Original Research Article

Technostress and its impact on job satisfaction: Evidences during COVID-19 pandemic among faculty members in higher education in Karnataka

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ABSTRACT

Teachers in schools, colleges, and universities have utilized Information and Communication Technology (ICT) based learning and teaching in the present COVID-19 pandemic situation. Teachers, students, and all other stakeholders have been stressed as a result of this abrupt paradigm shift in education. In recent years, teaching has become a difficult job ([1]Saras, 2018), Instructors are expected to quickly adapt and incorporate technological innovations into their teaching while also participating in administrative and other academic activities, all of which contribute to occupational stress among teachers. Competition has crept into the education industry in this dynamic climate. Faculty today serves in a variety of positions in addition to instructing students, such as mentor, coach, consultant, administrator, researcher, and so on. He or she is required to devote more time and effort to the institutions to meet the demands of an ever-changing academic environment. This study attempted to study the influence of personal variables like gender, course and tenure on technostress. The results found that the personal characteristics had no significant impact on technostress in a sample of 84technical and non-technical faculty members. Further, technostress did not show to have any impact on job satisfaction and organisational commitment; indicating a need for a more comprehensive further study.

1. Introduction

"Stress occurs when a state of disequilibrium exists within the system of variables relating people to their environments, and only when this state of disequilibrium causes a change in people's normal (i.e., equilibrium) levels of psychological wellbeing," Hart and Cotton (2003)[2] stated, referring to their previous studies. Murphy and Cooper, 2000[3] With the growing technological usage in every walk of our lives, we will be soon facing stress related to managing and handling the technical gadgets and the consequences related to them. Technological improvements are making jobs more effective and efficient, but they are also putting ongoing pressure on employees to adopt and adapt to recurring, continuous changes and upgrades in technology, which is increasing workplace stress. Technostress is a sort of stress caused by the constant and excessive use of digital technology (Chiappetta, 2017).[4] This expression first appeared during the industrial revolution and has since spread to every occupation that involves the use of digital equipment. Inability to cope with technological advances can cause worry and panic, resulting in a condition known as 'Technophobia' (fear of technology). In 2017, Carlotto et al.[5], in his book "Technostress: The Human Cost of the

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Computer Revolution,"s conceived the term technostress for the first time. He declared — technostress as a technological negative impact on humans. He stated that technostress causes psychological reactions such as a pressure of the eye, back pain, headaches, neck and joint pain, insomnia, anxiety, depression, over-related emotional, physical, mental and behavioral disorders and other electronic devices. In personal life and work, technology is necessary and hence it is an unavoidable part of our lives.

As a result of the global preventive efforts used to control the spread of infection during the COVID-19 pandemic, technostress has become more frequent. The tactics to counter or cope up included remote working from home. Various information and communication technologies (ICTs) such as television, mobile phones, the internet, satellite systems, and computer technologies have evolved daily throughout the last few years. These changes have an impact on education, health, the environment, culture, art, and entertainment. Chiappetta, M. (2017).[4] As a result, the majority of the population is finding it difficult to keep up with rapid technological advances. In the educational sector, virtual classrooms, social media platforms such as What's App, Google Classroom, Zoom, Facebook, and various online learning management systems were/are used by academics all over the world to communicate with students. A number over 1.5 billion pupils have been impacted by the closure of educational institutions owing to distance learning (UNESCO, 2020). At least for 50% of the teacher and students, this way of teaching and learning was a new or unthought-of experiment. This dilemma affects both teachers and students, especially when the network is down for an extended period and there is a lot of traffic on the internet due to the heavy and continuous use of teachers and students at the same time, as well as power outages or any technical or technical problem with the digital platform. These issues are common in underdeveloped or even developing countries across the world. This pandemic could have far-reaching psychological implications in addition to the potential for physical ill-health, like blood pressure, headache, increased heartbeat, etc. The term "technostress" refers to when people suffer negative psychosocial consequences of technology use and also display negative valence toward ICT use. There are four dimensions to technostress — disbelief , discomfort/fatigue, anxiety, ineffectiveness and each dimension describes two characteristics of technostress (Techno anxiety and Techno fatigue) (Carlotto, et al. ,2017).[2–10]

With the unexpected pandemic that covered the world with number of waves and with little or no prior training of usage of technology in education sector, faculty faced a lot of problems to immediately switch to technology forced teaching and assessment. They involved in experiments with various software, applications, gadgets and platforms to keep the teaching and learning continuous.

This induced lot of physical and mental stress among the teachers. After the pandemic hit the world, many researchers have worked/researched on the impact of technostress on job satisfaction, employee performance, mental wellbeing, employee efficiency, etc. Unfortunately, very little researches are done to consider teachers/teaching staff as a sample for the study.

