Technostress Creators on Teaching Performance of Private Universities in Jakarta During Covid-19 Pandemic

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Technostress Creators on Teaching Performance of Private Universities in Jakarta During Covid-19 Pandemic

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Abstract— Covid-19 pandemic has an impact on many sectors, one of which is higher education. Closing the college does not automatically stop the teaching and learning process. The shift from face-to-face methods in the classroom was changed to online. This rapid and comprehensive shift is closely related to lecturers' stress levels in applying online teaching methods. This study aims to identify factors in technostress on the teaching performance of 228 lecturers in Jakarta province, Indonesia. The instrument used in this study was a questionnaire and was processed using SPSS 25 software. The results of this study explained that this techno-complexity factor influenced the online teaching performance of lecturers in the condition of the Covid-19 pandemic. But on the other hand, other factors, namely techno-overload, techno insecurity, and techno-uncertainty, have different results.

Keywords— technostress, pandemic, Covid-19, university, e-learning, teaching.

1. Introduction

December 2019 presented a global challenge in which the emergence of Covid-19 [8] became the worldwide media's attention: public health officials, health care providers, and concerned citizens [10]. As of May 5, the World Health Organization (WHO) reported that globally there were 3,517,345 cases and 243,301 deaths [52]. Indonesia is one of the countries in Asia with the highest number of Covid-19 cases in which there are 12,071 cases with 872 deaths. From these data, Jakarta is the province with the highest number of Covid-19 cases in Indonesia, 4,687 cases, or 38.8% of the total cases [14]. Efforts to overcome this pandemic are carried out by the government, such as mass testing, national quarantine, and physical distancing. Some recent studies explain that there is a link between mental health during the Covid-19 pandemic. Zhang & Ma [55] explained that as much as 67.7% of the local community in Liaoning Province, China became more concerned about mental health during the Covid-19 pandemic. In contrast to these results, research conducted by Emily Holmes explains that the British public has experienced increased anxiety and fear of becoming mentally unhealthy since the Covid-19 pandemic struck [13]. While in Singapore, non-medical health care workers have a higher anxiety prevalence [47]. It explains that the Covid-19 pandemic has an impact on the anxiety that can cause stress. Of the many occupations affected by this pandemic, education turns out to tend to stress that is mass and prolonged. It is starting from student anxiety about the delay in the academic process [6] concerns about the financial condition of parents who might influence learning payments [25]. School or campus closures that are still in effect due to this pandemic occur in many countries such as countries in Asia (India, Indonesia, Pakistan, Philippines, Qatar, South Korea). Also in Africa (Egypt, Kenya, Nigeria, Oman) and America (America States, Argentina, Brazil, Chile), Europe (Ireland, Italy, Luxembourg, Moldova) [20].

One impact on aspects of education in Indonesia is the introduction of distance and online learning methods [51] as in mainland China and Hong Kong [26] and in several countries in Africa [34]. It raises questions that cannot be answered with certainty about when this pandemic ends so that the teaching and

learning system can be re-opened. The phenomenon is learning has to be conducted online rather than the face-to-face method in the classroom, usually done. The uncertainty of the end of Covid-19 allows the formation of stress in teaching, especially by using online teaching media or applications. At the tertiary level in Indonesia, the teaching-learning method is still carried out with a combination of online and face-to-face in the classroom. Online learning methods are seen both to establish independence and technological literacy both for students and teachers with a variety of media or technology applications [31, 23]. Contrary to the benefits of online technology in teaching, several studies also explain that the use of online technology or digitalization in education has an impact on stress [29]. Stress itself in teaching has been studied in various studies [28, 23, 2, 3, 1, 27]. Also, the workload to achieve the goal of excessive online teaching and insecurity in its use can form technostress [11]. It will have an impact on teaching performance. Li & Wang [28] explains that Techno-complexity and Techno-insecurity have a negative effect on teacher teaching performance, while Techno-overload has a positive effect. The level of individual technostress formed from work overload and technological mastery influences job performance [45]. However, the use of information and communication technologies that are not effective which results in fatigue and boredom will reduce job performance [48]. Based on the phenomena and gap research above, this study aims to complete the gap in previous studies that did not depart from the "pandemic conditions that force" to use distance and online teaching. Therefore, this study proposes to prove whether technostress (Techno-overload, Techno-complexity, Techno-insecurity, Techno-insecurity, and Techno-uncertainty) affect lecturers' performance in teaching online

