelings arising from digitalization, they do not necessarily exist together, but they are both tied to how people experience digitality and the feelings and thoughts that this experience brings up. The present study implemented a qualitative research strategy to explore meaningful aspects of older than 50 years-old individuals' experience at the workplace, with the purpose of unraveling the psychological mechanisms underlying the induction of technophobia and technostress. As these issues have not been extensively studied in Greece, a semi-structured focus group data collection strategy was selected that would reveal older individuals' representations and experiences. Focus groups promote self-disclosure in the sense that participants may feel more comfortable disclosing information in a discussion with people like themselves, and they can also reveal the dynamic processes through which people talk about shared experiences.

The research questions under investigation were:

1. How do employees over 50 perceive and define digital transformation (i.e. what attitudes and emotions are associated with it)?
2. How do they adapt to the digital workplace and how do they acquire the necessary skills (i.e. what psychological strategies they employ to cope with the stressors identified above or the possible lack of the required digital training)?
3. What are the practical difficulties they face regarding the digitalization of work (i.e. what are the hindrances and affordances they perceive and experience)?
4. What are, if any, the main inhibitors to digital workplace adaptation (stemming both from perceived personal weakness and organizational inadequacies)?

The findings presented and discussed in the current paper are part of a funded research project titled "Resilience, inclusiveness and development: Towards a just green and digital transition of Greek regions-JustReDi

(TAEDR-0537352)". The current subpart of the project aims at understanding and framing the psychological effects of digital transformation on the work life of individuals older than 50 years old.

Method

Participants

Data was collected via eight focus groups with a total of 37 (nine male and 28 female) employees and professionals over 50 years of age, from the private and public sector. Age was the only sampling criterion, as we were interested in the experience from both the private and public sector, at all job levels. Eight participants worked as freelancers, nine were employed in the private sector, 14 were employed in the public sector, and the remaining six worked either in public/private sector or as freelancers but were retired when the research was conducted. The distribution of participants regarding gender and professional sector is presented at table 1 (see Supplementary material: Appendix i).

Material

A semi-structured focus group interview guide [see Supplementary material: Appendix (ii)] to investigate the following basic themes was designed:

1. Participants' perceptions and definitions of digital transformation (gains/perils, attitudes, competencies, etc.)
2. Participants' experience in the process of adaptation to digital work life (emotional and cognitive factors, perceived inhibitors of adaptation)
3. Practical difficulties due to digital transformation that potentially act as techno-stressors for participants.

Since we were interested in participants from different work domains and various job positions, the guide remained flexible regarding the main axes. When further clarifications on specific experiences were needed, they were asked during the focus-group discussion.

Procedure

The sampling strategy adhered to the standards of purposive sampling, based on the criterion of age. At the first stage, an invitation was issued through the researchers' and the Communication and Media Psychology Lab's digital social media describing the guidelines for participation. Later, the snowball sampling method was implemented, as the participants engaged in conversations with people in their familiar circle, and several of them volunteered to participate. The focus groups took place between April and October 2024 in the Communication and Media Psychology Lab facilities. The duration of the focus groups sessions varied from 120 to 150 minutes, including 10 minutes to welcome participants at the beginning of the session, as well as a 10-minute break. The data collected were transcribed and thematic analysis was applied.

The first stage of thematic analysis involved familiarization with the collected data. Following the transcription of the focus groups discussions, the researchers identified codes (e.g. digital transformation is associated with security, flexibility, speed, etc.). The codes are defined as recurrent clusters of meaning; therefore, the coding process was carried out on the entire text of the transcribed focus groups. The second stage involved the organization of themes, including the naming of the themes, in relation to the research questions. The clusters of meaning (codes) were organized into themes (e.g. perceived definitions of digital transformation, the exertion of trying to adapt to the new digital work environment) which include multiple aspects of an idea/concept (Braun & Clarke, 2025). The second stage of analysis was not unidirectional but repetitive and reflective. The researchers attempted to capture coherent, distinguishable themes that reflect the meaning of the participants' subjective experience. Themes and the subthemes (which describe the different aspects of a theme,

e.g. positive/negative perceptions, gains/losses of skills) are presented in Table 1, accompanied by the main findings.

