PSIKODIMENSIA Kajian Ilmiah Psikologi
2023, Vol. 22, No. 1, 1-12
P-ISSN:1411-6073; E-ISSN:2579-6321
DOI:10.24167/psidim.v22i1.4935

The Role of Technostress on Educators' Work Performance at Universities in the Special Capital Region of Jakarta

Dina Syakina*, Aulia Rahma, Mohammad Rizal
Universitas Mercu Buana, Jakarta, Indonesia
*)*dina.syakina@mercubuana.ac.id*

Abstract

The COVID-19 pandemic forced the education system to adapt a new teaching system from offline to online. However, the ability of lecturers is often unable to keep up with rapid technological developments and the lack of resources provided by institutions, causes lecturers to feel stressed during the teaching and learning process. This study aims to determine the effect of technostress on lecturer performance using the Person-Organization Fit theory approach. The results showed that at the organizational level, the discrepancy between abilities and demands (AD-O) (B= -.39; p<.01) had a significant negative and positive effect on lecturer needs with supplies (NS-O) (B=. 24;p<.05) with performance. At the individual level, the mismatch between needs and supply (NS-T) (B=-.51; p<.01), the absence of social support from colleagues (PPF) (B=-.32; p<.01) had an effect significant negative. The findings of this study indicate that both the organizational level and peer support (AD-O and PPF) as well as the individual level (NS-T) play an important role in predicting a decrease in lecturer performance, while the mismatch between ability demands at the individual level has no effect on performance. The implications of this research will be discussed further in the discussion.
Keywords: *Higher education, Lecturer, technostress, work performance*

INTRODUCTION

The industrial and professional sectors have experienced severe turbulence since the Covid-19 pandemic swept the world for two years. Organizations do everything they can to survive and ensure that the employees' work performance continues to be carried out well (Giorgi et al., 2020). Changes that the Covid-19 Pandemic caused had made many employees experience insecurity at work and be forced to adapt quickly to working conditions (Yunita & Saputra, 2019). Therefore, many employees often felt anxiety, stress, and depression which often did not only result in mental health disorders (Carroll et al., 2009) but also increased interpersonal conflicts that reduced work performance (Kinyita, 2015).

The education sector is one of the work sectors affected by the changes in the Covid-19 pandemic (Daniel, 2020). Since Covid-19 hit, all affected countries have implemented social restrictions, resulting in the elimination of face-to-face learning (PTM), which was replaced with online learning and blended learning (Lemay et al., 2021). The educators used technology to help organize learning schedules and deliver learning materials to students to support the learning process properly. It made technology one of the essential things in the education sector during the pandemic (Graham et al., 2009). Although the technology is currently used in the learning process of all levels of education, it is not fully integrated well into daily teaching (Penado Abilleira et al., 2021).

The Ministry of Research and Higher Education in 2021 explained that as many as 60 percent of teachers or educators in Indonesia still stuttered in using technology during the teaching and learning process. In addition, Rahayu and Wirza (2020) research stated that although educators had a positive perception of technology use in teaching, some still stated that they felt that

learning methods using technology were considered ineffective. It was possibly because rapid technological developments were often not followed by increased knowledge and skills of educators in using technology. It caused educators to become stressed using technology and led to not delivering learning materials properly (Voet & de Wever, 2017). Research conducted by Irawati and Jonatan (2020) showed that students were dissatisfied with the educators' performance regarding educators' consistency in delivering lecture material properly and educators' unreliability in using digital learning platforms. They tended to be slow in responding to students' needs and difficulties when studying during a pandemic.

The educational context defines the work performance of educators as behaviors aimed at achieving the goals of education (Hwang et al., 2017). Meanwhile, work performance using technology is defined as how an individual or worker can use technology to support work performance (Tarafdar et al., 2020). When the pandemic hit, research on educators' performance was often forgotten. Previous research has focused on measuring student performance (Lemay et al., 2021; Tang et al., 2021). However, the success of online learning lies in how educators perceive online learning in terms of support from organizations and institutions (Özgür, 2020), the educators' ability (Bereczki & Kárpáti, 2021), and the use of qualified technology (Stošić & Stošić, 2015).

Various factors could cause work performance in the use of technology shown by educators to decline during the pandemic. These factors were divided into (a) internal and (b) external factors. The internal factors included (1) gender, in which male educators tended to be more reliable in using technology in teaching than female educators (Tarafdar et al., 2007); (2) age, in which young educators would tend to quickly learn about technological changes compared to older educators (Çetin & Bülbül, 2017); (3) work experience, reliable educators in using technology tended to have long experience working with technology than educators who were new to using technology (Scherer et al., 2021); (4) personality, educators who tended to have a proactive personality would tend to be open to technology (Zheng et al., 2020); and, (5) ability to use technology (Antonietti et al., 2022).