2. Literature Review

2.1 Technostress on Teaching Performance
The Covid-19 pandemic also influenced the teaching-learning method. For example, students who suddenly had to shift the learning patterns and adjust the learning achievements they had obtained so far [9] automatically by lecturers using online media support. Besides students, teachers are also affected. In a continuous-time can interfere with performance teaching performance, which begins with discomfort to stress in running teaching methods that shift to online media thoroughly and quickly. Stress in teaching online using technology or technostress is stress caused by the use of information and communication technology (ICT). TS is an adaptation problem because of the inability of workers to deal with new ICTs that are changing rapidly and healthily using them. The obvious TS symptoms are the inability to concentrate on one single problem, irritability, and a feeling of loss of control [19]. ICT in teaching and learning is present as a form of revolution [33]. It is undeniable that ICT brings benefits in teaching and learning in higher education. Teachers are expected to achieve several goals of using technology in an online lesson, namely enhancing productivity, working with convenience, accomplishing more work, and trying innovative ideas [28]. But on the other hand, the integration of ICT makes lecturers have an increased workload, the role of lecturers who become ambiguous with ICT, and skills in the use of ICT that must be continuously improved [22, 48]. The term technostress refers to stress in the use of technology [2]. For example, Information and Communication Technology media such as social media [37], mobile applications [17], and mobile computing devices [18]. Technostress uses factors such as techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty [30, 28; 12]. In a more complex connection, technostress is not only an impact on the health of lecturers but also a problem in the management of educational organizations [23, 18].

2.2 Techno-overload (TO)
Refers to a situation where lecturers are encouraged to work faster as a result of the use of connected ICTs whenever and wherever [28]. Techno-overload (TO) is when teaching staff is encouraged to work faster and longer due to increased workload due to the use of it. It can result in workers experiencing work fatigue and other health problems. Poor workplace design, awkward and repetitive body movements and other ergonomic hazards cause or contribute to a large number of cumulative trauma disorders that affect

the hands, wrists, elbows, arms, shoulders, lower back and cervical spine areas [32]. Workload has a positive effect on teachers emotional exhaustion [36]. The indicators used to measure Techno-overload in this study are more work to do, work with very tight time, changing work habits, higher workload because of complexity, less free time, and touch with work [28]. Based on previous research, here is hypothesis 1:

H1: Techno-overload positively affects teaching performance

2.3 Techno-complexity (TC)
Is defined as a situation where the complexity of ICT adds to lecturers' difficulty because they are forced to improve their skills and learn technologies that tend to change [28] . Indicators used to measure Techno-complexity are complex to understand, complex to use effectively, and doubt its usefulness in education, knowledge to operate effectively, and a considerable amount of time and effort [28]. Teaching and learning processes with the use of ICT become more complicated than conventional methods where face-to-face in class occurs [16, 42]. Various complicated matters are present in the integration of ICT in the teaching and learning process. Lecturers must understand how to use the media or applications used, but the settings and teaching time that must be shared with the media or application itself also become a consideration. It can lead to ambiguous, overwhelmed, anxious, and stressed lecturer roles [44]. In the long run, this can affect work performance [4, 22, 2]. Based on the explanation of this gap, here is hypothesis 2:

H2: Techno-complexity positively affects teaching performance

2.4 Techno-insecurity (TIS)
Describes a situation where lecturers feel insecure about the presence of ICT because it is feared that it can replace the role of lecturers in teaching [28]. Indicators used to measure Techno-insecurity are ICT disrupts standard work patterns, threats to the job, upgrading skillsets to avoid being replaced, colleagues as a threat, and fear of being replaced by colleagues [28] . Insecurity in teaching is also motivated by basic things such as confidence in using computers to teach [33], anxiety in using computers to teach [50, 41], and experience in operating teaching programs [49]. Based on previous research, here is hypothesis 3:

H3: Techno-insecurity positively affects teaching performance

2.5 Techno-uncertainty (TU)
Refers to a situation where lecturers feel uneasy about the integration of ICT in work, which can lead to specific qualifications so that work expectations form ambiguity [28]. Indicators used to measure Techno-uncertainty are frequent upgrades in ICT, constant changes to its functionalities, and replacing one ICT with another [28]. Based on the explanation, here is hypothesis 4:

H4: Techno-uncertainty positively affects teaching performance
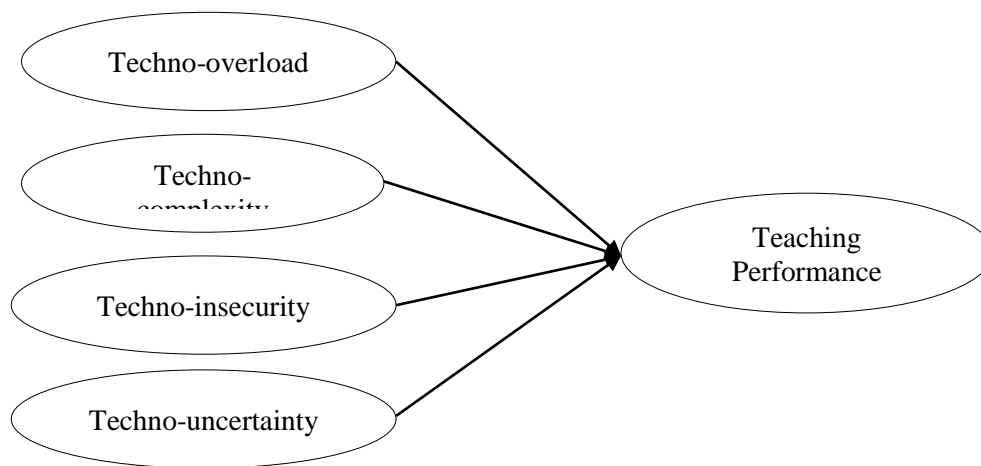
Figure 1. Theoretical Framework

3. Method

3.1 Research Design
This research is a quantitative study that uses statistical or quantitative data analysis. In explaining the relationship between independent variables (Techno-overload, Techno-complexity, Techno-insecurity, Techno-uncertainty) to the dependent variable (Teaching performance), this study is causal [39]. Data in this study were collected using an online questionnaire in April 2020. This instrument was chosen because of the implementation of large-scale social restrictions (PSBB) in Indonesia, especially in Jakarta.

3.2 Population and Sample
The study population was lecturers who teach at the private tertiary level in Jakarta. The amount of the population determined a certain amount to represent the study as a sample. The number of samples in this study was 228 samples. The minimum number of samples can be determined from the number of variables used multiplied by 5 [15, 56, 57]. The concept of non-probability sampling explains that the number of samples can be determined from the number of indicators used multiplied by 5 to 10 [58, 59, 60].

3.3 Technical Analysis
Likert scale questionnaires (1-5) were used in the research instrument. Data were measured to see the validity, reliability then analyzed by regression analysis using SPSS (Statistical Package for the Social Science) version 25 software.

3.4 Descriptive Statistic
Of the 314 lecturers who participated voluntarily, as many as 228 (72.61%) were used after screening. The lecturers used are lecturers who teach in Diploma / Vocation and Bachelor programs at private universities in the province of Jakarta, Indonesia. Participants consisted of 86 (37.7%) men and 142 (62.3%) women. Teaching areas for participating lecturers were 39 (17.1%) North Jakarta, 69 Jakarta (30.3%), 32 Jakarta (14%), East Jakarta 49 (21.5%), and South Jakarta 39 (17.1%).