Findings and discussion

Our main goal was to understand and record the subjective experience of older than 50-year-old employees, regarding the digital transformation of work and daily life. We seek attitudes and emotions associated with digital transformation, coping strategies and underlying psychological mechanisms related to inhibitors of adaptation, such as technostress and technophobia.

The findings are presented in four thematic categories, following the sequence of the research questions. Since this is a focus group study, the themes follow the pattern of consensus among all focus groups. Themes are patterns of meaning that develop around core concepts (Braun & Clarke, 2025). Without referring explicitly to technostress and technophobia, these concepts and their components emerged in the data. When diverse trends within a focus group arouse, differences are noted and discussed. The quotes presented below are indicative of consensus or of main diversities from collective trends. The themes and subthemes are presented in Table 1. The four themes discussed are: definitions of digital transformation, adaptation to the digital environment, practical difficulties, and inhibitors of adaptation that act as techno-stressors. The themes consist of subthemes that clarify the pattern of meaning in relation to the broader interpretative framework. Table 1. also includes the main findings that contributed to the formation of the themes and subthemes. No important differences in terms of gender, age, and work sector were detected in the way the participants described their experiences. Therefore, the discussion and analysis that follows, derives from uniform trends observed in all focus groups.

Perceived definitions of digital transformation: An inevitable "evil"

Through a process of free association, participants were asked to mention the first things that came to mind when they heard the term 'digital transformation'. Initial responses tended to be mainly positive, i.e. associated with concepts such as flexibility, speed, safety, time gain, easy retrieval of files, etc. More specifically, participants referred to the "transformation of matter into intangible" [in a way that corresponds to Bednarčíková & Repiská (2021) definition of "digitization"] and "safety", "conversion from some manual tasks [to] computer-assisted", "quick and easy retrieval of information", "the great advancement for work", "great convenience", "gain of time". However, as the conversation unfolded, it became increasingly apparent that the initial positive responses stemmed from dominant representations that digitality makes life simpler, and from a social imperative to accept that the transformation is for their own good. When participants elaborate on their experience, several negative issues arise. The constant introduction of new technological tools, the unfamiliar and therefore, uncontrollable and unpredictable new environment, and the compulsive/forced familiarization and preoccupation, due to the fear of unemployment, seem to be essentially attached to a stressful experience, not necessarily related to a pre-existing technophobia. This trend is reflected in CL's (female) words. Although she had started to familiarize herself with the use of computers since the 1980s (as many other participants also mentioned), she feels that now:

> […] it has nothing to do with what I had imagined when I started using computers in my work in the 1980s. What has now become monstrous, it's not digital transformation, it's something else. Unfortunately, the stupid processes that existed before, instead of getting better have become even worse, more complex, and more difficult. […] I now feel…I feel aversion, but I can't avoid it, so it's even worse for me.

In addition, duration, as a stressor, is experienced by most participants, and is reflected in LK's (female) feeling that she must keep her knowledge and skills up to the continuous demands of the digital transition, as "an extra pressure in your daily work[otherwise] I won't be able to have a job". So, what RL (female) initially

described as the "natural evolution of our lives", referring to the digital transformations, does not have the same meaning for everyone, especially when this "natural" evolution ultimately upends their everyday life.