Meanwhile, (b) external factors included (1) training, holding professional training in teaching using technology would help work to be more effective (Bichler et al., 2021); (2) organizational policies, such as setting work schedules and working hours limits while using technology (Ko et al., 2021); and (3) equitable use of technology, such as the internet and assistive technology devices (Ferri et al., 2020).

Technostress is a negative psychological state associated with using or viewing technology as unpleasant. It is caused by unequal abilities and demands that cause active perceptions at the psychophysiological level and develop negative attitudes toward using technology (Salanova et al., 2013). Meanwhile, Tarafdar et al. (2007) state that technostress is a problem of the adaptation process caused by an imbalance in one's ability to use technology in work or receive information. Wang and Li (2020) view technostress as the impact of an imbalance between capabilities and demands from both the organizational and individual levels, individuals, and their interactions with technology (Avanzi et al., 2018).

This research viewed the phenomenon of technostress based on the person-environment misfit theory, which assumed that technostress resulted from an imbalance between the individual and his environment (Penado Abilleira et al., 2021) in this case, technology, organization, and peers. Wang and Li (2019) also state that stress will be created when the environment does not provide sufficient resources to meet individual needs (abilities-demands) and the abilities possessed by individuals cannot meet demands from the environment (need-supplies).

Technostress is a multidimensional construct consisting of (1) incompatibility between individuals and organizations (P-O fit). In this case, the educators feel they lack the ability to meet the organizational policies' demands in using technology when teaching, such as Ability and Demand (A-D), and think that the organization has failed to fulfill their needs, therefore, this condition is called Need-Supplies misfit (N-S). The second is (2) the discrepancy between individuals and technology (Person-Technology fit). In this case, the ability of educators to use technology is not able to deal with evolving technological changes (Ability-Demand). This imbalance can also be triggered by the unavailability of supporting matters related to the use of technology when teaching (Need-Supplies), and (3) the discrepancies between individuals and other individuals (Person-Person fit) where educators feel they do not have enough support from their peers, such as a forum for asking questions when experiencing difficulties in using technology when teaching (Penado Abilleira et al., 2020).

Many factors cause technostress to occur in the education sector. One indication of the occurrence of technostress is that educators tend to see technology as a tool for lesson preparation, delivery of knowledge, or attracting students. However, they do not have adequate skills and competencies in designing and implementing technology constructively in the teaching and learning process (Chen, 2008; Munyengabe et al., 2017). Continuous technological improvement exposes educators to constant technostress because educators do not always have the knowledge to use new and updated technologies (Altinay-Gazi & Altinay-Aksal, 2017; Wang & Li, 2019). However, the ability of educators to integrate technology into the classroom pedagogically is critical for educational innovation (Koh et al., 2016; Schildkamp et al., 2020).

Salanova et al., (2013) stated that being an educator is one of the occupations with a high level of stress. This happened because they are required to adapt to the advanced development in science and technology. Therefore, the educator's role has changed, not only to become a "delivery of learning material" but to become a "designer of a complex learning environment" because he uses technology as a teaching method process (Gros Salvat & Silva Quiroz, 2005). In addition, La Torre et al., (2020) research indicated that the occupation as an educator required a high level of theoretical and analytical abilities. This condition made it vulnerable for educators to experience various stressors, including technostress.

Thus, technostress is conceptualized as a mismatch between a person and the environment, specifically in the technological environment. This stress is not only limited by the technology itself but also by the organizations that have used the requirements for the use of technology to influence individuals to the use of technology (Avanzi et al., 2018). Most research on the negative effects of technostress has focused on business or industrial work contexts (Fuglseth & Sørebø, 2014; Hsiao, 2017; Jena, 2015; Jung et al., 2012; Ragu-Nathan et al., 2008; Salanova et al., 2013; Tarafdar et al., 2007). However, more research currently focuses on the educational context (Özgür, 2020; Penado Abilleira et al., 2021).

Therefore, this research aims to examine how the technostress influenced educators' work performance who experienced changes in working conditions and adapted to using technology in the learning method process with the following hypotheses: (H1) whether there is a relationship between technostress in organizational ability-demand dimensions and performance; (H2) whether there is a relationship between the dimensions of organizational needs-supplies with performance; (H3) is there any relationship between technostress in the abilities-demands dimension of technology and performance; (H4) is there any relationship between technostress dimensions of technology needs-supplies and performance; and, (H5) is there any relationship between the technostress of the person-person dimension and performance.

