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IMPACT OF TECHNOSTRESS ON WORK-LIFE BALANCE

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Abstract: *One of the many factors that contribute to the success of an organisation is the use of professional information technology (ICT). The pandemic situation of recent years has highlighted the benefits of using state-of-the-art ICT. However, exploring the negative consequences is a less popular topic. The aim of this research is to identify the most significant risks factors of technostress that threaten the balanced performance of employees at work and the possibility of work-life balance. In 2021, statistical correlations between risk factors for technostress were identified using SPSS 26, based on the opinions of 237 Hungarian higher education staff. Using SPSS AMOS 27, a proprietary model was built to test the impact of the most serious risks on personal and work life. The results show that three factors have the greatest impact on work-life balance, which also affect organisational performance. Loss of leisure time due to techno-overload and techno-invasion, and a feeling of techno-uncertainty due to lack of ICT competence cause a sense of threat. These compromise work-life balance and, at the same time, work performance. The mutually reinforcing negative effects influence the sense of well-being (happiness) at work, the feeling of job security and force employees to learn continuously.*

Keywords: *info-communication technology, organisational performance, risk, well-being, work performance.*

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INTRODUCTION

Information and Communication Technology (ICT) is the driving force behind the new economic revolution. If we look at it from a positive perspective, it can be seen as a set of tools at the disposal of the modern worker. Information available everywhere and at any time, easier communication within the organisation, and ever faster technologies can all be counted as benefits (Stadin et al., 2019). On the negative side, we can say that the psychosocial workload is increasing, that the opportunities offered to the worker by new technologies are turning into pressure in the form of rising expectations from all sides (Califf et al., 2020; Rohwer et al., 2022). Technostress (stressful situations caused by technology) is the most critical of the negative effects of intensive use of smart devices. According to one of the first publications in the literature, technostress is defined as all the negative effects that technology has, directly or indirectly, on attitudes, opinions, behaviour or physically on the human body (Weil and Rosen, 1988). More serious problems are information overload and connectivity problems. Any effect caused directly or indirectly by technology that negatively affects attitudes, thoughts, behaviour, or causes negative physiological changes (Niedhammer et al., 2021).

As organisational ICT systems evolve, their use requires staff constantly to renew and update their digital skills (Fischer et al., 2018; Salazar-Concha et al., 2021). It is undeniable that the importance of technology in all organisational domains has been enhanced, with AI-driven systems now coming to the fore (Day et al., 2012; Seaward, 2018; Korzynski et al., 2021). The continuous evolution of technology is reflected in the relationships between and within organisations, regardless of size and type, both horizontally and vertically. This evolution is forcing resource-rich and resource-constrained operators continuously to adapt (Boyer-Davis, 2020). It also automatically brings with it pressure on staff to adapt to changing competence needs (Martínez-Navalón et al, 2023). The pandemic situation of recent years has only increased this pressure, as from one moment to the next, employees have had to work not only in a different environment (home office), but often without support, using unfamiliar systems (Rosen et al., 2010; Scaramuzzino & Barfoed, 2021; Schmidt et al., 2021). The often chaotic world of IT has created a challenging and stressful situation. The consequences of this situation are still felt today. It is therefore no coincidence that technostress has become an important area of scientific research in recent years (Saim et al, 2021; Whelan et al., 2022). The studies have mainly taken an organisational approach to the problem and have tended to neglect the personal side. According to Champion (1988 in La Torre et al., 2018), technostress is the cost of using technology, which has a wide range of effects. This implies that the compulsion to use smart devices cannot be clearly separated into the work and private spheres (Cahapay & Bangoc 2021; Pflügner, 2022). The link between them, the compulsion to use, does not end when working hours are over. This constant on-call situation is one of the reasons why people are often unable to switch off and disconnect from these devices, and privacy suffers (Körner et al., 2019; Aziz et al., 2021). This shift in the work-life balance poses a serious risk to the health and social relationships of individuals, while on the organisational side it threatens the success of the organisation as a whole through workplace performance (Popma, 2013; Efilti & Çoklar, 2019; Dragano & Lunau, 2020; Wu et al., 2023).

The aim of this research is to examine the interaction between the different elements of technostress, defining the most serious risk effects. Then, by examining the most critical factors, to highlight the threats to successful organisational functioning.

Research questions

Q1: Is there a link between the risk factors for technostress?

Q2: What are the most important risk factors for stress and its consequences?

Q3: Which areas of work and/or private life are most affected by technostress-related problems?

Q4: What risks do technostress situations pose to organisational functioning?

In the following chapters, after a brief literature review, the empirical research, its methodology and results are presented. Finally, the discussion and conclusions conclude the paper.

LITERATURE REVIEW

Technostress is not an entirely new term, it was coined at the same time as the first major IT developments (Broad, 1984). After this period, there were fewer publications on the subject. People became aware of the need for progress, and the need to adapt, which was still in evidence, became part of everyday practice. The last few years, and in particular the changes brought about by the pandemic, have greatly enhanced the importance of the subject. Research has suddenly proliferated, indicating the widening scope of the problem. The field has an interdisciplinary character, forming a link between information systems and psychological and business management research. It is a constantly evolving phenomenon, as new types of information systems (including applications and tools, artificial intelligence solutions) are constantly emerging and their use requires new approaches from users (Tarafdar et al., 2017).

Thus, the scientific explanation of technostress has gradually expanded and changed over the last 40 years in response to environmental conditions and experiences. According to Brod's (1982, 1984) definition, we are talking about a phenomenon in which individuals are unable to adapt or cope in a healthy way with new information and communication technologies. According to the later Weil and Rosen (1997) formulation, technostress is defined as any negative impact on attitudes, thoughts, behaviour or body physiology caused directly or indirectly by technology. In the literature, the studies of Ragu-Nathan et al. (2008) provided a new milestone and definition of stress as the experience of stress by IT users when using technology. In other words, it refers to information overload that makes employees partially or completely unable to cope with the difficulties and challenges caused by IT. Learning new technology can also be included in this group. In their research, the components of technostress were characterised as stressor-related events. In their study, Tarafdar et al. (2010) focused not only on the stress factors experienced by people working with IT technology but also on the technological environment. In doing so, they highlight the increasingly important social and economic role of this research area.

With the rise of the digital world, automation and information and communication technology, practitioners have been able to identify a growing number of factors and components that have been identified as the root causes of technostress and that can provide a general theoretical basis for deeper analysis. According to Weil and Rosen (1997), technostress results from an organisation's failure to properly implement IT technology-based systems that influence individual experience.

Based on the summaries of empirical research reviewed by La Torre et al. (2018), the causes of technostress can be grouped into three categories: individual factors such as age, gender, education, and personality traits (Srivastava et al., 2015, Khedhaouria and Cucchi 2019), technology-related factors, and work-related conditions.

Alphonse et al. (2018) approached the relationship between technostress and well-being from a CSR perspective, through interviews with managers. They investigated the importance of technostress risks to employees for SMEs' managers. Five areas were identified where management can have an impact on risk management and thereby affect employee well-being. These are: work organisation, working conditions, working conditions, job content and interpersonal relationships. Their results show that, although the need to reduce risk is articulated, the translation of this need into action plans is rarely impeccably implemented.

The relationship between technostress and trust is also a major influence. This is because the human-technology relationship, personal and impersonal trust, determines the use of IT tools and the quality of software applications. Personality traits, as an individual characteristic, and the organisational culture have a proven influence on its manifestations. Psychological and then economic research has supported a significantly positive relationship (Oksanan et al., 2021; Pflügner et al., 2021). Among the factors studied, employee performance, satisfaction and burnout have been the main focus (Srivastava et al., 2015, Khedhaouria & Cucch, 2019).

The following technostressor groups are accepted in the literature (Tarafdar et al., 2007; Ragu-Nathan, 2008; Pearson et al., 2009):

- Techno-overload: the IT system encourages employees to work faster and longer.
- Techno-invasion: the IT system also permeates employees' personal lives, making them available at all times. And employees feel compelled to stay in constant contact.
- Techno-complexity: due to the inherent configuration/quality of the IT system, employees do not feel that their own computer skills are adequate/necessary for their work.
- Techno-uncertainty/techno-complexity: refers to the constant changes and upgrades of software and hardware that can cause stress for employees.
- Technological unreliability: refers to situations where users feel threatened by the loss of their jobs.