Table 1. *Main themes, subthemes and findings emerged during focus groups discussions*

Themes	Subthemes	Main findings
Perceived definitions of digital transformation	Positive	Flexibility, speed, time gain, security, easy retrieval of information, etc.
	Negative	Constant introduction of new technologies in the workplace, uncontrollability
	older than 50 employees' position in the digitized work/life environment	Compulsory habituation due to the fear of work loss, unpredictability
The exertion of trying to adapt to the new digital work environment	Digital Skills (Emotional burden)	How achieved? 1. Individual responsibility 2. Personal training 3. Invest of time and money What kind? 1. Adaptation/adaptability 2. Critical thinking 3. Setting boundaries
	Losses (Cognitive exertion)	1. Ability to concentrate 2. Memory impairment 3. Skills previously contacted manually
Practical difficulties	Digital bureaucracy	1. Unsatisfactory ergonomics 2. Lack of updated guidelines 3. Fragmentation in digital platforms/lack of uniform systems
Inhibitors of adaptation	Technostress	1. Techno-overload 2. Techno-insecurity 3. Techno-complexity/reduced sense of competence 4. Techno-uncertainty
	Technophobia	1. Lack of digital trust (dis-trust in digital processes) 2. Fear of personal failure: (a) Lack of human interaction/agent (b) Irreversibility of mistakes (c) Transfer of responsibility to the citizens/employees

Some participants, not always the oldest ones, attribute negative characteristics to the changes brought about by digital transformation in the workplace from the start. These participants seem to perceive digital transformation as an obligation with which they must comply due to the fear of unemployment, an inevitable "evil" that forces them to abandon the familiar practices that used to offer them a sense of security and a perceived sense of competence. This inevitable evil is often experienced as an invasion, a feeling assessed as a parameter of technostress (Nimrod, 2018). GI (male)'s words reflect this feeling: "This (digitalization of workplace) is going to happen without asking us".

To sum up, it seems that although participants at first appear to evaluate the changes generated by digital transformation in the workplace as positive rather than negative, when they are asked to elaborate further on their own experience of trying to adapt to these changes, feelings of discomfort arise, stemming from difficulties in controlling and predicting the continuous but inevitable changes of the new environment, and from the constant effort to adapt. The feelings reported indicate what Nolen-Hoeksema et al. (2016) have defined as stressors, namely controllability, predictability and duration, respectively.

The exertion of trying to adapt to the new digital work environment

Regarding the skills that younger and older individuals need to cultivate to cope with a highly digital work environment, participants put forward adaptation/adaptability to the pace of technological flow and familiarity with training, that "raises the likelihood of survival in the workplace" (SK, female). The experienced obligation to adapt, expressed by participants, suggests feelings of techno-overload, i.e. a factor of technostress, considered as a challenge that benefits personal gain (Zhao et al., 2020). Frequent references were also made to the need to develop critical thinking skills, focusing mainly on the ability to assess the reliability and validity of the information they encounter when navigating in digital spaces.

The competence required to handle digital media and technological tools, whether it concerned participants themselves or members of the younger generations, was a recurring theme throughout the focus group discussions. "Setting boundaries", "detox time", and resisting the FoMO's adverse outcomes were highlighted as major skills that reduce technologically induced stress.

However, the acquisition of work-related digital skills is mainly perceived as an individual responsibility and is achieved through personal training, an effort that increases techno-overload. TS (female), who is a keen advocate of digital transformation in her field of work, reports that "when new things were implemented into my work, nobody trained you. You learnt it yourself, that is, with the help of manuals. It was hard, you were forced to learn them though. You couldn't work otherwise". EV (male) adds:

> We all rely on our personal resources, our personal knowledge, and our own practice. With a lot of mistakes, a lot of frustration. I have broken too many mice [*meaning computer mouse]* myself. And with investment. I mean, here you need a serious financial investment, which is, for example, computers that you pay dearly for.