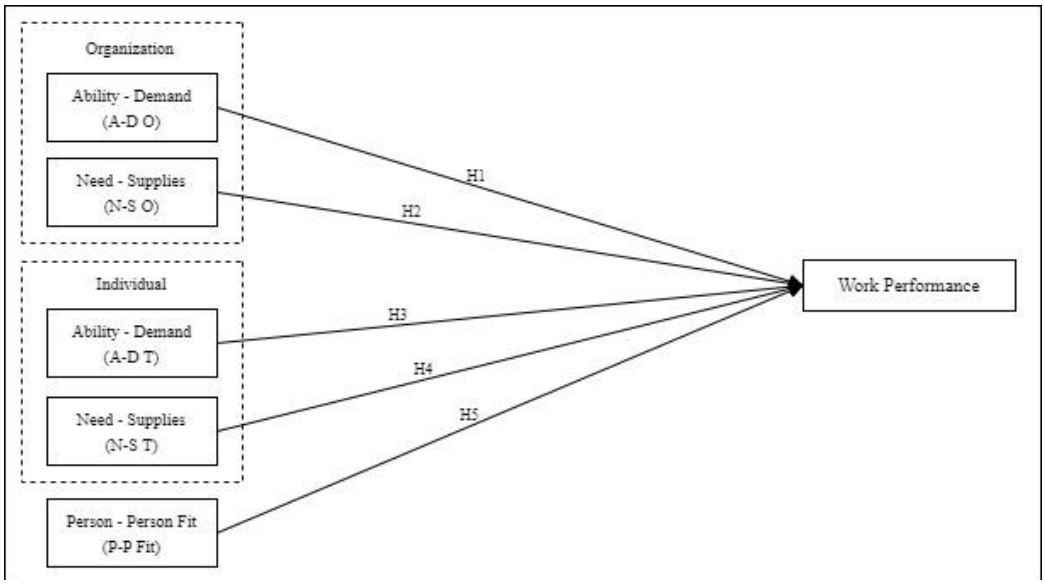

Figure 1. Research Model

METHOD

This method used a research method with a quantitative correlational approach, namely research that connected two or more research variables (Field, 2018). The population is defined as a group of subjects who want to be generalized to the research results (Azwar, 2010). The research population consisted of educators who worked in the Greater Jakarta area. Meanwhile, the sampling technique chosen was accidental sampling. According to Etikan et al. (2016), accidental sampling or convenience sampling is a sampling technique that happens to meet and is considered suitable as a data source. There were no specific criteria for the sample in this research. The reasons for choosing accidental sampling were the limited population, easy access to respondents, and depending on the respondents' availability and willingness to participate in this research (Etikan, 2016). The sample in this research were university lecturers, both private and public, who worked in the Special Capital Region of Jakarta. The control variables in this research consisted of (1) gender; (2) organizational tenure; (3) age; (4) type of school/university (private/public), and (5) what technology the educators used in teaching (WhatsApp Group, Google Classroom, Zoom, Google Meet).

The research measurement instruments were Likert scales self-report. All previous research instruments have passed the back-and-forward translation procedure. The instrument also passed the content validity assessment process and the content of the expert judgment process (two experts). The research instrument measuring the technostress variable was using a scale from Wang and Li (2019), with multidimensional constructs both at the organizational and technological levels, namely (1) Ability-Demand ("my capability was not sufficient to implement school/university policies in using ICT") and ("I feel pressured to use ICT at work"), (2) Need–Supplies ("the training provided by the university/school was not enough to help with using ICT at work") and ("ICT at school/campus was not effective to help my work productivity). Meanwhile, work performance was measured by an instrument developed by Tarafdar et al., (2020) with an example item ("ICT in campus/school could improve the quality of our work").

RESULTS

The results found that 69.2% of the 104 respondents were female educators, and 30.8% were male educators. In addition, 25 to 35 years old educators dominated the sample (48.1 %). This was

Table 1. *Correlation between variables*

No	Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1	Work Performance	3.02	0.52									
2	AD-O[1]	1.98	0.45	-.55**								
3	NS-O[2]	2.13	0.57	-.47**	.46**							
4	AD-T[3]	2.09	0.44	-.55**	.62**	.60**						
5	NS-T[4]	1.95	0.57	-.66**	.497**	.71**	.81**					
6	PPF[5]	2.08	0.66	-.62**	.43**	.75**	.59**	.68**				
7	Gender	1.31	0.46	.06	.03	-.01	-.05	-.04	.03			
8	Age	1.85	0.96	.04	.01	-.25**	-.01	-.10	-.06	.17		
9	Education	1.24	0.42	.02	-.02	-.05	-.02	-.02	-.06	.11	.35**	

