Applied Medical Informatics
Original Research Vol. 45, No. 1/2023, pp: 18-27

Assessing Technology-Induced Stress Among Students and Teachers

Alexandru D. COSTIN* and Andreea D. ONA

Department of Genetics and Plant Breeding, University of Agricultural Sciences and Veterinary Medicine, 3-5 Mănăştur Street, 400372 Cluj-Napoca, Romania.
E-mail: alexdan.costin@gmail.com; andreea.ona@usamvcluj.ro

* Author to whom correspondence should be addressed; Tel.: +40747964810.

Received: February 21, 2023/Accepted: March 21, 2023/ Published online: March 30, 2023

Abstract
Introduction: Technostress is a problem present at international level, represented by a series of negative effects on people's thinking, attitude and behavior, its appearance being determined using technology. *Aim:* The study purpose was to assess the level of technology-induced stress among students and teachers, from the period of online courses (2020 to mid of 2021), due to the COVID-19 pandemic. *Methods:* A study was carried out on two samples represented by students and teaching staff from universities in Cluj-Napoca, regarding technostress. An online non validated questionnaire created in Google Forms was applied, and it was randomly sent to different people from the two targeted samples on WhatsApp, Microsoft Teams, Gmail and Messenger platforms between October and December 2022. To determine the level of stress, the perceived stress scale PSS-14 was used. *Results:* One hundred people participated in the study, including both students and teachers. The questions in the questionnaire presented good consistency, with a Cronbach alpha of 0.915. The participants in the study, predominantly had digital skills (96%), and most frequently, they self-classified as experienced users (40%). Both students and teachers most frequently presented a moderate level of stress (50% and 48%, respectively). The computer was the most used device (71%), and the most used platform was Google Meet (59%). *Conclusion:* Possession of a higher digital skills level, presents an advantage in reducing participants technostress level.

Keywords: Technology; Stress; Pandemics; Universities; Surveys

Introduction

Although information and communication technology (ICT) has provided society with several benefits, such as efficiency, productivity, and flexibility, its use can generate a few negative aspects that can affect the user's well-being. The interaction with technology, as well as the perceptions, emotions, and thoughts related to its implementation and its expansion within society, leads to the emergence of the phenomenon of stress, called technostress [1,2].

Technostress is also defined as the stress users experience from using information and communication systems and technologies [3-7]. Information and communication technology components such as smartphones, social media applications, or electronic mail can affect users by developing a series of stressors, including overload, uncertainty, and ambiguity [8-10].

An important aspect is the possibility of stress co-occurring with ICT use, which can cause anxiety and depression [11]. Users are exposed to various technological tools, so they may feel pressured to

learn to use new forms of technology and keep up with its evolution. Inability to fully understand the requirements and functionality of gadgets can cause frustration and stress for some users [12].

Technostress can occur when ICT provides too complicated functions or changes at a fast pace due to the disruption caused by the gap between users' skills and ICT attributes [13].

Abstracting the phenomenon of technostress, it is associated with the psychosocial effects associated with ICT use and negative feelings related to the user's competence [14,15].

Technostress is an adaptive nature problem caused by the reduced ability to use new devices or programs efficiently [16]. Technostress is an important topic in information systems (IS) research because it has a negative impact on many characteristics such as willingness to use technology, user satisfaction [17,18] or interest in performing technology [19,20].

The phenomenon called technostress has been and still is in the researchers' attention [4,5,21,22,23,24,25], this being present due to the rapid expansion of technology and user overload (Table 1). Other studies have shown that technostress negatively influences some organizational outcomes (such as irritability, anxiety and headaches) leading to decreased productivity and commitment [26,27]. Different validated scales were used to determine the stress level, PSS-14 (Perceive Stress Scale with 14 items) scale being one of them [28].

Due to the pandemic period, besides activities from other fields, didactic activity also went online. This led to a didactic activity disruption. Due to this fact, both students and teaching staff had to rely on technology to carry out their activities. The large volume of work and the limited time favored the emergence of technostress.