Participants mention "on-the-job training" and "elementary seminars" provided by the workplace, as common practices necessary for adaptation to digital transformation. Some pursue these skills through self-paid seminars. Participants who work in education mentioned that they were required to undergo some compulsory training or certified seminars; however, most of them had to continue with optional, self-paid seminars to improve their skills and sense of competence, because, as GP (male) reports, the mandatory seminars did not provide significant knowledge. Furthermore, compulsory seminars for teachers require an investment in personal time, i.e. past working hours, as reported by SK (female). "Personal willingness" and "extra working time" is also mentioned by LK (female); when the multinational company she works for offered seminars within working hours, the familiarization and actual comprehension were gained during practice on her personal time. Hence, the need for extra training increases workload (i.e. techno-overload) and places emotional burden on employees (i.e. techno-insecurity related to the fear of losing one's job).

Participants propose "training within working hours", "mandatory seminars for all", "adequate and timely training" ahead of the implementation of a technological tool/procedure. At the same time, they highlight skills that cannot be attained and others that are "lost". Regarding the former, several participants described their inability to process a digital document and the need to have a printed form, a pattern described by Prensky (2001) as a characteristic of digital "immigrants". Regarding the latter, participants complain about their inability to concentrate and perceived memory impairment. Some feel as if they have "lost their intelligence" due to the

systematic use of technological tools, which contributes to their sense of loss of personal competence. These "lost" abilities are highly connected to the cognitive exertion due to techno-complexity and techno-overload.

In all focus groups, the way participants discussed their experiences revealed the strain and effort invested in trying to adapt to the demands of the digital work environment. They all agree on the importance of adaptability and critical thinking as key skills for survival. The former is deemed necessary for career advancement. But the process is hard and highly demanding and often exceeds working hours. They all feel the need to learn how to set boundaries, because excessive use of digital tools can lead to burnout and is undermining the formation and sustainability of relationships. Digitalization in the workplace is perceived to be linked to losses of skills, such as remembering and reading, and in some cases, it is linked to a sense of personal inadequacy, in terms of adaptation to the rapid changes, which may also damage the sense of self. Our findings confirm Zhao et al.'s research (2020), which indicated that techno-complexity (i.e. feelings of inadequacy in having to learn complex technological processes and applications) is negatively correlated to the challenge appraisal outcome, due to the higher cognitive load and the perceived difficulty in achieving the goals of job demands.

To sum up, the acquisition of digital skills, while considered necessary in every sector, appears to be a matter of individual responsibility in Greece, without adequate support from the workplace/organization, with employees relying on self-education and personal investment of time and money, often accompanied by great difficulties and stress. In addition to that, participants felt that the knowledge offered by compulsory seminars provided by both the public and private sector is rudimentary, and many older than 50 employees have been self-trained from a very early stage of technological implementation in their workplace. What appears to be crucial for employees' well-being is the implementation of continuous training during work hours, with the support from their institutions. Participants demand an easily accessible, organized and iterative lifelong learning, which they believe is essential for adapting to the changing working conditions, and for balancing work and personal life. Educational programs benefit older individuals, minimizing technophobia and technostress, as well as aiding to a more personalized use of ICT (Nimrod, 2018), that benefits well-being. The perception of organizational support when new technologies are implemented has been shown to contribute to the employee's sense of competence when using technological tools (Berg-Beckoff et al., 2017). Research (Hang et al., 2022; Ragu-Nathan et al., 2008) has also provided insights on how the organizations can help to increase job satisfaction and organizational commitment via technostress inhibitors; mechanisms that provide ICT literacy, technical support and information about the rationale of introducing new technology.

Practical difficulties: Digital bureaucracy

The pace of digitization, especially of public services, is identified by participants as causing difficulties, especially to older users. In particular, the fragmented implementation of digital solutions, the lack of uniform systems and the unsatisfactory ergonomics of digital platforms create a new kind of "digital bureaucracy", which causes confusion especially to older individuals. Although Greece has made progress regarding the digitalization of public services, the country still performs below the EU average (European Commission, 2023). Previous research (Tarafdar et al., 2011; Zhao et al., 2020) interlinked techno-stressors to the frequent introduction of new technologies/system's upgrades, which, in turn, blur the boundaries between work and personal time, enhance information overload, decrease the sense of control over job activities, and require constant re-learning.

