The Technostress Creator on Educators' Job Burnout in the Virtual Learning Environment: A Pilot Study

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Abstract
Purpose: This paper discusses the technostress creators on educators' job burnout. Five main factors; techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty, were used as the predictors in measuring job burnout among educators
Design/methodology/approach: A preliminary survey of 109 survey-based online questionnaires were disseminated among educators from universities in Malaysia. Based on the data gathered from the survey, the posited hypothetical model was tested statistically using Exploratory Factor Analysis (EFA) on SPSS 27.0.
Findings: Results from the analysis of empirical data found that the technostress caused by a factor such as the use of new technologies in the teaching and learning environment might influence the level of job burnout among educators.
Research limitations/implications: The results from the study have generalisability limitation since it is limited to the population of the study. Future research may be replicated to other universities with larger sample size while using educator personality traits as a potential moderator to provide more fruitful findings.
Practical implications: This research offers the university a suitable strategy for reducing technostress during virtual learning environment. It is recommended that the university prepare the best educational technology tools and provide trainings to help educators improve their skills and knowledge. The university must be aware of the adverse effects of virtual learning, which if not executed properly, will influence educators' job burnout.
Originality/value: The originality of this paper lies in providing a better understanding of the technostress creators on the educators' job burnout in virtual teaching and learning context. The technostress creators on job burnout may result from the mismatch between the educators' ability to use technology and the virtual teaching and learning method implemented during the COVID-19 pandemic.
Paper type: Research paper

Keywords: Job burnout, Educator, Technostress, Virtual learning

Introduction
Technostress is defined as psychological responses to a negative experience with computers (Brod, 1984). Technostress is a modern disease of adaption that can contribute to the difficulties in adapting to the new technologies in a healthy manner (Dragano & Lunau, 2020).

Some researchers (Agogo & Hess, 2015) claimed that technology could trigger negative emotions such as mental fatigue, scepticism, inefficiency and anxiety, and directly or indirectly decrease satisfaction. This situation cannot be avoided in academia because the COVID-19 has resulted in universities continuing their operation remotely to support the government instructions on Movement Control Order (MCO). The education landscape has changed dramatically with the remarkable rise of virtual learning whereby the teaching and learning session is conducted remotely and on digital platforms.

Therefore, creating efficient and effective virtual learning requires educators to be proficient in technology skills by having sound knowledge and the ability to master educational-related software and applications. The educators must embrace new technology and online classroom setting to keep up with the sudden transformation and shift. In between adapting to the technology provided by the institution, educators might find themselves in the dilemma of technostress. Technostress occurs when people psychologically respond to the new technologies negatively. The educators are exposed to technostress when they cannot cope with the use of technologies healthily while delivering their teaching responsibility. The technostress can cause job burnout to the educators if they are not managing the stress well. A previous study highlighted that technostress could cause job burnout and decrease the performance of the employee (Khedhaouria & Cucchi, 2019).

According to Maslach and Jackson (1981), job burnout is a syndrome that is related to the psychological aspect of a person, and it can lead to emotional exhaustion to increase due to the continuous stressors at work. Job burnout will also affect the accomplishment of employees at work (Maslach & Jackson, 1981). Apart from that, burnout tends to negatively impact the people who suffer from it and their workplace, too. International Labour Organisation and the World Health Organisation reported that employees who encounter stress from their insufficient skill in using information and communication technologies (ICT) might experience health problems (Mahboob & Khan, 2016). Meanwhile, in the educational setting, technostress and job burnout can lead to negative emotions among educators, leading to dissatisfaction in executing their tasks at work (Munandar, Musnadi & Utami, 2020).

The research on this issue has been mainly conducted on managers of large and medium-sized organisations (Khedhaouria & Cucchi, 2019) and managers from the banking sector (Sharma & Gill, 2014; Munandar, Musnandi, & Utami, 2020). Minimal research on technostress in education (Joo, Lim, & Kim, 2016; Jena, 2015a) were done to enhance the current literature on the educational setting. Thus, this study intended to fill the research gap by investigating the possible technostress creators on burnout among educators. In short, this pilot study examined the creators of technostress on educators' job burnout.