Table 1. Studies that has already been published on technostress topic

First author et al. [ref]	Population (Where?)	Study design	Participants (no and students/teachers)	Reported results
Kasemy et al. [29]	Egyptian Universities	Multicenter Cross-Sectional	Universities Staff Members and Students	They encounter medium-to-high technostress related to their use of ICT. Between them 33.3% of the staff members and 7.6% of students reported high technostress.
Penado Abilleira et al. [30]	Spanish Universities	Correlational	Teachers	Older teachers suffered negative consequences of technology to a greater extent than others. Teachers who suffered the most from the negative consequences of technology have been female teachers.
Wang et al. [31]	Three Public Universities in Northern China	Correlational	Students	Students from social sciences present a higher level of stres than those from engineering and natural sciences.
Kumpikaitė-Valiūnienė et al. [32]	Universities from Poland, Lithuania, Turkey and India	Cross-Sectional	Students	Social and informational dimensions of digital competencies had a positive influence on dealing with stress and improved well-being of students studying online during the lockdown.

The aim of this study was to assess the level of technology-induced stress among students and teachers in one Romanian university city, from the period of online courses (2020 to mid of 2021), due to the COVID-19 pandemic.

The study objective was to compare the level of technostress perceived by students and teachers from Cluj-Napoca universities.

Material and Method

Study Design

An analytical observational study was carried out on two samples represented by students (undergraduate to PhD students) and teaching staff from universities in Cluj-Napoca, applying an online questionnaire created in Google Forms.

Data collection and evaluation took place between October 1, 2022, and December 15, 2022. The data collected through the questionnaire was saved by Google Forms in an Excel file that was downloaded.

To determine the level of stress, the PSS-14 stress scale was used with 14 questions and with a score from 0 to 56 [28]. A low level of stress was considered for a score from 0 to 19. A Score from 20 to 38 indicates a moderate level of stress, and a score from 39 to 56 indicates a high level of stress.

Responses to each question in the stress scale questions were scored between 0 (never) and 4 (very often) on a Likert scale (1=almost never; 2=sometimes; 3=quite often).

A derivated variable named Score was created to quantify the score obtained by the participants. Another 2 variables were created to determine the stress presence (yes/no) and the stress level (low/moderate/high) depending on the score obtained.

The survey consisted of 4 sections: 1. data related to technostress, 2. digital skills, 3. devices and platforms used during online courses, and 4. demographic data.

The questionnaire had the following structure:

1. Data related to technostress – answers for the period of strictly online courses:
   - Q1. I felt that due to the use of technology, the workload was greater.
   - Q2. I was forced to work beyond my limits.
   - Q3. I had to sacrifice some of my free time to keep up with technology.
   - Q4. I was quite prepared in using technology.
   - Q5. I had enough time to improve my technology knowledge.
   - Q6. I felt that other people knew a lot more about technology than I did.
   - Q7. I felt the technology was too complex for me.
   - Q8. I felt unsafe using technology.
   - Q9. I felt that my data could be lost or accessed by unauthorized persons.
   - Q10. I felt that the addresses and passwords used are too many and I can forget them.
   - Q11. I felt that technology tends to distract in a negative way.
   - Q12. I felt that technology was advancing faster, and I couldn't keep up.
   - Q13. I felt that technology is affecting the education process.
   - Q14. I felt that technology was creating certain health problems for me (Impaired vision, Back problems, Sleep/diet disturbances).
2. The section referring to digital skills
   - Q15. Possession of digital skills (yes/no).
   - Q16. Level of digital skills (lack of digital skills/average user/advanced user/experienced user).
3. Devices and platforms used during online courses
   - Q17. The most used device.
   - Q18. The most frequently used platform for teaching activities.
4. Section referring to demographic data
   - Q19. Your age.
   - Q20. Sex (M/F).
   - Q21. Your status (student/teacher).