Description: **p<0.01; [1]AD-O= *Ability-Demand Organization;* [2]*NS-O= Need-Supplies Organization;* [3]*AD-T= Ability-Demand Technology;* [4]*NS-T= Need- Supplies Technology;* [5]*PPF= Person-Person Fit.* Gender = 1 (Female); 2 (Male); Age = 1 (25-35 years old); 2 (36- 45 years old); 3 (46- 55 years old); 4 (>55 years old); Education = 1(Magister); 2 (Doctor).

followed by 36-45 years old educators (26%). Most of the respondents stated that the university they taught held training to use technology in the teaching and learning process (87.5%). Almost all respondents stated that they participated in the training provided by the institution (95.2%). Based on correlation data between demographic variables and work performance variables, it was found that there was no significant correlation between demographic variables and work performance variables. However, the results of the ANOVA test showed that age had a significant difference in work performance. These results indicated that older educators (46 to 55 years old) tended to have higher work performance levels (mean difference .41; p < 0.05) compared to younger people.

Based on the results of the correlation test, it was found that work performance had a significant negative relationship with *Ability-Demand*-O ($r = –.55$; $p < .01$); *Need-Supplies*-O ($r = –.47$; $p < .01$); *Ability-Demand*- T ($r = –.55$; $p < .01$); *Need-Supplies*-T ($r = –.66$; $p < .01$); *Person-Person fit* ($r = –.62$; $p < .01$). These results indicated that the higher the discrepancy between ability-demand and need-supplies the lower the work performance. This applies both at the organizational and technological levels. In addition, respondents who felt that they did not get support or assistance from colleagues in using technology also tended to have lower work performance.

Table 1 also shows a negative correlation between *age* and the *need-supplies* variable at the

Table 2. *Multiple linear regression*

Variable	Coefficient		Description
	B (*Estimate*)	*Std. Error*	
Constant	4.47**	.18	
AD-O	-.39**	.09	H1 supported
NS-O	.24*	.10	H2 supported
AD-T	.24	.14	H3 not supported
NS-T	-.51**	.12	H4 supported
PPF	-.32**	.08	H5 supported
R^2			.58
F			27.08**
df1, df2			5,98

Description: **p<.01; *p<.05

organizational level (r = –.25; p < .01). This result indicated that the younger the educator's age, the higher the feeling of imbalance in their needs and the provision of resources that came from the organization.

Table 2 shows the results of hypothesis testing using multiple linear regression analysis. It was found that AD-O, NSO-O, AD-T, NS-T, and PPF together contributed 58 percent of the *variance* to the work performance variable (F = 27.08; p < .01). Based on table 2, it is also found that the imbalance at the organizational level both from ability-demand (r = –.39; p < .01) harmed work performance. These results indicated that the higher imbalance between educators' abilities and the organization's demands would reduce work performance. On the other hand, the organizational level's need-supplies (r = .24; p < .05) had a significant positive effect. The higher the need for educators and the unbalanced supply between them increased the educators' work performance.

Furthermore, it was found that there was a significant negative relationship between individual need-supplies level (r = –.51, p < .01) and person-person fit (r = –.32, p < .01) with work performance. These results indicated that the higher the respondents felt an imbalance between their needs and resources to deal with technological change and felt that they did not have social support from colleagues when facing stress in using technology, the lower their perceived work performance.

DISCUSSION

This research aimed to determine how the influence of technostress experienced by educators in the Special Capital City of Jakarta on work performance. Work performance using technology is defined as the extent to which an individual or worker can use technology to support work performance (Pullins et al., 2020). This research had a theoretical contribution to answering how stress in using technology resulted from interactions between individuals, organizations, and the environment (technology) that would affect work performance, especially for educators. However, previous research explained about how stress affected an employee's work performance. There was limited research that sought to look at stress from of using technology (Tiwari, 2021). Technostress in this research used the lense of the Person-Organization Fit theory. This theory's perspective has still not been widely used in measuring how stress was viewed in terms of the interaction between employees, the organization, and their environment (Wang & Li, 2019).

The results showed that work performance was influenced by technostress, where 58 percent of the work performance variance was influenced by technostress as a predictor. It was in line with research conducted by Dahabiyeh et al., (2022), which stated that educator productivity would decrease if educators felt very tired continuously from using technology without being accompanied by the ability to use it. The level of organization and social support obtained from colleagues significantly affected the high and educators' low work performance when dealing with stress in using technology. This result was supported by research by Lee et al.,(2016), which stated that low work performance caused by technostress could damage and disrupt performance at the individual level and the organizational and workgroup levels (groups).