Literature Review
Person-Environment Fit Theory
Person and environment (P-E) fit theory defined the degree of alignment between the individuals and the job environment (Wong & Tetrick, 2017). Individual refers to a person's needs, skills, and abilities to reflect a good performance, while the environment factor includes organisations, tasks, and people (Edwards & Billsberry, 2010). An individual will not only influence, but his/her environment also influences him/her. When a person and environment complement one another, it could affect an individual's level of motivation, behaviour, mental and physical health. The P-E fit theory is widely used in organisational behaviour research to explore individual satisfactions (Edwards, Caplan, & Harrison, 1998), performances, behaviours, attitudes (Chuang, Shen & Judge., 2016), and individual commitments (Zhang & Cui, 2018).

In education, P-E fit refers to the similarity between educators' characteristics and their teaching environment. Therefore, for this study, the P-E fit theory focuses on how an educator is matched with the virtual learning environment and how stress arises when these two factors are mismatched. Stress emerges when the virtual learning environment does not fulfil the needs of an educator, or the educator's ability is insufficient to meet the demand of the virtual learning environment. Researchers are increasingly debating the effects of technology on educators, particularly during the COVID-19 pandemic. Educators are required to use online learning in delivering their teaching and learning to the students. A mismatch between an educator and a virtual learning environment may cause technostress, resulting in negative emotions, health problems and dissatisfactions (Wang, Tan & Li, 2020; Jena, 2015b). Besides that, the educators are prone to experiencing technostress when they cannot cope with technology.

The technology forces educators to complete their online teaching efficiently, and due to overusing technology, they will encounter technostress during the process. Thus, in applying this theory to the context of academia, it can be assumed that the increase in educators' P-E fit will produce better job satisfaction, hence reducing their job burnout. In the current study, the researchers predicted that the misfit between the educators' ability (i.e., their skills in using information communication technology) and the new learning environment (i.e., using virtual learning) contributed to technostress development and eventually affected their job burnout. In other words, technostress emerges when the environment does not fulfil an educator's needs, or the educator's ability is insufficient to meet the demands of the virtual learning environment.

Technostress and Job Burnout

Technostress can be produced via stressors that generate stress within a person who has inadequate use of the ICT (Ayyagari, Grover & Purvis, 2011). The use of technology has risen exponentially in academia due to government incentives and to meet students' anticipations (Dunn & Kennedy, 2019). Technology is being used in the academic administration and through applications, such as learning management systems (LMS), massive open online courses (MOOCs), integrated digital-based assessment (Barana, Bogino, Fioravera, & Marchisio, 2016) and attendance management systems (Ofelia, Pedro, & Heffernan, 2017). Besides that, ICT enables higher education institutions to integrate academic administration, bring transparency, and speed up academic data processing. Integrating technology in the classroom improves the teaching and learning process (Mirzajani, Mahmud, Fauzi Mohd Ayub, & Wong, 2016).

Technostress triggers negative effects on attitudes, thought, behaviour and human psychology that are direct results of the use of technology (Munandar et al., 2020). Technostress is a modern phenomenon of information technology and computers (Ayyagari et al., 2011). This type of stress is created through technology adaptation resulting from individuals' failure in coping with technology. In the current study, technostress specifically refers to stress related to the use of technology in the virtual learning context. The dramatic growth of applications and technologies-based learning enhances the severity of technostress (Lee, Chang, Lin, & Cheng, 2014). However, the use of information and communication technologies is essential to achieve meaningful teaching and learning process. Therefore, educators must learn the most recent technology to increase productivity, efficiency, and accuracy in their teaching and learning sessions. Educators' involvement in virtual learning contributes to the experience of technostress, causing greater stress levels for educators and job burnout. Tarafdar, Tu, and Ragu-Nathan and Ragu-Nathan (2007) further developed and validated a technostress measurement scale and defined five components of technostress that describe typical situations where computer technology could potentially create technostress. For this study, five elements

were identified to determine technostress in the virtual learning context; techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty.