Participants in the current research referred to the usability of the platforms, either of private (e.g. e-shops, web banking) or public services (gov.gr, taxisnet). They explicitly described dissatisfaction which results in poor performance and a feeling of personal incompetence. For example, GP (male) reports: "I have a problem with a bad application. Bad platform, bad product. Bad products I see all the time, man, I mean when you go to gov.gr, let's say, you can't find something immediately. I mean you must know". A similar experience was described by RL (female), referring to the platform "akatharista.apps.gov.gr". She commented that "they put us into some

things, so out of the blue, without a background, without a framework, a training, instructions, nothing. EP (female) refers to the vast number of platforms, which do not seem to be pooled in a common digital hub. It is worth noting, that most of the digital services of the public sector in Greece are gathered in gov.gr, but it is clear from participants' discussions, that this location is not as visible as it should.

Participants highlight two further points of dissatisfaction with digital services that both result in poor service, wasted time, and frustration: the lack of updated guidelines and instructions on the use of a platform and the provision of proper documentation to the user, as well as the absence of support by human agencies.

In conclusion, older than 50 employees are obliged to integrate into evolving work environments, where they face difficulties that not only relate to their ability to (re)adapt, but also to the un-usability and the lack of ergonomics of public and private sector digital services. They feel the need for guidance, and for the presence of the human factor that would facilitate them in completing the necessary tasks, as well as a user-friendly environment, which has been shown to contribute to an employee's sense of competence in working with technology (e.g. Berg-Beckoff et al., 2017). The absence of the human factor hands over the responsibility of carrying out tasks to the younger family members, a delegation which also creates pressure and anger. Therefore, as previous research (Ragu-Nathan et al., 2008; Tarafdar et al., 2011) also suggests, it is vital for organizations to invest and develop technostress inhibitors (including user-friendly, adaptable platforms and applications) that decrease technostress and increase job satisfaction and commitment.

Inhibitors of adaptation: Time, technostress, technophobia, lack of human contact

Although technophobia and technostress are not always associated (Martínez-Corcoles et al., 2017), they are both related to how people experience digitality and the feelings and thoughts that this experience brings up (Nimrod, 2018; Osiceanu, 2015).

Techno-overload, techno-insecurity, techno-complexity, techno-uncertainty, i.e. the technostress creators identified by Tarafdar et al. (2007), together with specific feelings associated to them, were also detected in our data and were related to work environment and working conditions. Techno-overload refers to the situation where the use of ICT forces individuals or professionals to work longer and faster and requires them to be more productive (Agboola & Olasanmi, 2016). Feelings of betrayal are often detected in participants' words, because of the promise that technology would save time for relationships, but this time has been practically lost for the benefit of some organization. Alongside the gain of time, which does not seem to be credited to the benefit of the employees, participants highlighted the further gains that companies have, due to the technological implementations, in terms of abundant production. These attitudes reveal feelings of an unequal distribution of gains that digital transformation brings about and, therefore, a reduced commitment in the organizations' practices.

We discussed previously the perceived notion "of the inevitable evil", regarding the need of older employees to retrain, so that they are adequately equipped to survive in the digitalized workplace. Techno-insecurity, i.e. the threat that often older individuals feel of being replaced by a younger, more skillful employee or a machine (Agboola & Olasanmi, 2016) is reflected in IN's (female) words: "This means that jobs are lost. I will never be convinced morally and ideologically -whatever you name it- that it is right". SA (female) agrees with IN and adds "I experienced the Covid-19 era as the era of "fire everyone, we are not needed. We will do everything digitally now". I believe that we are the last of the Mohicans, as employees".