Other work-related stressors have subsequently been identified in addition to the primary groups listed (Brown et al., 2014; Ninaus et al., 2015; Suh and Lee 2017; Stich et al., 2017):

- Mismatch between actual and desired PC use;
- Teleworking intensity;
- Email-related stressors (e.g. high email volume, poor email quality);
- Frequent interruptions during working hours.

The influence of these factors depends on personal psychological peculiarities. Particularly, it is proved that people characterized by higher dispositional anxiety perceived the new technology as more stressful in terms of technostressors (Jurek et al., 2021).

The most noticeable effects of technostress that can be observed in the functioning of organisations are:

- Increased role overload;
- Role conflict;
- Reduced job satisfaction;
- Fatigue and burnout.

The rise of a computer-driven economy and society has also contributed to an increase in the number of overworked workers, with the consequence of increased stress. At the societal level, its side effects have been shown to cause increasing problems in work relationships, personal relationships and health (Tarafdar et al., 2010).

The development of techno-overload is fuelled by workers' multitasking, work at home and failures in the technological background (hardware, software problems). Slow networks, network outages, outdated equipment and inconsistent data retrieval are major problems that prevent workers from achieving maximum efficiency as well as being able to support organisational goals as intended.

Across the functional areas of organisations, there is almost no area where some element of technostress risk is not present. According to Da Cunha et al. (2015), the negative consequences that flow from employees to the organisation include biased information input, and corrupt autonomy on the part of employees. In addition, the progressively increasing use of decentralised applications increases the negative effects of these trends.

Managing work-related stress requires skilled managers who can identify stressors and develop plans to reduce them in order to improve efficiency (Skakon et al., 2010). These measures became important within the employer value proposition development (Samoliuk et al., 2022). Çiçek and Kilinç (2021) investigated the role of transformational leadership. The results of the study show that transformational leadership behaviour negatively affects technostress. According to Ray (in FutureTalks.hu, 2020), as more and more artificial intelligence is created in the world, more and more emotional intelligence will need to be brought into leadership. These dependencies as well as the significance leader’s role became especially obvious during the pandemic (Sarihasan et al., 2022). Thus, the issue of trust will continue to be a central theme in the strategic thinking of organisations.

The above shows that the proliferation and continued use of IT systems is having an increasingly powerful impact on the health of employees. Employees are forced to play catch-up in order to work faster, which in an ill-prepared and incompetent situation can pose a serious mental strain. It is common knowledge that mental problems can eventually lead to physical illness (Da Cunha et al., 2015). Thus, technostress has a direct impact on the well-being of employees within the organisation and on their health in their private lives.

An online survey carried out in 2008 shows that one third of employees find it problematic that their professional life takes over their private life (Paridon and Hupke, 2009). For example, employees in managerial positions find it more difficult to maintain the boundary between work and private life due to the obligation of being constantly available. The same can be said of employees who are in regular contact with clients. According to a survey carried out by the German IT trade association BITKOM in 2011, 88% of employees in the sector are available to customers, colleagues or superiors outside working hours. In fact, 29% of employees say they answer the phone at any time for professional matters.

Other studies point to a conflict between work, professional and private roles. This leads to an increase in the psychosocial burden of the individuals concerned (Tarafdar, 2011a). The study also shows that role conflict is more damaging than role overload and can be a source of further health problems. The intrusion of professional life into private life limits the possibility for workers to rest and recuperate. The link between the intensive use of ICT and fatigue is mainly manifested in poor sleep (Punamäki, 2007). Of course, it is not only the smartphone that is to blame for poor sleep quality. In some cases, sleep problems are simply the result of excessive work pressures on the worker, the so-called 'work mania' (iPass, 2011).

We know that chronic and/or severe fatigue can be associated with various health problems, such as weakened defence mechanisms, mood disorders, heart disease and neurological disorders. It is also known that fatigue is a safety risk and is responsible for the increase in accidents at work (Swaen, 2003; Dembe, 2005). Finally, fatigue resulting from chronic technostress also has a strong negative impact on productivity (Hung, 2011; Tarafdar, 2007). A survey of university students reveals that their cognitive performance is highly dependent on the quality of their sleep (Lund, 2009). Excessive workloads do not spare young people either, and technostress has a negative impact on students' academic productivity (Upadhyaya & Vrinda, 2021; Pillai et al., 2021; Alvarez-Risco et al., 2021; Iskandar, 2021). This problem is of course also true for workers. Research among university professors (Li & Wang, 2021; Magistra et al., 2021; Dung, 2021) and employees of for-profit organisations (Savolainen et al., 2021; Pflügner et al., 2021; Oksanen et al., 2021; Nemteanu & Dabia, 2021; Stadin et al., 2021) show similar results. Both techno-overload and techno-invasion are significantly associated with higher turnover intention, higher work-life conflict and can lead to burnout (Kenneth, 2021; Hwang et al., 2021).

In all of the above cases, the presence of technostress is a risk. For the employee, it is mainly health, social and job retention, while for the organisation it is economic and technological. In several European countries, there is a legal obligation for managers to carry out a risk assessment at the workplace, taking psychosocial factors into account. In many cases there are serious shortcomings in this risk assessment, as shown in research by Beck and Lenhardt. (2019). Several studies in the literature report on the results of assessments carried out in the spirit of legal obligations. These are not primarily concerned with technostress and the risk of its consequences. Other risk assessments of the risks to workers tend to focus on problems arising during work and/or in connection with working conditions, irrespective of the phenomenon of technostress. Qualitative studies have been conducted with SMEs' managers in Brussels (Pavlista et al., 2021) and Germany (Alphonse et al., 2018). Five areas were identified where leadership has an impact on risk management and thus can influence employee well-being. These are: work organisation, working conditions, working conditions, job content and interpersonal relationships at work. Their results show that, although the need to reduce risk is articulated, the translation of this into action plans is rarely flawless. It can be seen that there are serious shortcomings even in what can be considered classic working conditions. Thus, the identification and quantification of the risks of technostress are currently neglected.

Based on the above, it can be said that technostress has an impact on both the work and private lives of employees. Workplace performance is not only a function of professionalism and organisational conditions, but also of the way in which employees feel about their work.

In recent years, there has been an upsurge in research into these effects, which are broadly covered by the term wellbeing (Czerw, 2019; Hou et al, 2022; Katajavuori et al., 2023).

Well-being is the experience of health, happiness and a good life. There are many approaches to the conditions and characteristics necessary to experience this feeling (Kun & Gadanecz, 2022; El-Sharkawy et al., 2023; Lera et al., 2022), particularly, in terms of work activities (Aliyev, 2022). The literature suggests that it includes mental health, life satisfaction, a sense of purpose and the ability to cope with stress. In general terms, well-being simply means feeling good. But this simplification is not sufficient for scientific research and the use of research findings. It is worth deepening the thinking further and separating out areas where a more precise picture of the characteristics of well-being can be obtained. The literature identifies 5 areas where research on well-being should be extended. These are (Rath & Harter; 2010; Baker, 2020):

- Emotional well-being: generating emotions that lead to good feelings (stress management and relaxation techniques, self-love).
- Physical well-being: developing a healthy lifestyle, physical exercise habits for good physical fitness.
- Social well-being: building and maintaining a support network (communication, meaningful relationships, overcoming loneliness).
- Workplace well-being. Pursuing interests, values and life purpose (achieving meaning, happiness and professional development).
- Social well-being. Active participation in a well-functioning community, culture and environment.

To talk about general well-being, all of these types must be functioning to some extent. Of these, well-being at work is the focus of this research. Aiming to show how the impact of technostress affects employees' workplace activities, relationships, health and sense of security. Overall, the impact of risk factors on organisational functioning.