Techno-overload describes situations where ICT use forces educators to continuously work harder for a more extended period (Ragu-Nathan, Tarafdar, Ragu-Nathan & Tu, 2008). Online learning platform devices, social networking platforms, and collaborative applications make it possible to process simultaneous real-time information streams, resulting in information overload, interruptions, and multitasking. A prior study also discussed that information overload such as overtime and bring-home tasks substantially influences the stress experience and job satisfaction level (Mahapatra & Pati, 2018). Interruptions can appear through WhatsApp messages and text-based workflow related alerts which pressure users into attending to information as soon as it arrives. This situation can develop anxiety, tension, and workflows disconnection, making sustained mental attention difficult to achieve. Multitasking implies educators working on different applications and tasks simultaneously and doing more in less time while experiencing tension (Ayyagari, 2012). A previous study commented that individuals mainly experience high job burnout when the technostress situation is characterised by work overload (Khedhaouria & Cucchi, 2019).

Next, techno-invasion refers to a situation where a mobile device enables high flexibility, which can blur boundaries between work and other life domains and causes work-life conflict and impair recovery from work (Dragano & Lunau, 2020). The invasion effect of ICTs in virtual learning can be observed when educators are always expected to be available and reached at any time, and they feel the need to be constantly connected (Mahapatra & Pati, 2018). The finding of the study (Mahapatra & Pati, 2018) also remarked that techno-invasion has significant negative impacts on job burnout.

Third, techno-complexity describes situations where the complexity associated with ICT forces educators to feel less competent regarding their computer skills, forcing them to spend extra time and effort in learning and understanding how to use software or applications (Ragu et al., 2008). Some users find various software, applications, and functions intimidating and challenging to understand, eventually leading to inadequacy and inability to perform the tasks (Ayyagari, 2012). New applications can take months to learn, and manuals can be hard to follow. Thus, users can be reluctant to use assigned applications, functions, and jargon that they find challenging to understand and consequently make them feel stressed out.

Fourth, techno-insecurity emerges when users feel threatened about their job by new technologies and co-workers who better understand new ICT. The rapid evolution of ICT causes educators to find often it challenging to develop a knowledge base or meaningful pattern, and their existing knowledge becomes obsolete (Mahapatra & Pati, 2018). Techno-insecurity appears within scenarios in which ICT users think they will lose their performance to other people who better understand modern ICT tools (Tarafdar et al., 2007). As the number of ICT tools increases, educators have a greater demand to use and operate ICT tools. As a result, existing educators might experience insecurity since they have to understand complex technologies, which leads to stress and tension (Ayyagari, 2012).

Fifth, techno-uncertainty refers to a constant feeling of uncertainty and ambiguity caused by a chronic digital transformation process or by features of technologies that foster constant changes (Dragano & Lunau, 2020). The continuous changes and upgrades to ICT do not allow educators to develop foundation experience for a particular application or system. (Tarafdar et al., 2007). Upgrades and changes to computer systems require educators and users to continuously learn new skills and programs (Ayyagari, 2012). Although they can initially be enthusiastic about learning new applications and technologies, constant requirements for refreshing and updating can eventually create frustration and anxiety.

Research on technostress among educators in university is a critical research area since educators face higher exposure to technology than teachers in schools due to the widespread adoption of enhanced teaching and learning in higher education (Dunn & Kennedy, 2019). With the prevalent use of mobile technologies, social media, and various educational technologies (e.g., e-learning systems, online resources, MOOC, digital examinations, podcasts) and other tools in teaching and learning at universities, it is likely that some educators are experiencing a higher level of technostress (Lee et al., 2014). The adverse effects of technostress on the adoption and continuous use of information systems (Joo, Park & Shin, 2017; Maier, Laumer, Eckhardt, & Weitzel, 2015) provoke the educators to drop the use of technologies when they experience high levels of technostress (Steelman & Soror, 2017). Therefore, this current study proposed that characteristics of technostress like techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno uncertainty act as job demands among educators, which require a greater degree of effort to deal with. In the absence of suitable educators coping mechanisms, these demands eventually will exhaust them physically and mentally, leading to job burnout. This research tested several hypotheses, which are as follows:

H1:   Techno-overload is positively associated with job burnout.
H2:   Techno-invasion is positively associated with job burnout.
H3:   Techno-complexity is positively associated with job burnout.
H4:   Techno-insecurity is positively associated with job burnout.
H5:   Techno-uncertainty is positively associated with job burnout.