Techno-complexity, i.e. the feeling of ICT users that operations of technologies are highly complex (Agboola & Olasanmi, 2016), generates further feelings of inadequacy and incompetence at handling new technological tools and digital platforms. Incidences of this experience have already been discussed above, regarding digital skills and digital literacy. Here, we add the shared experience of a reduced sense of professional competence due to the never-ending and rapid digitalization, which is experienced as an impairment. Some employees over 50

years of age started equipping themselves with digital skills since the 1980's, as they predicted the implementation of digital practices into their workplace. Nevertheless, nowadays, they don't feel adequately equipped within sweeping digital progress, a feeling that is shared by 30% of the Europeans (European Commission, 2023).

Techno-uncertainty describes the constant introduction and immediate implementation of new technologies (e.g. platforms) without adequate training and support. Confirming Nastjuk et al.'s (2024) and Zhao et al.'s (2020) data, our findings confirmed that techno-uncertainty is not appraised by default as a technostress creator. Participants seem to have embraced the upgrading of their skills regarding opportunities provided by digitalization for leisure activities (e.g. booking air tickets and movie/theatre tickets, shopping online), which in turn may positively affect their self-efficacy. Techno-uncertainty turns into a hindrance, and therefore a technostress creator, when individuals need to interact with the public sector and/or for transactions deemed important. In this case, professionals, such as accountants, as well as younger family members, are often recruited to carry out relatively simple tasks, entailing additional costs for individuals, and inflicting extra pressure on the sense of competence.

Feelings connected with technophobia (Nimrod, 2018; Osiceanu, 2015), as an aversion to becoming familiar with the digitalization of services and to integrate new practices, were detected in the words of many participants. As EK (female) describes "as if we are fish and someone is asking us to breathe the air, it's not possible", a description supporting Khasawneh (2018)'s definition of technophobia. Several participants expressed "fear in electronics", i.e. a "fear of the irreversibility of digital mistakes", as well as the "fear of personal failure" (Sinkovics et al., 2002). Participants do not refer only to fears deriving from self-perceived skills, but also from the very nature and function of the technologies involved in digital transactions (Osiceanu, 2015). Since "the protection of the single piece of paper" is not valid, participants describe a lack of digital trust, which is one of the institutional priorities of the Council of the European Union (European Council, 2019) in the framework of the Digital Single Market, and has been underlined by relevant research (Garzoni et al., 2020). The "human versus machine ambiguity" is one of the components of the technophobia scale (Sinkovics et al., 2002) and includes distrust on machines, especially for serious transactions, i.e. money, and the need for a human agent. Indicatively, participants referred to the anxiety created by unmediated citizen-digital services relationship.

The absence of the human agency and the lack of interaction in the work environment, especially when working remotely, were also mentioned as core issues of digital transformation in the workplace. It was almost unanimously agreed upon that the lack of support fuels the adverse feelings associated with technology. The need for a human agency was addressed within the focus groups discussions through two perspectives. On the one hand, employee mediation creates further delays in processes that are largely digitized, while the difficulty of contacting the proper officials adds to the confusion around digitized services. On the other hand, the absence of human agency creates frustration and confusion when trying to carry out tasks through digital tools and environments.

Lastly, technophobia pertains to daily experience and relates to the concerns of older individuals for the younger generation, i.e. to one of the two components of technophobia regarding the effects of technology on society (Nimrod, 2018; Osiceanu, 2015). We close the current section with an indicative quote on the representation of digitalization (MK, female):

> […]it makes me feel anxious thinking that I won't make it, I won't make it. It's just a modern reproduction of how bureaucracy drives people away from proper functioning and a proper democratic society. Meaning, they've built platforms in a way that makes you feel impotent, like the Kafkaesque construct, just in a different form.