The requirements for risk assessment are best met by integrated risk assessment (Meulbroek, 2008). In risk assessment calculations (hazard identification, modelling of accident scenarios and consequence analysis), the emotional part of the human factor is generally not taken into account. However, it is very important to be aware of the influence of human behaviour and emotions when assessing the risk of technostress in terms of organisational functioning, management, culture and cooperation. In their research, Dragano and Lunau (2020) investigated the risk of digital technologies on the mental health of employees. The results did not provide a clear answer, confirming the need for further research.

In the next chapter, we will address the research questions in the empirical investigation by formulating our hypotheses.

Test Model

On the basis of the theoretical review and our own experience, we set up an analytical model in which we drew hypothesised relationships between the elements of the risk factors. Hypotheses were then formulated with these relationships in mind.

H1 All technostress risk factors examined are significantly related to each other.
H2 The risk factors that have the most pronounced impact on employees' behaviour, work and personal life can be identified.
H3 Of the risks caused by technostress, work-life balance is the most at risk.
The model is shown in Figure 1 below.

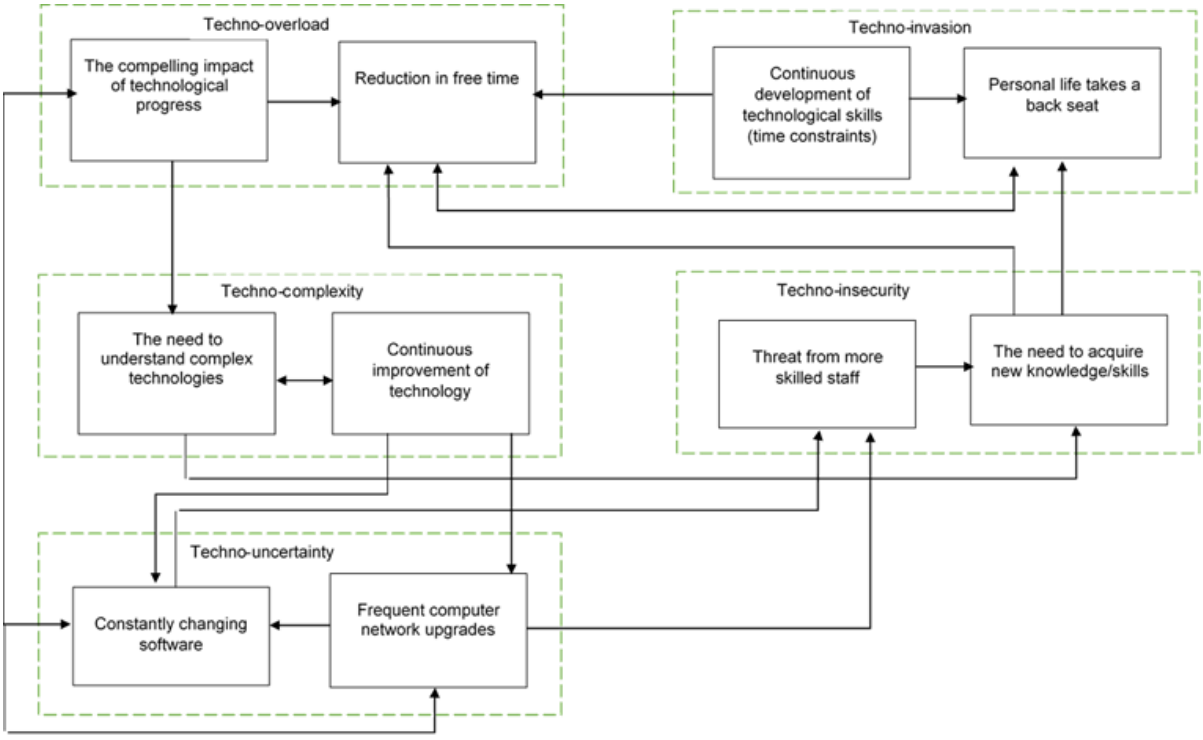

Figure 1. Test model
Source: own construction

METHODOLOGY

In 2021, we launched a quantitative research in the form of a questionnaire survey. The questionnaire was sent to 62 higher educational institutions in Hungary. According to the Hungarian Central Statistical Office (KSH, 2021), in 2021 there were 23 511 teachers working in higher education in Hungary. The sample size was 237, which at the 95% confidence level for a population size of 23 511 represents a margin of error of 6.33% based on Creative Research Systems (2023). This means that the sample size provides a good basis for analysis and the results can be accepted with a confidence level of almost 95%. The questionnaire was sent by direct mail after a test phase. The questionnaire was available to all employees and was completed anonymously on the Internet. The questionnaire contained 48 questions. Respondents were asked to rate their level of agreement with each statement on a five-point Likert scale. A five indicated total agreement and a one indicated total disagreement. The structure of the questionnaire is shown in Table 1 below.

Table 1. Questionnaire structure.

1. Group of questions	2. Group of questions	3. Group of questions	4. Group of questions	5. Group of questions
Job title, position, work schedule, satisfaction, etc.	Attitude, security, motivation, appreciation, etc.	Information provision, technological readiness, equipment, institutional support	Respondents' own experience and feelings about the use of ICT technologies and tools	Demography

As the research targeted all higher education institutions, we aimed for a representative sample. Questionnaires were sent out via the deans, asking for management support in returning responses. Unfortunately, the response rate was not very high. About 11% of the questionnaires sent out were returned. Statistical evaluation was carried out using SPSS 26 software. Multiple regression statistical methods, including path analysis, were used to test the hypotheses. A significance level of 5% was used in the evaluation. Then, using SPSS AMOS version 27, we created a new proprietary model in which we examined the most important risk factors (stressors). The aim was to assess the correlation of risk factors affecting organisational performance. The sample characteristics are summarised in Table 2 below.

Table 2. Sample characteristics.

Characteristics	%
Gender	39,7% male
	60.3% female
Age	19.4 % 35 years or younger
	39.3% 35 - 45 years old
	23.6% 45 - 55 years old
	17.7% over 55 years
Highest level of education	1.3 % upper secondary education
	98.7 tertiary education
Position	7.2% PhD student
	1.7% administrative assistant
	91.1% teacher, researcher

EMPIRICAL RESULTS

In our analysis, we examined how each technostress risk factor interacts with the other and the direction of the effect. We used pathway analysis to analyse how techno-overload, techno-invasion, techno-complexity, techno-uncertainty and techno-insecurity are strong risk drivers. The indicators used to measure techno-overload are the compelling impact of technological development and the Reduction in free time. In the case of techno-invasion, we looked at the continuous development of technological skills (lack of time) and the eclipse of personal life. Within techno-complexity, we analysed the need to understand complex technologies and the continuous improvement of technology. In measuring techno-insecurity, we looked at the threat posed by more skilled employees and the need to acquire new knowledge/skills. For the last risk factor, techno-uncertainty, we analysed the impact of constantly changing software and the frequent upgrading of computer networks. The results of the linear regression are summarised in Table 3.

Table 3. Linear regression results.