Research Framework
Based on the literature review, a research model was developed to examine the relationship of technostress on job burnout among educators. Figure 1 shows the conceptual framework of the current study.
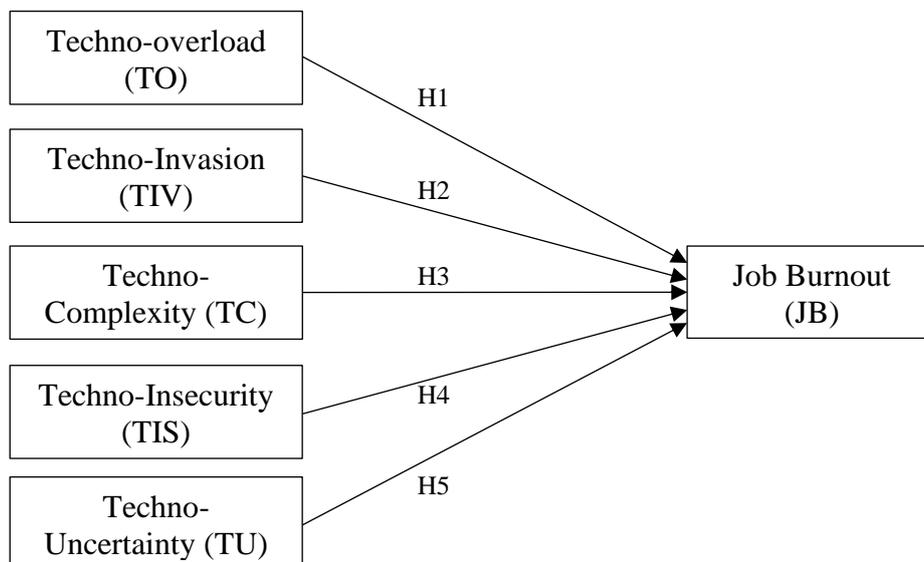

Figure 1: Conceptual Framework

The present research identifies the significance of technostress on educators' job burnout (H1 to H5). This study proposed a conceptual framework for a specific model to explain the relationship between technostress and job burnout. This study also presented a theoretical

framework created to analyse the stress experienced by educators due to the implementation of virtual learning. This study highlights six constructs, namely techno-overload, techno-invasion, techno-complexity, techno-insecurity, techno-uncertainty, and job burnout, that can be understood within the framework as illustrated in Figure 1. The theoretical framework illustrates the essential constructs included in this study to guide further discussions.

Methods

In this quantitative cross-sectional research design, questionnaires were used to gather the data. The questionnaire was adapted from a study by Aziz and Yazid (2021), consisting of 35 items that measure six constructs and eight questions on demographic factors. The six dimensions are techno-overload, techno-invasion, techno-complexity, techno-insecurity, techno-uncertainty, and job burnout. Each item was measured using the 10-point Likert scale ranging from strongly disagree (1) to strongly agree (10).

The first section is related to techno-overload. In this section, participants were asked to describe the extent to which they are driven to work faster and longer due to increased work demands because of the use of virtual learning. The questionnaire section includes items such as "I have less free time due to the implementation of virtual learning" and "I have to work much faster due to the implementation of virtual learning."

The second section is related to techno-invasion. In this section, participants were asked to describe their situations where virtual learning pushes them to be connected constantly and reached at any time and, consequently, their personal lives are invaded by teaching-related matters. The item samples are "I feel that my teaching activities using virtual learning makes it easier to invade my privacy" and "I feel my privacy can be compromised because my teaching activities using virtual learning can be traced."