In identifying items Q1, Q2, Q3, Q4, Q5, Q6, Q7 and Q12, the questionnaire reported by Westermann [33] was used as a model, and items Q8, Q9, Q10, Q11, Q13, and Q14 were identified using as a model the questionnaire used by Çoklar et al. [34], in both cases the items being adapted according to the requirements of the paper. Of the 14 questions asked for technostress, questions Q4 and Q5 were formulated as positive, and according to the PSS-14 stress scale, the score given to them will be considered the opposite, namely for a score of 0 points given to any of the 2 questions, will be changed to 4 points during evaluation; 1 point awarded will be modified by 3 points; 2 points awarded will remain the same 2; 3 points awarded will be changed by 1 point, and 4 points awarded will be changed by 0 points.

Messages with participate invitation, were sent on WhatsApp, Microsoft Teams, Gmail, and Messenger platforms to both students and teaching staff from Cluj-Napoca universities: University of Agricultural Science and Veterinary Medicine, Iuliu Haţieganu University of Medicine and Pharmacy, Babeş-Bolyai University and Technical University of Cluj-Napoca.

In the message, the requirements related to participation were explained, and the link to the survey was provided. Respondents voluntarily participated in the study (completion of the questionnaire signified their consent to participate in the study).

The purpose of the study was described on the first page of the questionnaire. Each participant had the opportunity to withdraw from completing the questionnaire at any time. Confidentiality was maintained as no personal data was collected and participant responses were anonymous.

Statistical Methods

IBM SPSS Statistics 28.0.1 (demo version) was used for statistical analysis. Absolute and relative frequencies were used to illustrate the qualitative data. The significance threshold was set to 0.05 (95% confidence level).

The median and the 25^{th} to 75^{th} percentiles were used to describe continuous data that proved deviation from the theoretical normal distribution. Determination of quantitative data normality distribution was performed using the Kolmogorov–Smirnov test.

Chi-squared test was used to confirm associations between categorical variables, and for the theoretical frequencies that were less than 5, the Fisher exact test was used.

To reduce the multidimensionality of the data and find a pattern in the multidimensional data by identifying a smaller number of uncorrelated or relatively correlated variables in the 14 technostress related items, exploratory factor analysis (EFA) was used.

To test the internal consistency of the 14 items related to technostress in the questionnaire, the Cronbach Alpha coefficient was used. The confidence interval for Crombach Alpha, was also presented.

The Kaiser-Meyer-Olkin (KMO) test was used to demonstrate the suitability of the data for exploratory factor analysis (EFA) analysis (if sampling is adequate) and Bartlett's test of sphericity to test the null hypothesis that the variables from the PSS-14 stress scale are significantly uncorrelated.

A value of KMO higher than 0.6 and a Bartlett's p-value lower than 0.05, indicated that the EFA analysis could be used.

Results

In the study participated 100 people, with a median age of 27 years (quartiles: 25;42); 66 of them were females (66%) and 34 were males (34%). Of the 100 respondents, 96 (96%) had digital skills, and 40 (40%) of them are experienced users.

Among them 50 (50%) were students, and 50 (50%) were teachers. Only 3 (3%) people mentioned that they don't have digital skills.

Students and Teachers Technostress

Students were significantly younger than teachers (Table 2). Regarding the respondents status, there was no association with sex, possession of digital skills, self-evaluated digital skills level, stress

level and used communications platform, but there was a significant association between respondents status and used device (Table 2).

Table 2. Results obtained according to respondents' status

	Students (n=50)	Teachers (n=50)	p-value
Age, median [Q1 to Q3]	25 [21;26]	41.5 [33.75;47.5]	<0.001
Score, median [Q1 to Q3]	28 [18;34]	27.5 [17.25;33.75]	0.5480
Sex, n (%)			
M	14 (28)	20 (40)	0.2053
F	36 (72)	30 (60)	
Possession of digital skills, n (%)			
Yes	48 (96)	49 (98)	>0.9999
No	2 (4)	1 (2)	
Digital skills level, n (%)			
Lack of digital skills	2 (4)	1 (2)	0.9500
Average user	12 (24)	14 (28)	
Advanced user	16 (32)	15 (30)	
Experienced user	20 (40)	20 (40)	
Stress level, n (%)			
Low stress	16 (32)	18 (36)	0.9063
Moderate stress	25 (50)	24 (48)	
High stress	9 (18)	8 (16)	
Used device, n (%)			
Computer (Desktop/Laptop)	26 (52)	45 (90)	< 0.001
Smartphone	24 (48)	4 (8)	
Tablet	0 (0)	1 (2)	
Used communications platform, n (%)			
Microsoft Teams	10 (20)	11 (22)	0.6065
Google Meet	28 (56)	31 (62)	
Zoom	12 (24)	8 (16)	