Parameters		Model summary				Standardised coefficients
Dependent	**Independent**	**r^2**	**F**	**df**	**Sign**	**β**
Reduction in free time	The compelling impact of technological progress	,105	27,563	1	,000	,324
Reduction in free time	Lack of time	,067	16,929	1	,000	,259
Reduction in free time	Personal life takes a back seat	,220	66,451	1	,000	,470
Reduction in free time	The need to acquire new knowledge/skills	,074	18,739	1	,000	,272
Personal life takes a back seat	Lack of time	,149	41,223	1	,000	,386
Personal life takes a back seat	Reduction in free time	,220	66,451	1	,000	,470
Personal life takes a back seat	The need to acquire new knowledge/skills	,095	24,671	1	,000	,308
The need to understand complex technologies	The compelling impact of technology	,227	68,891	1	,000	,476
The need to acquire new knowledge/skills	Threats to staff's technological skills	,111	29,481	1	,000	,334
Constantly changing software	Continuous improvement of technology	,254	79,806	1	,000	,503
Constantly changing software	Frequent computer network upgrades	,352	127,778	1	,000	,593
Frequent computer network upgrades	Continuous improvement of technology	,220	66,321	1	,000	,469

Source: own construction

Only significant relationships are shown in the table. The beta coefficient shows how much one variable affects the other. In Figure 2, the authors have marked these values. R square represents the proportion of the variance of the dependent variable in a regression model explained by an independent variable. The R squared coefficients, i.e. the changes in the variance of the dependent variable due to the independent variable, are higher in the following cases: Constantly changing software and Frequent computer network upgrades, which is 35%, Constantly changing software and Continuous improvement of technology, which is 25%, The need to understand complex technologies and The compelling impact of technology, which is 23%, Personal life takes a back seat and Reduction in free time, which is 22%, and Frequent computer network upgrades and Continuous improvement of technology, which is also 22%. The explanatory values are usually low and medium, for which there could be several reasons. The most respondents were university lecturers and researchers. Their employment is on flexible working hours, the content of their work is different from that of those in the business sector, and the opportunities for individual training are different from those in business organisations.

The results of the analysis demonstrate that the pressures of technological development, the lack of time associated with the continuous development of technological skills, the strong influence of technology on personal life and the need to acquire new knowledge/skills, each separately represent a risk to the sacrifice of employees' leisure time. The risk of personal life being overshadowed is compounded by the lack of time due to the continuous development of technological skills, the loss of free time and the need to acquire new knowledge/skills. There is a significant relationship between the constraints of technology and the need to understand complex technologies, with the threat of more educated employees influencing the risk of acquiring new knowledge/skills. A significant relationship can be found between constantly changing software, continuous technological development

and practical computer network upgrading as risk factors. Based on the significant relationship in the theoretical model, the following statements can be made.

- If workers are forced by the constant evolution of technology to do more work than they can handle, if they feel they do not have enough time to learn and develop their technological skills, and if technology is intruding into their personal lives, they are taking a high risk (at the expense of their free time) to keep up to date with the use of new technologies. *This risk is primarily a health risk, both mental and physical.*
- If workers need longer to understand and master the use of new technology, they risk sacrificing personal time. *This poses sociological and health risks.*
- If they feel that technology is intruding on their personal lives, they risk not having enough time to learn and develop their technological skills. *Health and job retention risk.*
- If they have to sacrifice their holidays and weekends to keep up to date with new technology, or if they need longer to understand and use new technology, they are also risking their free time. *Health and social (family life) risks.*
- In addition to the sacrifice of leisure time, the pressures of technological development also affect workers in terms of the complexity of understanding and using new technology. *Job retention and workplace relations (social) risk.*
- The feeling of being threatened by more skilled employees has a positive impact on the time taken to learn new technologies, but also poses a risk to organisational trust. *Social risk.*
- The constantly changing software within the institution, the continuous technological development and the frequent upgrading of computer networks reinforce each other. *Technological, economic and social risk.*

The background to these findings is provided by the network of relationships shown in Figure 2.

The results show that the first hypothesis (H1) is confirmed, as significant associations between these risk factors can be found. Based on the significance values written on the relationship, the second hypothesis (H2) is also considered to be confirmed, as the most pronounced risk factors (see coloured model elements) are detected. These factors show the most correlation. The technology constraint is significantly related to the complexity of understanding new technology, which suggests that there is a significant relationship between techno-overload and techno-complexity. Techno-overload and techno-invasion also influence each other, as there is a significant relationship between the marginalisation of personal life and the loss of leisure time. The crowding out of personal life has an impact on the need to acquire new knowledge/skills, which results in a significant relationship between techno-invasion and techno-insecurity. In addition to the strong impact on personal life, the need to acquire new knowledge/skills also has an impact on the loss of leisure time. On this basis it can be declared that techno-uncertainty is also linked to techno-overload. A link between techno-complexity and techno-uncertainty was found, as continuous technological development within the organisation is significantly related to constantly changing software. The results show that it is the marginalisation of personal life that is the real problem, and where the greatest risk is to be found. Based on the results, the third hypothesis (H3) is also accepted.

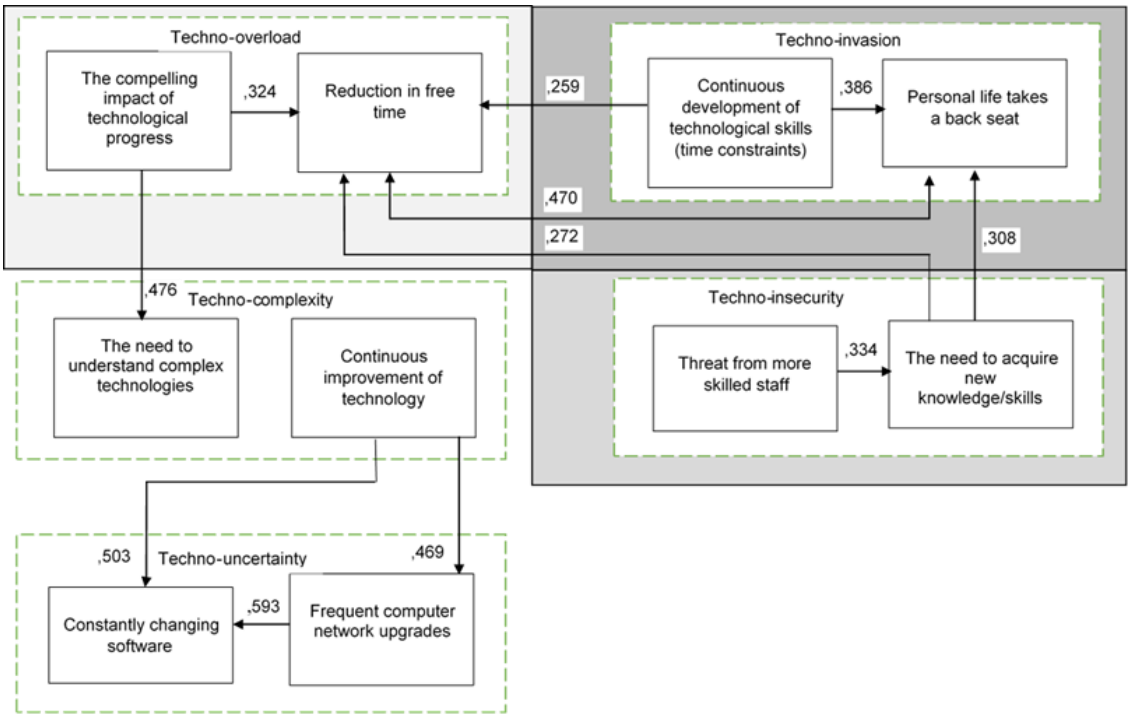

Figure 2. Significant association pattern of technostress risk elements.
Source: own construction

In response to the results so far, we can say that the respondents confirm the results of the statistical analysis. The main problem perceived by staff is in the area of work-life balance. This is the area most at risk, as was shown in the path analysis. In fact, learning new skills requires more effort, can initially slow down work processes, and the fact that additive effort is often only possible beyond working hours and not within them is an additional stress factor. This increases the problem of reconciling work and private life and poses a risk to performance at work. The threat posed by the higher level of knowledge of the more skilled worker is perceived as less pronounced. The statistical results allow a similar conclusion. The standard deviation values are generally large, except in the case of the fear of losing one's job due to the knowledge of the more qualified employee. This implies that there was heterogeneity in the respondents' opinions on each of the findings (see Table 4).

Table 4. Most important risk factors for technostress.

	Statements	Average	St. deviation	Components value
Plus efforts/techno-overload Crornbach's Alpha:.735	(PI1) Technology makes me work harder than I can handle.	2.65	1.100	.887
	(PI2) Not enough time to learn and develop my technological skills.	2.51	1.068	.653
Threat to private life /techno-invasion Crornbach's Alpha:.769	(P1) I have to sacrifice my holidays and weekends to keep up to date with new technology.	2.61	1.247	.840
	(P2) I feel that technology is encroaching on my personal life.	2.71	1.184	.797
Work threat/techno-uncertainty Crornbach's Alpha:.752	(W1) I feel threatened by staff for their newer technological skills.	1.81	0.905	.848
	(W2) I need more time to understand and use the new technology.	2.30	1.081	.820

Source: own construction

For further analysis, we focused on the 3 most pronounced risk factors, which are grey-coded in Figure 2 (techno-overload, techno-invasion, techno-uncertainty).