The third section is related to techno-complexity. Participants were asked to indicate their assessment of the extent to which the complexity of virtual learning increases their work difficulty and forces them to continuously learn and relearn skills to cope with challenges associated with increasingly complex or fast-changing technologies. Among the items are "I do not have adequate knowledge of virtual learning to complete my work satisfactorily" and "I need to spend a considerable amount of time and effort to use virtual learning effectively."

The fourth section is related to techno-insecurity. In this section, participants were asked to assess the extent to which they feel insecure about their job performance due to fear of being defeated by other people who have higher capabilities in using virtual learning. Examples of items are as follows: "Virtual learning will advance to an extent where my present job can be performed by a less skilled individual" and "I have to constantly upgrade my skillset to avoid being replaced by a new teaching method someday."

The fifth section is related to techno-uncertainty. In this section, participants were asked to indicate how they feel uneasy about integrating virtual learning in their teaching process. The items are "I am unsure whether I have to deal with virtual learning problems or with my work activities" and "There are constant changes to the functionalities in the virtual learning we use in our university."

The last section is related to job burnout. In this section, participants rated their job burnout level due to virtual learning for the current semester. Among the items are "I feel stressed", "I feel physically drained", and "I have no energy to start work in the morning."

Respondents' Profile

Before deciding on the actual questionnaire to be used in this study, a pilot study was conducted to correct any deficiencies in the instrument before the actual data collection was carried out. For a pilot study, a total of 109 educators, which are lecturers from public universities,

participated in the survey. The participants consisted of 20 (18.3%) males and 89 (81.3%) females. They represented the lecturers from various fields of expertise. 73 lecturers teach diploma students, while the remaining 36 teach bachelor's degree students. 27 participants (24.8%) live in urban residential areas while conducting virtual learning. Meanwhile, 57 participants (52.3%) stay in the suburban residential areas, and 25 participants (22.9%) are located in the rural areas. The three most widely used virtual learning methods are video conference applications (e.g., WebEx, Google Meet, Zoom), the Learning Management System (e.g., Google Classroom, U-Future, Microsoft Team), and social media platforms/Web 2.0 technologies (e.g., Facebook, Instagram, Telegram, WhatsApp, YouTube, Twitter). Among the problems encountered by educators during virtual learning are facing slow internet access (67.6%), students do not participate in virtual learning (63.9%), students missing in action (60.2%), environmental conditions that are not conducive to work (43.5%), disruption of family members (36.1%) and some of them (19.4%) do not have the appropriate equipment such as computer and smartphone.

Findings
Exploratory Factor Analysis (EFA)

Table 1: Bartlett's Test and KMO Value

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.877
Bartlett's Test of Sphericity	Approx. Chi-Square	3767.486
	df	595
	Sig.	.000

For the pilot study, the results of the Kaiser–Meyer–Olkin (KMO) value of 0.877 indicates an excellent score as it exceeds the general acceptance index of KMO of 0.60. Table 1presents the significance value of Bartlett's Test of Sphericity is 0.00, which meets the required significance value of less than 0.005 (Bahkia et al., 2019). The value indicates that these items are sufficient for intercorrelation, and it also suggests that the data and sample size are adequate and appropriate to proceed further with the reduction procedure.

Table 2: The EFA Procedures on Six Constructs

Factor	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	6.650	19.001	19.001
2	5.717	16.335	35.336
3	4.649	13.283	48.619
4	3.038	8.680	57.299
5	2.454	7.011	64.310
6	2.398	6.852	71.162

Extraction Method: Principal Axis Factoring.

Table 2 shows the EFA procedures extracted five components of the technostress constructs, which would be considered for further analysis. The eigenvalues are ranged between 2.398 and 6.650. The first component with an eigenvalue of 6.650 contributes to 19.001% of the variance. The component 2 contributes 16.335% (eigenvalue = 5.717), component 3 contributes 13.283% (eigenvalue = 4.649), component 4 contributes 8.680% (eigenvalue = 3.038), component 5 contribute 7.011% (eigenvalue = 2.454), and component 6 contributes 6.852%

(eigenvalue = 2.398). The six components collectively accounted for 71.162% of the variance, acceptable since it is higher than 60% (Bahkia, Awang, Afthanorhan, Ghazali, & Foziah, 2019).