The association between respondents stress level and self-evaluated possession of digital skills does not reach the significance threshold (Table 3). However, a significant association had been identified between respondents stress level and digital skills level (Table 3).

Between respondents stress level and used device, respectively used communications platform, there was no association (Table 3).

The results obtained following the Kaiser-Meyer-Olkin (KMO) test and Bartlett's sphericity test are presented in Table 4. The results of EFA analysis are presented with a Scree Plot graph obtained in SPSS, in Figure 1. Questionnaire items showed a good consistency, with a Crombach alpha equal to 0.915 and a confidence interval [0.888 to 0.938].

Table 3. Results obtained according to respondents' stress level

	Low Stress n=34	Moderate Stress n=49	High Stress n=17	p-value
Possession of digital skills, n (%)				
Yes	34 (100)	48 (98)	15 (88)	0.1110
No	0 (0)	1 (2)	2 (12)	
Digital skills level, n (%)				
Lack of digital skills	0 (0)	1 (2)	2 (12)	0.0015
Average user	4 (12)	17 (35)	5 (29)	
Advanced user	7 (21)	18 (37)	6 (35)	
Experienced user	23 (68)	13 (27)	4 (24)	
Used device, n (%)				
Computer (Desktop/Laptop)	27 (79)	32 (65)	12 (71)	0.2733
Smartphone	6 (18)	17 (35)	5 (29)	
Tablet	1 (3)	0 (0)	0 (0)	
Used communications platform, n (%)				
Microsoft Teams	9 (26)	10 (20)	2 (12)	0.7451
Google Meet	20 (59)	28 (57)	11 (65)	
Zoom	5 (15)	11 (23)	4 (23)	

Table 4. KMO and Bartlett's sphericity test results

Statistical test	Value	p-value
Kaiser-Meyer-Olkin (KMO)	0.893	n.a
Bartlett's Test of Sphericity	n.a	< 0.001