Insights into good practices: Literacy mechanisms, adaptation, and critical skills

If stress is conceptualized as a subset of negative emotions, for which the development of both problem-focused and emotion-focused copying strategies is necessary, as Lazarus (1993) has suggested, this study reveals specific practical difficulties that provoke technostress, but more importantly, specific emotions that mediate between the techno-stressor and its effects. The findings contribute to the theoretical discussion regarding the management of subjective emotions in ways that contribute to a more positive appraisal of digital conditions, as well as to the identification of targeted actions to reduce the objective issues that act as stressors. In other words, our findings provide indications on what should be changed in the person-digital environment relationship through direct actions of the environment (i.e. addressing the practical difficulties discussed above on the part of institutions and organizations, or what Ragu-Nathan et al. (2008) call technostress inhibitors), as well as through subjective change on the part of employees (as a result of systematic and organized support that will help them to develop strategies for dealing with the negative emotions induced by digitization), so that they can cope more effectively with emotional burden and cognitive exertion.

While digital transformation can bring significant benefits to work conditions, it also poses serious challenges for employees over 50 years of age. Our findings highlight the cognitive and emotional effort invested by individuals in trying to adapt to the changes brought about by digital transformation in the workplace, as well as specific emotions generated by this effort. Concerns about time management, lack of human contact, impersonal transactions, as well as frustration and feelings of insecurity were repeatedly detected in participants' words. These feelings and concerns, which contribute to the development of technostress, are not necessarily linked to some generic technological phobia, but mainly to insufficient support and training that would enable individuals to develop a sense of security and trust in the new environment and to achieve the necessary level of competence and confidence.

Older employees and professionals feel an imperative need to adapt to the digitalized work conditions, otherwise they will be prematurely left out of active work life. What seems to be missing in the implementation of digital tools and processes are the main components of technostress inhibitors, as identified by Tarafdar et al. (2007) and Ragu-Nathan et al. (2008): literacy mechanisms, that will provide the necessary knowledge and skills for handling any new challenges in the work domain, support mechanisms, that will offer the necessary guidance into solving different kinds of adversities, and involvement mechanisms which entail the rationale of the introduction of a new technology and its applications. This combination of problem-focused and emotion-focused processes (Lazarus, 1993) can contribute to the reduction of technostress, the increase of self-efficacy, and the reduction of biases against technology use (Truța et al., 2023).

Notwithstanding technostress, the words of some participants also reflected some form of technophobia, mainly illustrated in the repeated demand for a human agent mediating between the user and the machine, and stemming from digital mistrust, the fear of personal failure during important transactions, and the irreversibility of mistakes, all issues that create extra confusion and reinforce the sense of incompetence. Nevertheless, more research is needed on whether and how technostress and technophobia are interlinked.

The findings of the current study provide useful insight into the practices that could enhance self-efficacy and the well-being of employees and professionals. Participants acknowledged the importance of adaptability and critical thinking as key skills for endurance in an increasingly digitalized work environment. The former was considered necessary for career advancement and survival nowadays, while the latter was considered important for assessing incoming digital information and reducing frustration. Participants stress the need for continuous training during work hours and for sustained support by their organizations. This training must be organized and conducted promptly as new digital tools are introduced. Self-efficacy and wellbeing are also harmed by the digital bureaucracy components; unsatisfactory ergonomics of platforms, lack of guidelines, fragmentation of

digital spaces and lack of uniform systems, as well as by the absence of human agents, which multiply the time and effort invested in accomplishing a task.

Digital education for working individuals and citizens will benefit both individuals and organizations, by reducing digital mistrust. The provision of human agents mediating between employees/citizens and complex digital transactions will enhance a more humane approach of the public sector and could establish a more citizen-oriented perception of technology. Digital literacy and digital education will also assist individuals in setting the necessary boundaries, discussed thoroughly in the focus groups, between on and off-screen time and activities, to prevent cognitive overload and emotional exhaustion. Participants' difficulty to put a boundary between personal time and work time has been also pointed out in previous studies in Greece (Sidiropoulou & Davou, 2018; Sidiropoulou, 2018). Educational programs benefit older individuals, minimizing technophobia and technostress, as well as aiding to a more personalized use of ICT (Nimrod, 2018), that enhances well-being. While digital transformation can bring significant benefits at the workplace, this study showed that it also poses serious demands on older individuals, who have to cope with financial, educational and emotional challenges, in the absence of organizational and state policies that provide training and support.