Table 3: The EFA Procedure has Extracted Five Components of Technostress and One Component of Job Burnout

	Factor					
	1	2	3	4	5	6
TO1	.731					
TO2	.847					
TO3	.878					
TO4	.747					
TO5	.592					
TO6	.789					
TO7	.850					
TO8	.695					
TIV1		.543				
TIV2		.545				
TIV3		.562				
TIV4		.598				
TIV5		.709				
TC1			.800			
TC2			.691			
TC3			.787			
TC4			.672			
TIS1				.789		
TIS2				.585		
TIS3				.634		
TIS4				.734		
TIS5				.716		
TU1					.822	
TU2					.886	
TU3					.673	
TU4					.582	
JB1						.714
JB2						.741
JB3						.769
JB4						.823
JB5						.814
JB6						.724
JB7						.800
JB8						.842
JB9						.791
Extraction Method: Principal Axis Factoring.						
Rotation Method: Varimax with Kaiser Normalisation.						
a. Rotation converged in 6 iterations.						

The results in Table 3 shows that the EFA procedure has extracted the six components. Each component has a certain number of items with their respective factor loading. In this study, the rotated component matrix shows that all 35 items have a factor loading above 0.50. In the end, the finalised instrument consists of six components, comprising eight (8) items for techno-overload, five (5) items for techno-invasion, four (4) items for techno-complexity, five (5) items for techno-insecurity, four (4) items for techno-uncertainty, and nine (9) items for job burnout.

Reliability
The reliability of the instrument was tested using Cronbach's alpha coefficient. The Cronbach's alpha value must be greater than 0.70 (Bahkia et al., 2019) to indicate that the element achieves internal reliability. The six constructs with their respective Cronbach's alpha values are observed as in Table 4.

Table 4: The Internal Reliability Coefficient for Assumed Factors

Name	Number of items	Cronbach's Alpha
Techno-overload	8	0.931
Techno-invasion	5	0.937
Techno-complexity	4	0.887
Techno-insecurity	5	0.843
Techno-uncertainty	4	0.930
Job burnout	9	0.959

The Cronbach alpha's reliability coefficient for techno-overload is 0.931, 0.937 for techno-invasion, 0.887 for techno-complexity, 0.843 for techno-insecurity, 0.930 for techno-uncertainty, and 0.959 for job burnout. Hence, all measures are considered highly reliable. A Cronbach's alpha value greater than 0.8 indicates the internal consistency of the instrument.

Discussion and Conclusion
Based on P-E Fit theory and previous research on virtual learning, this study investigates the association between five constructs of technostress and job burnout among educators in higher education institutions. This study uses 109 data distributed for the pilot test, and the respondents were lecturers from a few public universities in Malaysia. The data analysis was conducted through SPSS version 27 for factor analysis, KMO, and Cronbach's alpha reliability results. Furthermore, the study has outlined the specific components with names assigned according to the framework proposed in the earlier stage of this study.

Theoretical Implications
This study contributes to the academic literature by documenting new empirical evidence on the relationship between technostress and job burnout in the virtual learning environment among educators. This study supports by the person-environment (P-E) fit theory. The results might assume that the increase in educators' P-E fit will produce better job satisfaction, hence reducing their job burnout.

Practical and Social Implications
The study's findings also have a practical contribution to the university on reducing the technostress among educators during virtual learning environment. The university must plan and schedule academic task so that educators do not face a high level of stress to complete the task within a stipulated time and have a balanced lifestyle. The university also needs to find

suitable, friendly, and familiar applications or software so that educators can quickly understand them. Besides that, the university also might conduct proper trainings for the educators on how to use the application or software to expose them earlier to the application or software, to upgrade their ICT skills, and to encourage sharing the ICT knowledge among them. Hence, educators' satisfaction towards virtual learning process is increased, eventually decreased their job burnout.

Limitations and Suggestions for Future Research
The results from the study have limitation since it is limited to the population of the study. Future research may be replicated to other universities with larger sample size while using educator personality traits as a potential moderator to provide more fruitful findings.

Acknowledgement

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