n.a = not available

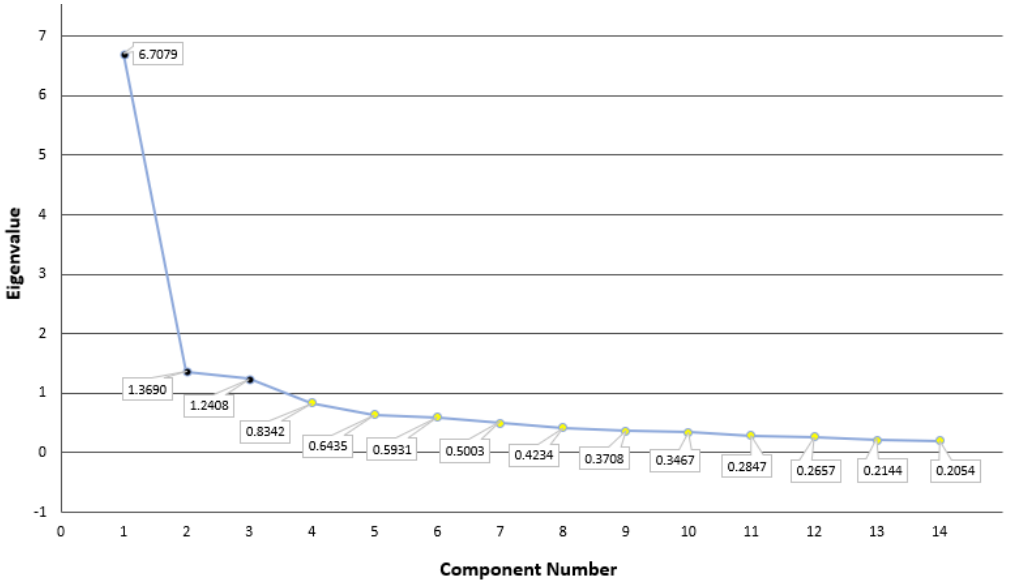

Figure 1. Scree Plot graph

Discussion

Both students and teaching staff mainly presented a moderate level of stress (Table 2), with students presenting a higher level of stress than teaching staff. Similar results were also obtained in a multicenter cross-sectional study from 2021 that evaluated a total of 3,582 individuals, randomly selected from medical and nursing schools in Egypt [29].

Females were the predominant respondents to the questionnaire (Table 2). This was most likely because females were more interested in completing the questionnaire than males who were more reserved. Similar aspects were also observed in other studies from 2017-2021, studies in which the number of female respondents was higher than the number of male respondents [16,30-32,34,35].

Regarding the self-assessment of the possession of digital skills, the majority of respondents stated that they possess these skills (Table 2). This fact was due to the presence of ICT tools in the respondents' daily life, tools that they could use effectively. In terms of digital skills level, experienced users participated to the study in a larger number than the others (Table 2), because having at least one ICT tool, they were able to constantly practice different aspects and thus the level of competence increased. Older respondents also had more time to interact with the technology and understand it, aspect that favored the increase in digital competences level.

The respondents to the survey presented a moderate stress level in a higher number (Table 2), showing that both students and teachers were able to adapt relatively quickly to the new working conditions. Similar results were presented in two studies, in which due to having digital skills, the level of stress was lower [32,35].

Participant's stress level was influenced by their digital skills level, the higher the level of skills, the lower the level of perceived stress (Table 3).

The Kaiser-Meyer-Olkin (KMO) test shown that the sampling was adequate (the obtained value was between 0.8 and 1), and the data for the EFA analysis were suitable (Table 4). Similar data were also observed in a 2020 publication where the KMO value was greater than 0.9 [16].

Testing the null hypothesis in which the variables are significantly uncorrelated, was carried out with Bartlett's test of sphericity and thus it was demonstrated that the exploratory factor analysis makes sense (Table 4). To determine the number of factors that can be extracted and to narrow down the number of items, a scree plot was generated, which shows that there would be a minimum number of three possible factors (Figure 1).

As for the consistency of the questions or items in the questionnaire, it was very good, the Cronbach Alpha coefficient having a value higher than 0.9 and it was not necessary to eliminate some questions (the values of the coefficients resulting after the elimination of items were lower than the value of the coefficient already obtained). Similar results were recorded in other studies, with the consistency of the questionnaire questions being good or very good [16,30,34,35].

A higher level of skills was an advantage in working in situations such as the pandemic. In the last year, the number of articles testing the level of technostress present in different fields has increased.

The results showed in the studied sample, that the presence of digital skills presents an advantage for both teachers and students. Thanks to them, the level of perceived stress will be low.

Study Limitations

The availability to answer the questionnaire was reduced due to the high volume of work for students and teaching staff during the pandemic period.

The willingness to answer the questionnaire was also influenced by the fact that not all people spend much time online, and thus some of those who received the questionnaire, either forgot to fill it in or did not manage to read the message in time. At the same time, there was also the possibility that some people encountered a series of problems such as poor internet connection or search engine errors, aspects that led to the impossibility of completing the questionnaire.

The questions asked were closed questions, so the participants had to choose the answer option already established, according to their opinion.

Another problem was the sample size, which was not as large as expected. Another limitation was represented by the fact that this study focused only on students and teaching staff from universities

in Cluj-Napoca, the reference period for the study being strictly that of online curses from the pandemic period.

Regarding the presence and level of skills, they could be influenced by the cultural background of the respondents and the period in which the respondent started using ICT components. Another influence on the presence and level of digital skills could also be represented by the university profile of the respondents, some profiles use ICT more intensively than others.