2. Purpose of The Study

High levels of teacher stress have a variety of negative consequences, including impaired concentration, lack of commitment, lack of motivation, poor performance, disconnect from students and the system, and poor classroom instruction quality. Stress levels among academic and non-academic staff at universities worldwide are increasing at an alarming rate (Parray et al., 2016).[11]

Stress due to the usage of new information technology tools for teaching and learning is stressing teachers, which is affecting their job satisfaction and has effect on organisational commitment.

3. Objectives of The Study

1. To assess the impact of personal variables on techno stress experienced by technical and non-technical faculty
2. To evaluate the influence of technostress on Job satisfaction & Organisational Commitment

4. Literature Review

Results of the research by Penado Abilleira, M., et.al.(2021),[1,12–15], suggest that female teachers from colleges who are older were the ones who suffered the most from the negative effects of technology. Saim et al (2021)[15], did an extensive study of literature to identify and confirm the relation of technostress creators and work life balance. Weems-Landingham, V. (2021)[16] in their article "Embracing Technostress to Overcome Online Teaching Challenges" declared that it is inevitable to experience technostress, but the positive mindset and persistence shown can help counter technostress. Brennan F. (2021)[17] noticed in his research that 60 percent of the teachers reported feeling stressed by technology. The most significant contributor was techno-overload, which resulted from the shift in teaching format from face-to-face to online. Isolation and disconnect caused by students' reluctance to use webcams during synchronous classes was also a frequently reported cause of synchronous class failure.

In terms of personal characteristics, Coklar & Akçay (2016)[6] found that general teacher technostress levels were average; general teacher technostress levels did not vary with gender or length of service but did exhibit a modest variance with Internet use time. According to

Syvänen et al., (2016)[18], there was no significant difference between male and female teachers or school types, however, younger teachers were less stressed by technology than older teachers. Rebman and Kitchens (2014)[14] looked at gender, age, education level, and computer confidence among online teachers and found that female instructors and senior employees have higher levels of technostress; additionally, education level and computer confidence have an impact on technostress. Gender, age, technology awareness, and tenure of academicians all have an impact on technostress, according to Jena & Mahanti (2014).[7] Zainun N. F. H in 2013[19] studying IT professionals published a paper to assess Technostress on Job Satisfaction and Organisational Commitment, and found that technostress is inversely proportional to job satisfaction and organisational commitment. Agbu & Simeon (2011)[20] discovered that older distance education instructors have greater levels of technostress, while there was no significant gender difference.

5. Research Methodology

The random sampling method was adopted for the research. Faculty from technical and non-technical courses responded for the study. A Sample of 84 faculty members, teaching in two technical colleges (Engineering) and three non-technical Degree colleges from Vijayapur city, Karnataka participated in the study. A structured questionnaire, comprising of 35 questions/statements was administrated for the study.

5.1. Instrument used

Technostress instrument developed by [13] Ragu-Nathan et al., 2008, was administrated for the study. The questionnaire comprised of 5-point Likert scale measurement of technostress, assessing dimensions like – Techno-overload, Techno-invasion, Techno-complexity, Techno insecurity and Techno-uncertainty. The questionnaire also evaluates Job satisfaction, Organisational commitment and Continuance commitment. For the present study the 5 dimensions of technostress were evaluated for their influence on Job satisfaction and Organisational Commitment.

5.2. Dimensions studied

1. **Techno-Overload —** stress that arises due to too much usage of technology at work
2. **Techno-Invasion —** stress due to interference of technology into work
3. **Techno-Complexity —** stress due to complexity of the technological tools/ instruments while usage
4. **Techni-Insecurity —** stress that rises fear of job loss or job replacement due to technology taking over

5. **Techno-Uncertainty —** stress that is due to uncertainty of the results, changes, duration, and usage of the technological devices for the work.
6. **Job satisfaction —** a sense of fulfilment doing a particular job
7. **Organisational Commitment –** a sense of responsibility towards an organisation

5.3. Hypothesis studied

Considering the objectives of the study, the following hypothesis (Null hypothesis)may be stated:

1. **Hn$_1$:** Personal variables considered do not have an impact on Technostress among technical and non-technical faculty.
2. **Hn2:**Technostress does not have an influence on Job satisfaction among technical and non-technical faculty
3. **Hn$_3$:** Technostress does not have an influence on Organisational Commitment among technical and non-technical faculty.
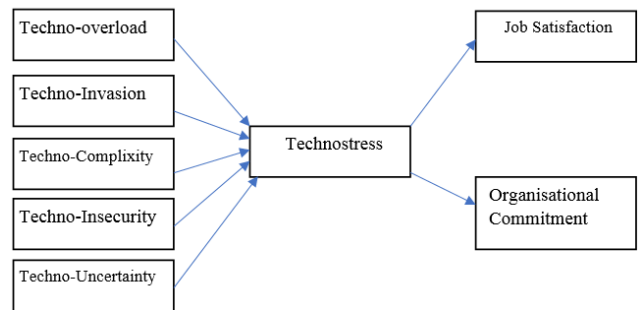
5.4. Conceptual framework