The variables were compressed into three factors by Varimax rotation (KMO Barlett test: .859 Kb Chi-squared: 594.612, df:15 sig.: .000, explained fraction 81.058%) for further analysis (see component values (Table 4, column 5) and factor names (Table 4, column 1)).

The survey asked respondents how secure they felt in their jobs. A high proportion of respondents (80%) generally felt so. The mean score on a scale of 5 was 4.1.

On a scale of one to five, respondents were also asked to rate how happy they were at work. Also a large proportion (77%) of respondents said that they are usually happy, with an average score of 3.97.

22% of those surveyed have to constantly update their technological skills to keep up to date at work.

A model was created using SPSS AMOS version 27, in which the risk factors (stress factors) in Table 4 were examined: extra effort/techno-overload, threat to privacy/techno-invasion, threat to work/techno-insecurity. The question was asked about their impact on job security, happiness at work (well-being), and continuous renewal of technology knowledge. These outputs are fundamental determinants of employees' performance at work and thus put organisational performance at risk.

The 'absolute model fit': the Khi-square was significant (33.449, df: 16, p: ,0.006). The RMSEA (Root Mean Square Error Approximation) value: .068, which should typically be below 0.08. For Incremental Model Fit, CFI: .975, NFI: .954, TLI: .928. For Parsimonious Fit, Khi squared/df: 2.091. The model is shown in Figure 3.

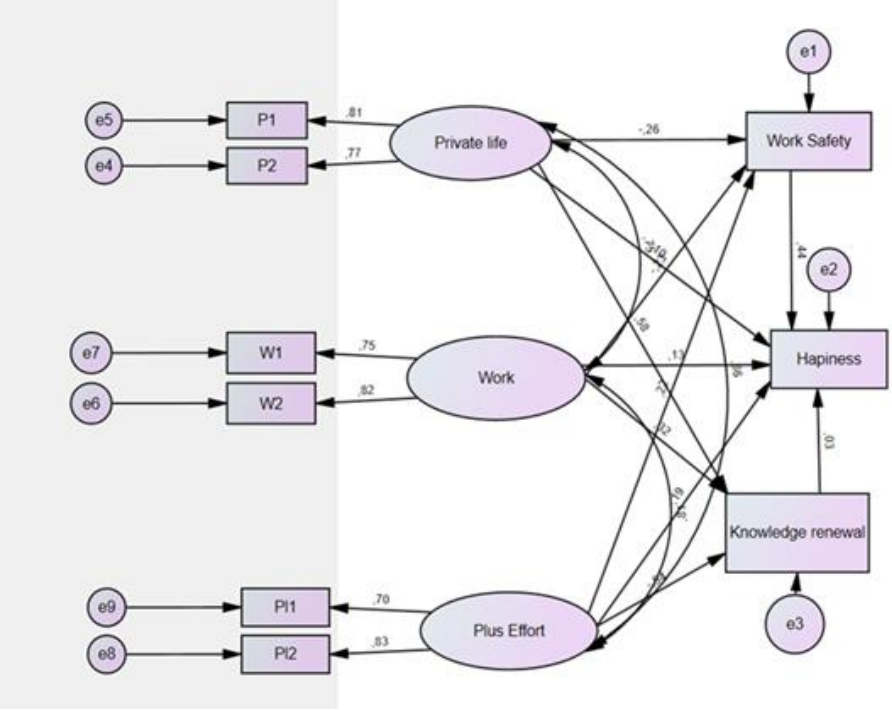

Figure 3. Effects of stressors on job security, job-generated happiness, and continuous technology knowledge renewal (risk value).

Source: Own construction (the components of the factors (P1, P2, W1, W2, PI1, PI2) are shown in Table 4

The graph shows that the more extra energy someone invests in learning technological skills, the more it will affect their personal life (work-life balance). The risk of losing a job generates more work (time spent learning) to learn new technologies and skills. And the fear of losing a job puts a stigma on personal life. A strong significant relationship can be demonstrated with regard to the need to sacrifice work-life balance in order to develop and constantly update technological skills. There is also a strong significant relationship between happiness and satisfaction at work.

Overall, the results of the research demonstrate that technostress factors pose a risk to work-life balance, workplace trust and, through this, organisational performance.

DISCUSSION

In response to the results so far, we can say that the results of the model analysis confirm the results of the statistical analysis. The main problem is perceived to be in the area of work-life balance. As was shown in the path analysis, this is the area most at risk. In fact, learning new skills requires more effort, may initially slow down work processes, and the fact that additive effort is often only possible beyond working hours and not within them is an additional stress factor. This increases the problem of reconciling work and private life and poses a risk to performance at work. The threat posed by the higher level of knowledge of the more skilled worker is perceived as less pronounced. The statistical results allow a similar conclusion. The standard deviation values are generally large, except in the case of the fear of losing one's job due to the knowledge of the more qualified employee. This means that there was heterogeneity in the respondents' opinions on each of the statements, but relatively high agreement on the likelihood of losing a job (see Table 4).

Previous research findings in the higher education sector show a mixed picture. In some areas similar results (Upadhyaya and Vrinda, 2021), in others different (Choi and Lim, 2016; Abilleira et al., 2021). This may be due to the fact that the higher education research presented in the literature has focused exclusively on students (Pillai et al., 2021; Alvarez-Risco et al., 2021; Iskandar, 2021) or exclusively on teachers (Li and Wang, 2021; Magistra et al., 2021; Dung, 2021). However, they did not survey the entire higher education workforce, including staff in support areas. This fact certainly has a major impact on the results obtained and the final conclusions. Results from the for-profit sector can be found in the literature (Savolainen et al., 2021; Pflügner et al., 2021; Oksanen et al., 2021; Nemteanu and Dabia, 2021; Stadin et al., 2021) which reach similar conclusions regarding the correlation of factors. We found one study that, similar to the questions of the present study, investigated the problem of reconciling work and family life through stress factors (Kenneth et al., 2021). The previous studies have mainly approached the issue from the perspective of the perception of stress, and the risk of technostress is not included in the study models. Likewise, the focus on the impact on organisational performance is limited (Hwang et al., 2021), mainly from the perspective of organisational culture, emotional intelligence, organisational trust, which are factors that fundamentally influence well-being and happiness at work. Some studies have been found that support our thinking that personality traits, human behaviour, and choice of leadership style can reduce the risk of technostress on organisational performance (Çiçek and Kilinç, 2021; Magistra et al., 2021; Kuzaini et al., 2021; Spagnoli, et al., 2021; Khan, 2021). This so-called "soft" approach is gaining ground

and there is a growing body of research that seeks to explore the impact of these factors. Soft factors and/or their comparative absence have been shown increasingly to put organisational performance at risk.

CONCLUSION

Overall, the results of the research show that the technostress factors are significantly related to each other. Based on the questions within the factors, the most significant factors that influence the sense of well-being in both work and personal life can be identified. As is known from the literature, a sense of well-being at work has a strong impact on work performance. Therefore, management should pay attention to those factors that pose a risk primarily to organisational performance. These are the possibility of work-life balance, happiness at work and the need to continuously renew knowledge. The pronounced risk of these factors can be clearly demonstrated by the analysis of our own model.

Limitations of the research include the limited possibilities for data collection and the reluctance of respondents to answer. The composition of the sample includes few opinions from support staff, which could have a negative impact on the results. Also, the results may be distorted by the fact that respondents had to answer on the basis of their own value judgements, which may vary according to the current mood and feelings at work.