Future researchers will be able to replicate this study with more systematic sampling methods and larger size. More studies on this aspect are suggested in the future to obtain more detailed information on technostress.

Conclusions

Regarding the level of digital skills, teachers are experienced users, and as a stress level, they present a moderate level. The students are as well experienced users, and as a stress level, they also present a moderate level.

The level of digital skills possessed by the participants could influence the level of perceived stress.

Following the analysis of the total of 100 participants, only 3 people mentioned the fact that they do not have digital skills. Following the results obtained, it can be stated that possession of a higher digital skills level, presents an advantage in reducing the level of technostress.

List of abbreviations

COVID-19 – Coronavirus Disease 2019
EFA – exploratory factor analysis
ICT – information and communication technology
IS – information systems
KMO – Kaiser-Meyer-Olkin
MED – median
PSS – perceive stress scale
Q – quartile

Ethical Issues

The approval of the ethics committee was not necessary because no personal data was collected, the answers being anonymous. On the questionnaire first page was stated that, by completing the questionnaire, the participants agreed to participate in the study.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Riedl R. On the biology of technostress: Literature review and research agenda. Database Adv Inf Syst, 2013;44(1):18-55.
2. Society for Human Resource Management [Internet]. Workplace flexibility study: Overview of flexible work arrangements. [updated 2014 Oct 15; cited 2022 Apr 5]. Available from: https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/pages/2014-workplace-flexibility-survey.aspx.

3. Ragu-Nathan TS, Tarafdar M, Ragu-Nathan BS, Tu Q. The consequences of technostress for end users in organizations: Conceptual development and empirical validation. Inf Syst Res. 2008;19(4):417-33.
4. Ayyagari R, Grover V, Purvis R. Technostress: technological antecedents and Implications. MIS Q. 2011;35(4):831-58.
5. Tarafdar M, Tu Q, Ragu-Nathan BS, Ragu-Nathan TS. The impact of technostress on role stress and productivity. J Manag Inf Syst. 2007;24(1):301-28.
6. Tarafdar M, Cooper CL, Stich JF. The technostress trifecta - techno eustress, techno distress and design: theoretical directions and an agenda for research. Inf Syst J. 2019;29(1):6-42.
7. Chen L, Muthitacharoen A. An empirical investigation of the consequences of technostress: evidence from China. Inf Resour Manag J. 2016;29(2):14-36.
8. Fenner GH, Renn RW. Technology-assisted supplemental work and work-to-family conflict: The role of instrumentality beliefs, organizational expectations and time management. Hum Relat. 2010;63:63-82.
9. Grant CA, Wallace LM, Spurgeon PC. An exploration of the psychological factors affecting remote e-worker's job effectiveness, well-being and work-life balance. Employee Relat. 2013;35:527-46.
10. Knani M. Exploratory study of the impacts of new technology implementation on burnout and presenteeism. Int J Bus Manag. 2013;8:92-7.
11. Panova T, Lleras A. Avoidance or boredom: Negative mental health outcomes associated with use of Information and Communication Technologies depend on users' motivations. Comput Hum Behav. 2016;58:249-58.
12. Quinn B. Overcoming technostress in reference services to adult learners. Ref Libr. 2001;33(69-70):49-62.
13. Lee A, Son S, Kim K. Information and communication technology overload and social networking service fatigue: A stress perspective. Comput Hum Behav. 2016;55:51-61.
14. Burke M. The incidence of technological stress among baccalaureate nurse educators using technology during course preparation and delivery. Nurse Educ Today. 2009;29:57-64.
15. Carlotto M, Welter G, Jones A. Technostress, career commitment, satisfaction with life, and work-family interaction among workers in information and communication technologies. Curr Events Psychol. 2017;31:91-102.
16. Penado Abilleira M, Rodicio-García ML, Ríos-de-Deus MP, Mosquera-González MJ. Technostress in Spanish University Students: Validation of a Measurement Scale. Front Psychol. 2020;11:582317.
17. Fuglseth AM, Sørebø Ø. The effects of technostress within the context of employee use of ICT. Comput Hum Behav. 2014;40:161-70.
18. Maier C, Laumer S, Eckhardt A, Weitzel T. Giving too much social support: Social overload on social networking sites. Eur J Inf Syst. 2014;24(5):447-64.
19. Tams S, Hill K, Ortiz de Guinea A, Thatcher J, Grover V. NeuroIS-alternative or complement to existing methods? Illustrating the holistic effects of neuroscience and self-reported data in the context of technostress research. J Assoc Inf Syst. 2014;15(10):723-53.
20. Tarafdar M, Pullins EB, Ragu-Nathan TS. Technostress: Negative effect on performance and possible mitigations. Inf Syst J. 2015;25(2):103-32.
21. Borle P, Reichel K, Niebuhr F, Voelter-Mahlknecht S. How Are Techno-Stressors Associated with Mental Health and Work Outcomes? A Systematic Review of Occupational Exposure to Information and Communication Technologies within the Technostress Model. Int J Environ Res Public Health. 2021;18(16):8673.
22. Bondanini G, Giorgi G, Ariza-Montes A, Vega-Muñoz A, Andreucci-Annunziata P. Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis. Int J Environ Res Public Health. 2020;17(21):8013.
23. Srivastava SC, Chandra S, Shirish A. Technostress creators and job outcomes: theorising the moderating influence of personality traits. Inf Syst J. 2015;25(4):355-401.
24. Tarafdar M, Tu Q, Ragu-Nathan T. Impact of technostress on end-user satisfaction and performance. Manag Inf Syst. 2010;27(3):303-34.