Although the educators' work performance in this research was in a good category where educators experienced and felt that the use of technology was sufficient to improve work quality and productivity, the results showed that younger educators tended to feel more lack of organizational supply to meet their work needs by using technology. Skaalvik and Skaalvik (2015) state that young or new educators will find it more challenging to adapt to their work, especially if they feel that the organization does not provide the need to adapt to their work.

Technostress in this research was a construct consisting of (1) incompatibility between individuals and organizations (P-O fit). In this case, the educators felt they did not have enough ability

to meet the organizational policies' demands in using technology when teaching (A-D). They felt that the organization's needs were not met (N-S). Furthermore, there was a (2) discrepancy between individuals and technology (P-T fit). In this case, the educators' ability to use technology could not deal with evolving technological changes (A-D). This imbalance could also be triggered by the unavailability of supporting matters related to using technology when teaching (N-S). Besides, there was a (3) discrepancy between individuals and other individuals (P-P fit), where educators felt that they did not have enough support from their peers, such as a forum for asking questions when experiencing difficulties in using technology when teaching (Penado Abilleira et al., 2020).

The research results indicated that the organizational level was crucial for determining work performance. The results showed that AD-O was significantly negatively related to work performance. This indicated that the higher imbalance between individual abilities and demands from the organization would reduce the respondents' work performance (H1 was supported). In contrast, AD-T showed the opposite result (H3 was not supported). This result indicated that the individual's ability to use technology often could not meet the organization's demands in using technology when teaching. These results were in line with Hogan and McKnight's research (2007) which stated that the educators' role changed drastically when using technology in the teaching and learning process. As a result, educators found it very difficult to meet the demands to use technology when teaching was often complex and convoluted.

Interesting results found NS-O at the organizational level was positively and significantly related to work performance (H2 was supported). This result was contrary to Wang and Li (2019). A possible explanation for this finding was that even though educators realized that their needs were very high, the resources provided by the organization could not meet them. They would tend to look for other alternatives, such as attending seminars on technology and professional self-development to improve work skills and apply technology in teaching and learning (Al-Fudail & Mellar, 2008; Luchman & González-Morales, 2013).

NS-T at the individual level of technology had a significant negative effect on work performance (H4 was supported). This result meant that the educator's needs and the resources owned by the educator could not adjust to significant changes from constant technology, so work performance decreased. Hofer et al., (2021) stated that although it had been going on for almost two years, changing learning methods from offline to online was very difficult, so educators often felt "threatened". Educators who found it challenging to adapt to changing methods were more likely to experience in their teaching (Daumiller et al., 2021)

The results also showed that PPF (person-person-fit) had a significant negative relationship with work performance (H5 was supported). These results indicated that colleagues' social support played a crucial role for the educator when the demands for using learning technology were very high. It was in line with research from Avanzi et al., (2018), which reported that getting support when feeling depressed due to stress was meaningful. It increased self-confidence in facing challenges and things that caused stress.

This research had several limitations. One of them was that the total sample consisting of 104 educators could not be generalized. However, it could be used as a benchmark for how the picture was faced by educators when facing technological stress when teaching and learning, especially in the Special Capital Region of Jakarta. In addition, several points could be made to deal with this technostress problem: (1) educators should seek and form groups as a means for social support from colleagues in helping to deal with technological difficulties; (2) organizations should adopt a new system of technology for teaching, always cooperate and adapt to the needs of educators, it is to reduce the possibility of technostress resulting from an imbalance in the use of technology and

educator work performance; (3) mentoring and training when implementing new technology systems must continue to be carried out regularly to monitor the capabilities and skills possessed by educators so that they can adapt well. Furthermore, in post-pandemic era, this (technology) still could be seen as an opportunity to engage with students, aligning with previous study which affirm that technology makes learning interesting fosters active classroom participation and technology as effective in enhancing lesson delivery and improving classroom participation (Shadiev & Yang, 2020).

CONCLUSION

This research aimed to determine how the technostress' role in the work performance of university lecturers or educators in the Special Capital Region of Jakarta. The research results indicated that the imbalance influenced the educators' work performance in the ability of educators and demands at the university level (AD-O), the need for educators with the supply provided by the university (NS-O), the need for educators with supplies owned by individuals (NS-T), as well as the social support that educators had in meeting the demands of work using technology (PPF). However, it was not predicted to be influenced by an educator's AD-T.

ACKNOWLEDGEMENT

This work is ostensibly supported by Mercu Buana University Jakarta.

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Article submitted: July 20, 2022
Article accepted: June 22, 2023