The further direction: The aim is to increase the sample size possibly with an international perspective. Having shown in the research that technostress has a clear impact on work-life balance, the next step in the analysis is to test the relationships between age, marital status, position and family-friendly factors in organisational culture on an extended sample. The next research will focus on the profit-oriented sector, where data collection is ongoing. A comparison of the results will highlight the difference between the two areas, drawing attention to the management decisions that need to be made.

A novel finding of the research, which contributes to both theory and practice in published research to date, is that technostress factors are risk-assessed and that employee/organisational happiness is included among the factors that risk organisational performance. This relationship is closely related to work-life balance. Also, the approach of including not only teaching/research staff in the sample (even if in low numbers), but also those employed in support jobs, opens new avenues for further research. This perspective highlights that the success of higher education depends as much on the support staff as on the lecturers and students. In addition to the quantitative factors that qualify performance, the role of people – a major psychological risk factor – must be taken seriously in the changed workplace. It must also be seen that well-being is not just a buzzword in the field of HR management, but an organisational characteristic with risks that have a serious impact on organisational performance.

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REFERENCES

Abilleira, M.P., Rodicio-García, M.L. Deus, M.R., & Mosquera-González, M. (2021). Technostress in Spanish University Teachers During the COVID-19 Pandemic. *Frontiers in Psychology*, 12. 617650. https://doi.org/10.3389/FPSYG.2021.617650

Aliyev, K. (2022). Well-being costs of perceived job insecurity: Mediating role of financial satisfaction, subjective healthiness and institutional trust. *Journal of International Studies, 15*(2), 140-156. doi:10.14254/2071-8330.2022/15-2/10

Alphonse I., Dupont C., Perrine F., & Scoyez S. (2018). Sensitivity of directors to workplace wellbeing and risk management, Evidence from small and medium enterprises in Belgium *Global Journal of Business Research*, 12(1). 79–92.

Alvarez-Risco, A., Del-Aguila-Arcentales, S., Yáñez, J.A., Rosen, M.A., & Mejia, C.R. (2021). Influence of Technostress on Academic Performance of University Medicine Students in Peru during the COVID-19 Pandemic. *Sustainability*, 13(16), 8949-8949 https://doi.org/10.3390/SU13168949

Aziz, A., Awang Kader, NN., Riduan, M.A. & Halim, R. (2021). The Impact of Technostress on Student Satisfaction and Performance Expectancy. *Asian Journal of University Education*, 17(4), 538-552, https://doi.org/10.24191/ajue.v17i4.16466

Baker, K. (2020). The 5 Elements of Wellbeing, available at: https://www.mpi.org/blog/article/the-5-elements-of-wellbeing

Beck D., & Lenhardt U. (2019). Consideration of psychosocial factors in workplace risk assessments: Findings from a company survey in Germany. *International Archives of Occupational and Environmental Health*, 92. 435–451 https://doi.org/10.1007/s00420-019-01416-5

BITKOM 2011. available at: http://www.bitkom.org/de/markt_statistik/64054_68489.aspx (accessed 20 June 2022)

Bondanini, G., Giorgi, G., Ariza-Montes, A., Vega-Muñoz, A. & Andreucci-Annunziata, P. (2020). Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis, *International Journal of Environmental Research and Public Health*, 17, 8013. https://doi.org/10.3390/ijerph17218013

Boyer-Davis, S. (2020). Technostress in Higher Education: An Examination of Faculty Perceptions before and during the Covid-19 Pandemic, *Journal of Business and Accounting*, 13(1), 42-58.

Brod, C. (1982). Managing technostress: optimizing the use of computer technology. *Personnel Journal*, 61(10), 753-757.

Brod, C. (1984). *Technostess: The human cost of the computer revolution*. Addison-Wesley, Reading, Boston, USA

Brown, R., Duck, J., & Jimmieson, N. (2014). E-mail in the workplace: the role of stress appraisals and normative response pressure in the relationship between e-mail stressors and employee strein. *International Journal of Stress Management*, 21(4), 325-347 https://psycnet.apa.org/doi/10.1037/a0037464

Cahapay, M. B., & Bangoc II, N. F. (2021). Technostress, Work Performance, Job Satisfaction, and Career Commitment of Teachers amid COVID-19 Crisis in the Philippines. *International Journal of Educational Research and Innovation*, (16), 260–275. https://doi.org/10.46661/ijeri.6145

Califf, C.B., Sarker, S. & Sarker, S. (2020). A Mixed-Methods Study of Healthcare IT, *MIS Quarterly* 44(2), 809-856. https://doi.org/10.25300/MISQ/2020/14818

Champion, S. (1988). Technostress: technology´s toll. School Library Journal, 35(3), 48-51, In: La Torre, G. *et al.* (2018). Definition, symptoms and risk of techno-stress: a systematic review. *International Archives of Occupational and Environmental Health*, 92. 13-35, https://doi.org/10.1007/s00420-018-1352-1

Choi, S.B., & Lim, M.S. (2016). Effects of social and technology overload on psychological well-being in young South Korean adults: The mediatory role of social network service addiction, *Computers in Human Behavior*, 61(8), 245-254. https://doi.org/10.1016/j.chb.2016.03.032.

Çiçek, B, & Kilinç, E. (2021). Can transformational leadership eliminate the negativity of technostress? Insights from the logistic industry. *Business and Management Studies: An International Journal*, 9(1), 372-384. https://doi.org/10.15295/BMIJ.V9I1.1770

Creative Research Systems (2023). Available: https://www.surveysystem.com/sscalc.htm

Czerw, A. (2019). Diagnosing Well-Being in Work Context – Eudemonic Well-Being in the Workplace Questionnaire. *Current Psychology*, 38, 331–346. https://doi.org/10.1007/s12144-017-9614-8

Da Cunha, J.V., Carugati, A., & Leclercq-Vandelannoitte, A. (2015). The dark side of computer-mediated control. *Information Systems Journal*. 25(4), 319-354, https://doi.org/10.1111/isj.12066

Day, A., Paquet, S., Scott, N., & Hambley, L. (2012). Perceived information and communication technology (ICT) demands on employee outcomes: The moderating effect of organizational ICT support. *Journal of Occupational Health Psychology*, 17(4), 473–491. https://doi.org/10.1037/a0029837.

Dembe A.E., Erickson, J.B., Delbos, R.G., & Banks, S.M. (2005). The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the United States, *Occupational and Environmental Medicine*, 62(9), 588-597.

Dragano, N., & Lunau, T. (2020). Technostress at work and mental health: Concepts and research results. *Current Opinion in Psychiatry*, 33(4), 407–413. https://doi.org/10.1097/YCO.0000000000000613

Dung, N.X. (2021). Technostress's Impact on Intention to Apply Novel Teaching Technology: Case Study in Lecturers at Universities in Hanoi. *Journal of Economics and Economic Education Research*, 22(7), 1-10.

Efilti, E. & Çoklar, A.N. (2019). Teachers' Technostress Levels as an Indicator of their Psychological Capital Levels, *Universal Journal of Educational Research* 7(2), 413-421, https://doi.org/10.13189/ujer.2019.070214

El-Sharkawy, S.A., Nafea, M. & Hassan, E.ED.H. (2023). HRM and organizational learning in knowledge economy: investigating the impact of happiness at work (HAW) on organizational learning capability (OLC), *Future Business Journal*, 9(10), https://doi.org/10.1186/s43093-023-00188-2

Fischer, T., Halmerbauer, G., Meyr, E., Riedl, R. (2018). Blood Pressure Measurement: A Classic of Stress Measurement and Its Role in Technostress Research. In: Davis, F., Riedl, R., vom Brocke, J., Léger, PM., Randolph, A. (eds) *Information Systems and Neuroscience. Lecture Notes in Information Systems and Organisation*, vol 25. Springer, Cham. https://doi.org/10.1007/978-3-319-67431-5_4

Hou, N., Peng, J. & Nie, Q. (2022).The benefits of ambidextrous leadership behavior for the workplace well-being of leaders, *Currentent Psychology*, https://doi.org/10.1007/s12144-022-03900-7

Hung, W.H., Chang, L., & Lin, C. (2011). Managing the Risk of Overusing Mobile Phones in the Working Environment: A Study of Ubiquitous Technostress. *Pacific Asia Conference on Information Systems. Paper 81*, Queensland University of Technology, Brisbane.