25. Weil MM, Rosen LD. Technostress: Coping with technology @work, @home, @play. 1st ed. New York: Wiley; 1997.
26. Ahmad UNU, Amin SM, Ismail WKW. The relationship between technostress creators and organisational commitment among academic librarians. Procedia Soc Behav Sci. 2012;40:182-6.
27. Tarafdar M, Tu Q, Ragu-Nathan TS, Ragu-Nathan BS. Crossing to the dark side: Examining creators, outcomes, and inhibitors of technostress. Commun ACM. 2011;54(9):113-20.
28. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385-96.
29. Kasemy ZA, Sharif AF, Barakat AM, Abdelmohsen SR, Hassan NH, Hegazy NN, Sharfeldin AY, El-Ma'doul AS, Alsawy KA, Abo Shereda HM, Abdelwanees S. Technostress Creators and Outcomes Among Egyptian Medical Staff and Students: A Multicenter Cross-Sectional Study of Remote Working Environment During COVID-19 Pandemic. Front Public Health. 2022;10:796321.
30. Penado Abilleira M, Rodicio-García ML, Ríos-de Deus MP, Mosquera-González MJ. Technostress in Spanish University Teachers During the COVID-19 Pandemic. Front Psychol. 2021;12:1-10.
31. Wang X, Li Z, Ouyang Z, Xu Y. The Achilles Heel of Technology: How Does Technostress Affect University Students' Wellbeing and Technology-Enhanced Learning. Int J Environ Res Public Health. 2021;18(23):12322.
32. Kumpikaitė-Valiūnienė V, Aslan I, Duobienė J, Glińska E, Anandkumar V. Influence of Digital Competence on Perceived Stress, Burnout and Well-Being Among Students Studying Online During the COVID-19 Lockdown: A 4-Country Perspective. Psychol Res Behav Manag. 2021;14:1483-98.
33. Westermann T. User acceptance of mobile notifications. 1st ed. Berlin: T-Labs Series Telecommun Serv. 2017;133.
34. Çoklar AN, Efilti E, Sahin L. Defining Teachers' Technostress Levels: A Scale Development. J Educ Pract. 2017;8(21):28-41.
35. Wang X, Li B. Technostress Among University Teachers in Higher Education: A Study Using Multidimensional Person-Environment Misfit Theory. Front Psychol. 2019;10:1791.