4. Result

Table 1. Online Media for Teaching

Media	Frequency	Percentage
Email	116	50.9%
Audio-Visual (Google Meet, Zoom, Microsoft Teams, etc)	62	27.2%
Web forum created by the institution where they teach	41	18%
Chat Messaging (WhatsApp, LINE, Telegram, etc.)	9	3.9%
Total	228	100%

Online teaching media used by participating lecturers are Email as much as 50.9%, Audio-Visual (Google Meet, Zoom, Microsoft Teams, and the like) as much as 27.2%, Web forums made by institutions where teaching is as much as 18% and Chat Messaging (WhatsApp, LINE, Telegram, and the like) as much as 3.9%. Email still dominates as a medium used in online teaching.

Table 2. Validity Test

Indicator	Pearson Correlation	r Table	Sig (2-tailed)	Conclusion
TO1	0.238	0.1294	0.000	Valid
TO2	0.323	0.1294	0.000	Valid
TO3	0.208	0.1294	0.002	Valid
TO4	0.361	0.1294	0.000	Valid
TO5	0.252	0.1294	0.000	Valid
TO6	0.180	0.1294	0.006	Valid
TO7	0.231	0.1294	0.000	Valid
TC1	0.231	0.1294	0.000	Valid
TC2	0.329	0.1294	0.000	Valid
TC3	0.339	0.1294	0.000	Valid
TC4	0.183	0.1294	0.006	Valid
TC5	0.263	0.1294	0.000	Valid
TIS1	0.319	0.1294	0.000	Valid
TIS2	0.398	0.1294	0.000	Valid
TIS3	0.263	0.1294	0.000	Valid
TIS4	0.433	0.1294	0.000	Valid
TIS5	0.430	0.1294	0.000	Valid
TU1	0.580	0.1294	0.000	Valid
TU2	0.357	0.1294	0.000	Valid
TU3	0.333	0.1294	0.000	Valid
WP1	0.224	0.1294	0.001	Valid
WP2	0.185	0.1294	0.005	Valid
WP3	0.264	0.1294	0.000	Valid
WP4	0.269	0.1294	0.000	Valid

All indicators in table 2 show that the value of the r-value is higher than that of the r-table. Furthermore, the significance value of all indicators is less than 0.05. Based on these results, it can be explained that all indicators are declared valid. In table 3, all values on the variable are above 0.70. It demonstrates that the tools used in this study are reliable.

Table 3. Reliability Test

Variable	Cronbach's Alpha	N of items
Techno-overload	0.778	7
Techno-complexity	0.776	5
Techno-insecurity	0.775	5
Techno-uncertainty	0.772	3
Work performance	0.785	4

4.1 Regression Analysis

Results from statistical analysis of regression analysis showed in table 4. The regression analysis in table 4 shows that the significance value is above 0.05, and the t value is smaller than the t table value (1.970). These results explain that Work Performance is not affected by Techno-overload. Therefore, this result also explains that hypothesis 1 was rejected. These results support research by Brown, Jones, & Leigh Brown, Jones, & Leigh [5]. In this research, it is stated that role overload does not directly influence work performance. However, this result is different from the study conducted by Li & Wang [28]. In this research, teaching using Information and Communication Technology is intensively carried out following

the Ministry of Education's direction regarding the modernization of learning and teaching systems using Communication Information Technology. The results of this study do not support research conducted by Hung et al. [18]. Although this study only measures technostress on work mobility of smartphone users, this result also explains that the confrontation of the situation does not moderate the techno-overload relationship to Work Performance.