Hwang, I., Kim, S., & Rebman, C.M. (2021). Impact of regulatory focus on security technostress and organizational outcomes: the moderating effect of security technostress inhibitors. *Information Technology & People*, 35(7), 2043-2074. https://doi.org/10.1108/ITP-05-2019-0239

iPass (2011). The iPass global mobile workforce report: understanding enterprise mobility trends and mobile usage, Redwood Shores, iPass

Iskandar, Y.H.P. (2021). The Factors Influencing Compulsive Social Apps and Its Impact on Technostress among Students. *Anatolian Journal of Education*, 6(2), 207-220 https://doi.org/10.29333/AJE.2021.6215A

Jurek, P., Olech, M., & Brycz, H. (2021). Perceived technostress while learning a new mobile technology: Do individual differences and the way technology is presented matter?. *Human Technology*, *17*(3), 197–212. https://doi.org/10.14254/1795-6889.2021.17-3.2

Katajavuori, N., Vehkalahti, K. & Asikainen, H. (2023). Promoting university students' well-being and studying with an acceptance and commitment therapy (ACT)-based intervention, *Current Psychology*, 42, 4900–4912. https://doi.org/10.1007/s12144-021-01837-x

Kenneth J. H., Ranida, B. H., Valle, M., Carlson, J., Carlson, D.S., Zivnuska, Z., & Wiley, B. (2021). Technostress and the Entitled Employee: Impacts on Work and Family. *Information Technology & People*, 35(3), 1073-1095 https://doi.org/10.1108/ITP-07-2019-0348

Khan, A. N. (2021). A Diary study of social media and performance in service sector: Transformational leadership as cross-level moderator. *Current Psychology*, pp. 1-15. https://doi.org/10.1007/S12144-021-02310-5

Khedhaouria, A., & Cucchi, A. (2019). Technostress creators, personality traits, and job burnout: A fuzzy-set configurational analysis. *Journal of Business Research*, 101(8), 349-361 https://doi.org/10.1016/j.jbusres.2019.04.029

Khuzaini, K. and Zamrudi, Z. (2021). Technostress among marketing employee during the COVID-19 pandemic: Exploring the role of technology usability and presenteeism. *Scientific Journal of Accounting and Management*, 18(1), 36 https://doi.org/10.31106/JEMA.V18I1.10050

Korzynski, P., Rook, C., Florent Treacy, E., & Kets de Vries, M. (2021). The impact of self-esteem, conscientiousness and pseudo-personality on technostress, *Internet Research*, 31(1), 59-79. https://doi.org/10.1108/INTR-03-2020-0141

Körner U., Müller-Thur K., Lunau T., Dragano N., Angerer P., & Buchner A. (2019). Perceived stress in human-machine interaction in modern manufacturing environments-Results of a qualitative interview study. *Stress Health*, 35, 187–199. https://doi.org/10.1002/smi.2853

Kun, A. & Gadanecz, P. (2022). Workplace happiness, well-being and their relationship with psychological capital: A study of Hungarian Teachers, *Current Psychology*, 41, 185–199. https://doi.org/10.1007/s12144-019-00550-0

KSH (2021). https://www.ksh.hu/stadat_files/okt/hu/okt0020.html

La Torre, G., Esposito, A., Sciarra, I., & Chiapetta, M. (2018). Definition, symptoms and risk of techno-stress: a systematic review. *International Archives of Occupational and Environmental Health*, 92(1), 13-35 https://doi.org/10.1007/s00420-018-1352-1

Lera, MJ., Leon-Perez, J.M. & Ruiz-Zorrilla, P. (2022). Effective Educational Practices and Students' Well-being: The Mediating Role of Students' Self-efficacy, *Current Psychology*, 15 June https://doi.org/10.1007/s12144-022-03266-w

Li, L., Wang, X., & Wang, X. (2021). Technostress inhibitors and creators and their impacts on university teachers' work performance in higher education. Cognition, *Technology & Work*, 23(2), 315-330 https://doi.org/10.1007/S10111-020-00625-0

Lund H.G., Reider, B.D., Whiting, A.B., & Prichard J.R. (2009). Sleep patterns and predictors of disturbed sleep in a large population of college students, *Journal of Adolescent Health*, 46(2), 124-32 https://doi.org/10.1016/j.jadohealth.2009.06.016

Magistra, S.N., Santosa, S., & Indriayu, M. (2021). Effect of Self-Efficacy and Technostress on Teacher Performance through Organizational Commitments. *Dinamika Pendidikan*, 16(1), 75-82. https://doi.org/10.15294/DP.V16I1.28993

Martínez-Navalón, J.G., Gelashvili, V., DeMatos, N. & Herrera-Enríquez, G. (2023). Exploring the impact of digital knowledge management on technostress and sustainability, *Journal of Knowledge Management*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JKM-07-2022-0544

Meulbroek, L. K. (2008). *A Senior Manager's Guide to Integrated Risk Management. Corporate Risk Management* Chew, D.H. (ed.) New York Chichester, West Sussex: Columbia University Press. pp. 63-86. https://doi.org/10.7312/chew14362-004

Mura, L., & Vlacseková, D. (2018). Motivation of public employees: Case study of Slovak teaching and professional staff. *Administratie si Management Public*. 31, 67-80. https://doi.org/10.24818/amp/2018.31-05

Nemteanu, M., & Dabija, D.C. (2021). The Influence of Internal Marketing and Job Satisfaction on Task Performance and Counterproductive Work Behavior in an Emerging Market during the COVID-19

Pandemic. *International Journal of Environmental Research and Public Health*, 18(7), 3670. https://doi.org/10.3390/IJERPH18073670

Niedhammer I., Bertrais S., & Witt K. (2021). Psychosocial work exposures and health outcomes: A meta-review of 72 literature reviews with meta-analysis. *Scandinavian Journal of Work Environment and Health*. 47(7), 489–508. https://doi.org/10.5271/sjweh.3968.

Ninaus, K. *et al.* (2015). Benefits and stressors perceived effects of ICT use on employee health and work stress: an exploratory study from Austria and Hong Kong. *International Journal of Qualitative Studies on Health and Well-Being*, 10(1), 28838 https://doi.org/10.3402/qhw.v10.28838

Oksanen,A., Oksa,R., Savela, N., Mantere, E., Savolainen, I., & Kaakinen, M. (2021). COVID-19 crisis and digital stressors at work: A longitudinal study on the Finnish working population. *Computers in Human Behavior*, 122. 106853-106853. https://doi.org/10.1016/J.CHB.2021.106853

Paridon H., & Hupke M. (2009). Psychosocial impact of mobile telework: results from an online survey, *Europe's Journal of Psychology*, 5(1). http://dx.doi.org/10.5964/ejop.v5i1.282

Pavlista V., Angerer P., & Diebig M. (2021). Barriers and drivers of psychosocial risk assessments in German micro and small-sized enterprises: A qualitative study with owners and managers. *BMC Public Health*. 21, 1376 https://doi.org/10.1186/s12889-021-11416-1

Pearson, A., Pearson, J.M., & Griffin, C. (2009). Innovating with technology: The impact of overload, autonomy, and work and family conflict. *Journal of Information Technology Theory and Applications*, 9(4), 41-65.