The fact that participants of this study responded to an open call in a way constitutes them a self-selected 'sample', and this could be considered a limitation. Nevertheless, the purpose of qualitative research is to investigate deep processes rather than provide representative and generalizable results, which remain to be investigated by future quantitative research. Apart from testing the generalizability of the trends found in this study, future research should be orientated towards specific emotion-focused strategies and interventions that would contribute to the elimination of technophobia and technostress, both in the workplace and everyday life.

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Ψηφιακός μετασχηματισμός: Το στρες του «ψηφιακού μετανάστη» στο χώρο εργασίας

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ΠΕΡΙΛΗΨΗ

Η παρούσα έρευνα εξετάζει τον τρόπο με τον οποίο ο ψηφιακός μετασχηματισμός επηρεάζει την εργασιακή πραγματικότητα των ατόμων άνω των 50 ετών στην Ελλάδα. Στόχος της είναι να καταγράψει πώς οι εργαζόμενοι βιώνουν τις αλλαγές που επιφέρει η εφαρμογή τεχνολογικών εργαλείων και ψηφιακών διαδικασιών στην εργασία τους και πώς αυτές οι αλλαγές επηρεάζουν την καθημερινή ζωή και τις σχέσεις εντός και εκτός του χώρου εργασίας. Τα δεδομένα συλλέχθηκαν μέσω οκτώ ομάδων εστίασης με συνολικά 37 εργαζόμενους και επαγγελματίες άνω των 50 ετών, από τον ιδιωτικό και τον δημόσιο τομέα. Ανάμεσα στα πιο ενδιαφέροντα ευρήματα ήταν ότι οι συμμετέχοντες φαίνεται να αντιλαμβάνονται τον ψηφιακό μετασχηματισμό ως ένα «αναπόφευκτο κακό» που τους αναγκάζει να απορρίψουν τις οικείες μεθόδους που τους προσέφεραν μια αίσθηση ασφάλειας και επάρκειας. Τα ευρήματα υπογραμμίζουν ότι η απόκτηση ψηφιακών δεξιοτήτων τείνει να είναι θέμα ατομικής ευθύνης, αυτοεκπαίδευσης και προσωπικής επένδυσης χρόνου και χρήματος στην Ελλάδα, χωρίς επαρκή υποστήριξη από τον εργασιακό χώρο/οργανισμό. Ο αργός ρυθμός των διαδικασιών ψηφιοποίησης, η αποσπασματική εφαρμογή των ψηφιακών υπηρεσιών, η έλλειψη ενιαίων συστημάτων και η μη ικανοποιητική εργονομία των ψηφιακών πλατφορμών προκαλούν σύγχυση, δημιουργώντας ένα νέο είδος «ψηφιακής» γραφειοκρατίας. Μια βασική θεματική που αναδείχθηκε από τα δεδομένα ήταν οι πτυχές της τεχνοφοβίας και του τεχνοστρες, που προκύπτουν κυρίως από τα συναισθήματα ανασφάλειας και άγχους λόγω της έλλειψης εμπιστοσύνης στις ψηφιακές διαδικασίες. Οι συμμετέχοντες εξέφρασαν φόβο για το μη αναστρέψιμο των ψηφιακών λαθών, καθώς και απογοήτευση από την ανάγκη εφαρμογής νέων διαδικασιών χωρίς ανθρώπινη/συλλογική καθοδήγηση. Από τα δεδομένα προέκυψαν επίσης καλές πρακτικές, οι οποίες συζητούνται στο τελευταίο μέρος της εργασίας.

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