Table 4. Regression Analysis

	t-value	Sig.
(Constant)	7.779	0.000
Techno-overload	-0.745	0.457
Techno-complexity	3.199	0.002
Techno-insecurity	-0.788	0.432
Techno-uncertainty	1.4990	0.138

*Dependent variable: Work Performance

The second hypothesis, Work Performance, is influenced by Techno-complexity. From the results of the regression analysis, it can be explained that Hypothesis 2 is accepted or, in other words, Work Performance is indeed influenced by Techno-complexity. Therefore, H2 is accepted. These results are in line with research conducted by Cheah, Bellavitis, & Muscio [7]. This study uses techno-complexity to measure performance related to finance in workers in public research institutions and private firms, where techno-complexity is seen as a series of difficulties in managing, understanding, breaking codes, and integrating investment. Likewise, with research conducted by Islam, Talukder, & Hu [21], this result is different from research conducted by Seong Tak & Park [40]. Although explaining the effects indirectly, this study explicitly reveals that the technostress in which there is techno-complexity does not directly affect performance, especially in terms of job satisfaction. It is possible when work-life conflict interventions are formed. The third hypothesis proposes that Technology-insecurity affects Work Performance. The results of the statistical analysis showed that Work Performance was not proven to be influenced by Techno-insecurity, or in other words, Hypothesis 3 was rejected. This result is different from research conducted by Sareen [38]. This study also stressed that men feel more insecure when using technology at a teaching level and nonteaching-level workers. These results support research conducted Zainun, Johari, & Adnan [54]. This research explains that techno-insecurity is seen as a change that does not have a dominant influence on work commitment. The last hypothesis, the fourth hypothesis, states that Techno-uncertainty influences Work performance. The results of the regression analysis showed that Techno-uncertainty did not influence work Performance. Techno-insecurity factors have also been studied by Sareen [38] and have different effects where these factors influence the work done on campus. This research explains that techno-insecure reflects uncertain situations and demands continuous change. These results support research conducted by Li & Wang [28]. Uncertainty in the constant shift in technology used in teaching becomes an important issue, which is still a question. Consistency to follow the latest technology to support work is still not generalized.

5. Conclusion

This study concludes that from the four hypotheses proposed, 1 hypothesis was accepted, and three hypotheses were rejected. This result is quite different from the results of previous studies using Technostress. According to the researchers, this was due to the intervention of the Covid-19 pandemic situation. This study is devoted to testing the technostress factors on teaching performance amid the Covid-19 pandemic. It is considered necessary because this intervention factor is a factor outside of work that has a mass impact so that the conditions are deemed applicable to all teachers. The results of this study provide essential points where techno-complexity is precisely the only factor in technostress that influences teaching performance. It explains the important thing that the workload of lecturers increases not from the quantity of work but from the way and process of doing the additional work. The method of how to do work, in this case, is closely related to the background of lecturers. Such as the habit of using

technology, knowledge in using teaching technology and the limitations of the device, or age. Covid-19 is a pandemic that has paralyzed many business sectors in Indonesia, especially in Jakarta, where education is one of the still to date impacts. There is still no certainty to re-opening to all schools or universities. This uncertain condition is likely to be the cause of the increasingly high techno-complexity, which is feared to have a negative impact on work productivity [24]. On the other hand, this study explains that factors in technostress such as techno-overload, techno-insecurity, and techno-uncertainty during the Covid-19 pandemic did not influence teaching performance. It is truly relevant to the previous explanation where the impact of Covid-19 applies in a mass and comprehensive manner so that the dislike of lecturers' workload will increase along with the implementation of the online system in teaching. This addition emphasizes more on procedures, provisions, or indicators of online education and learning interaction evaluation. Therefore, adjustments to work in online teaching methods [46] automatically occur. Concern over the insecurity in using online teaching technology for a long time does not apply in this study because the Covid-19 pandemic situation considered to be enacted in mass. It also causes the need for adaptation in using online methods in conditions where uncertainty will end this pandemic. This uncertainty shapes the perception of lecturers where the use of technology in teaching emerges as a process of developing technology that is part of modern life [43], which inevitably has to be followed slowly. Indirectly these results explain that uncertainty conditions do not automatically shift the role of lecturers. So far, techno-stress is considered to be able to change the role of teachers in educating [35]. This research suggests the next research explicitly to be able to examine the impact of technostress on students. The ongoing impact of the Covid-19 pandemic and its overall effect seems to have exciting explanations about technostress for students.

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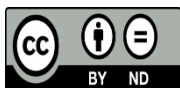
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