Pflügner,K., Maier, Ch., & Weitzel, T. (2021). The direct and indirect influence of mindfulness on techno-stressors and job burnout: A quantitative study of white-collar workers. *Computers in Human Behavior*, 115. 106566. https://doi.org/10.1016/J.CHB.2020.106566

Pflügner, K. (2022). Technostress Management at the Workplace: A Systematic Literature Review, *Wirtschaftsinformatik Proceedings 2*. available: https://aisel.aisnet.org/wi2022/adoption_diffusion/adoption_diffusion/2

Pillai, K.R., Upadhyaya, P., Viswanath, A., Badrinarayan, P., Ramaprasad, S., Yogesh, M., & Pai, P. (2021). End-user satisfaction of technology-enabled assessment in higher education: A coping theory perspective. *Education and Information Technologies*, 26(4), 3677-3698 https://doi.org/10.1007/S10639-020-10401-2

Popma, J. (2013). *A technostressz és a nomád munkavégzés egyéb hátulütői (The technostress and other drawbacks of nomadic work)* Műhelytanulmány Európai Szakszervezeti Intézet (European Trade Union Institute Workshop), Budapest

Punamäki R.-L. Wallenius, M., Nygård, C-H., Saarni, L., & Rimpelä, A. (2007). Use of information and communication technology (ICT) and perceived health in adolescence: the role of sleeping habits and waking-time tiredness, *Journal of Adolescence*, 30(4), 569-585.

Ragu-Nathan T., Tarafdar, M., & Ragu-Nathan, B.S. (2008). The consequences of techno-stress for end users in organizations: conceptual development and empirical validation, *Information Systems Research*, 19(4), 417-433.

Rath, T. & Harter, J. (2010). The Five Essential Elements of Well-Being, available: https://www.gallup.com/workplace/237020/five-essential-elements.aspx

Ray, A. (é.n.): MI gondolatok. In FutureTalks.hu (2020), available at: https://mvmfuturetalks.hu/hu (accessed 21 June 2022)

Rohwer, E., Flöther, J.C. Harth, V. & Mache, S. (2022). Overcoming the "Dark Side" of Technology—A Scoping Review on Preventing and Coping with Work-Related Technostress, *International Journal of Environmental Research and Public Health* 19, 3625. https://doi.org/10.3390/ijerph19063625

Rosen, C. C., Chang, C. H., Djurdjevic, E., & Eatough, E. (2010). *Occupational stressor and job performance: an updated review and recommendations, in New Developments in Theoretical and Conceptual Approaches to Job Stress*, V. 8, Emerald Group Publishing Limited, pp. 1-60.

Saim, M.A.S.M., Rashid, W.E.W. & Ma'on, S.N. (2021). Technostress creator and work life balance: a systematic literature review, *Romanian Journal of Information Technology and Automatic Control*, 31(1), 77-88. https://doi.org/10.33436/v31i1y202106

Salazar-Concha, C., Ficapal-Cusí, P., Boada-Grau, J. & Camacho, L.J. (2021). Analyzing the evolution of technostress: A science mapping approach, *Heliyon*, 7(4), e06726. https://doi.org/10.1016/j.heliyon.2021.e06726

Samoliuk, N., Bilan, Y., Mishchuk, H., & Mishchuk, V. (2022). Employer brand: key values influencing the intention to join a company. *Management & Marketing. Challenges for the Knowledge Society, 17*(1), 61-72. https://doi.org/10.2478/mmcks-2022-0004

Sarihasan, I., Dajnoki, K., Oláh, J., & Al-Dalahmeh, M. (2022). The importance of the leadership functions of a high-reliability health care organization in managing the COVID-19 pandemic in Turkey. *Economics and Sociology, 15*(1), 78- 93. doi:10.14254/2071-789X.2022/15-1/5

Savolainen, I., Oksa, R., Savela, N., Celuch, M., & Oksanen, A. (2021). COVID-19 Anxiety-A Longitudinal Survey Study of Psychological and Situational Risks among Finnish Workers. *International Journal of Environmental Research and Public Health*, 18(2), 794. https://doi.org/10.3390/IJERPH18020794

Scaramuzzino, G. & Barfoed, E.M. (2021). Swedish social workers' experiences of technostress, *Nordic Social Work Research,* https://doi.org/10.1080/2156857X.2021.1951335

Schmidt, M., Frank, L. & Gimpel. H. (2021). How Adolescents Cope with Technostress: A Mixed-Methods Approach, *International Journal of Electronic Commerce*, 25(2), 154-180. https://doi.org/10.1080/10864415.2021.1887696

Seaward, B.L. (2018). *Managing stress*, Jones & Bartlett Learning, Burlington MA

Suh, A., & Lee, J. (2017). Understanding teleworkers´ technostress and its influence on job satisfaction. *Internet Research*, 27(1), 140-159 https://doi.org/10.1108/IntR-06-2015-018139.

Skakon, J. Skakon, Nielsen, K., Borg, V., & Guzman, J. (2010). Are leaders´ well-being, behaviours and style associated with the affective well-being of their employees? A systematic review of three decades of research, *Work & Stress*, 24, 107-139. https://doi.org/10.1080/02678373.2010.495262

Spagnoli, P., Manuti, A., Buono, C., & Ghislieri, C. (2021). The Good, the Bad and the Blend: The Strategic Role of the "Middle Leadership" in Work-Family/Life Dynamics during Remote Working. *Systems Research and Behavioral Science*, 11(8), 112. https://doi.org/10.3390/BS11080112

Srivastava, S.C., Chandra, S., & Shirish, A. (2015): Tehcnostress creators and job outcomes: theorising the moderating influence of personality traits. *Information Systems Journal*, 25, 355-401, https://doi.org/10.1111/isj.12067

Stadin, M., Nordin, M., Broström, A., Linda, L., Hanson, M., Westerlund, H., & Fransson E.I. (2021). Technostress operationalised as information and communication technology (ICT) demands among managers and other occupational groups – Results from the Swedish Longitudinal Occupational Survey of Health (SLOSH). *Computers in Human Behavior*, 114, 106486. https://doi.org/10.1016/J.CHB.2020.106486

Stich, J.F. *et al*. (2017): Workplace stress from actual and desired computer-mediated communication use: a multi-method study. *New Technology Work Employ*, 32, 84-100. https://doi.org/10.1111/ntwe.12079

Swaen, G.M., Van Amelsvoort, L.G.P.M., Bültmann, U., & Kant, I.J. (2003) Fatigue as a risk factor for being injured in an occupational accident: results from the Maastricht Cohort Study, *Occupational and Environmental Medicine*, 60 (Suppl. 1), i88-92.

Tarafdar, M., Tu, Q., Ragu-Nathan, B.S., & Ragu-Nathan, T.S. (2007). The impact of technostress on role stress and productivity, *Journal of Management Information Systems*, 24(1), 301-328.

Tarafdar, M., Tu, Q., & Ragu-Nathan, T. S. (2010): Impact of technostress on end user satisfaction and performance. *Journal of Management Information Systems*. 27, 303-334. https://doi.org/10.2753/MIS0742-1222270311

Tarafdar M., Tu, Q., Ragu-Nathan, B.S., & Ragu-Nathan, T.S. (2011a). Crossing the dark side: examining creators, outcomes andinhibitors of techno-stress, *Communications of the ACM*, 54(9), 113-120. https://doi.org/10.1145/1995376.1995403

Tarafdar M., Tu, Q., Ragu-Nathan, B.S., & Ragu-Nathan, T.S. (2011b). Impact of technostress on end-user satisfaction and performance, *Journal of Management Information Systems*, 27(3), 303-334. https://doi.org/10.2307/29780194

Tarafdar, M., Cooper, C. L., & Stich, J. F. (2017). The technostress trifecta – techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29(1), 6-42. https://doi.org/10.1111/isj.12169

Upadhyaya, P., & Vrinda (2021). Impact of technostress on academic productivity of university students. *Education and Information Technologies*, 26(2), 1647-1664. https://doi.org/10.1007/S10639-020-10319-9

Weil, M., & Rosen, L. (1997). *TechnoStress: Coping with technology @work @home @play*. John Wiley, New York, NY.

Whelan, E., Golden, W. & Tarafdar, M. (2022). How technostress and self-control of social networking sites affect academic achievement and wellbeing, *Internet Research*, 32(7), 280-306. https://doi.org/10.1108/INTR-06-2021-0394

Wu, W., Chin, W., & Liu, Y. (2022). Technostress and the smart hospitality employee, *Journal of Hospitality and Tourism Technology*, 13(3), 404-426. https://doi.org/10.1108/JHTT-01-2021-0032

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