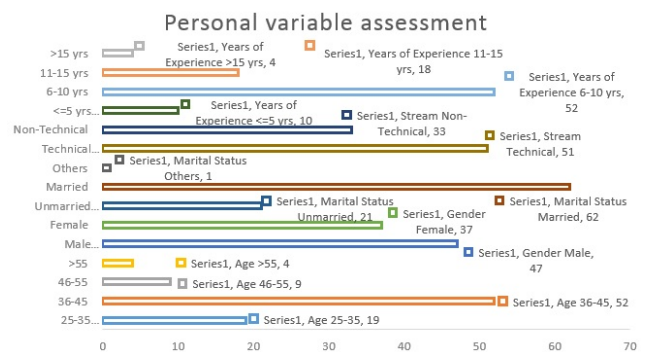**Fig. 1:** Conceptual framework

6. Results & Discussion

Chart 1: Personal variable assessment

Table 1: Personal variables assessment

Variables		Frequency	Percentage
Age	25-35	19	22.6
	36-45	52	61.9
	46-55	9	10.7
	>55	4	4.8
Gender	Male	47	56.0
	Female	37	44.0
Marital Status	Unmarried	21	25.0
	Married	62	73.8
	Others	1	1.2
Stream	Technical	51	60.7
	Non-Technical	33	39.3
Years of Experience	<=5 yrs.	10	11.9
	6-10 yrs.	52	61.9
	11-15 yrs.	18	21.4
	>15 yrs.	4	4.8

Table 2: Dimensions & Technostress

		Techno-Overload	Techno-Invasion	Techno-Complexity	Techno-Insecurity	Techno-Uncertainty	General-Technostress
Age	Pearson Correlation	-0.004	0.065	-0.056	0.087	-0.078	0.027
	Sig. (2-tailed)	0.972	0.556	0.611	0.434	0.483	0.810
	N	84	84	84	84	84	84
Gender	Pearson Correlation	-0.047	-0.023	0.042	0.018	0.024	-0.011
	Sig. (2-tailed)	0.670	0.834	0.704	0.869	0.825	0.917
	N	84	84	84	84	84	84
Marital Status	Pearson Correlation	-0.017	-0.102	-0.087	-0.014	-0.029	-0.049
	Significance (2-tailed)	0.877	0.356	0.432	0.898	0.795	0.658
	N	84	84	84	84	84	84
Stream/Course	Pearson Correlation	0.066	0.034	-0.118	-0.133	-0.205	-0.076
	Significance (2-tailed)	0.551	0.759	0.286	0.229	0.061	0.492
	N	84	84	84	84	84	84
Experience	Pearson Correlation	0.173	0.141	0.125	0.066	0.030	0.110
	Sig. (2-tailed)	0.116	0.201	0.258	0.548	0.789	0.319
	N	84	84	84	84	84	84

Table 3: Analysis of variance w.r.t technostress and Job satisfaction

	Sum of Squares	df	Mean Square	F	Significance
Regression	0.189	1	0.189	0.311	0.578[b]
Residual	49.889	82	0.608		
Total	50.078	83			

Table 4: Analysis of variance w.r.t technostress and organisation commitment

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.015	1	0.015	0.075	0.785[b]
Residual	16.130	82	0.197		
Total	16.145	83			

The Significance value of age do not show any significance with Technostress dimensions (Techno-Overload = 0.972, Techno-Invasion=0.556, Techno-Complexity=0.611, Techno-Insecurity=0.434, Techno-Uncertainty = 0.483), as they are higher than α = 0.05. Though Technostress dimensions like Techno-overload (-0.004), Techno-complexity(-0.056), Techno-Uncertainty (-0.078) show a negative correlation, stating as age increase, these dimensions may decrease. The outcome is not familiar with the results of Syvänen et al., (2016),[18] Rebman and Kitchens (2014)[14] & Jena & Mahanti (2014),[7] who stated that age does have an influence on technostress. Agbu & Simeon (2011)[20] specifically stated that older (senior) distance education instructors reported greater levels of technostress. The Significance value of gender is all shown to be higher than 0.05, hence there is no significant relationship between gender and technostress (Techno-Overload = 0.670, Techno-Invasion=0.834, Techno-Complexity=0.704, Techno-Insecurity=0.869, Techno-Uncertainty = 0.825). Dimensions like Techno-overload (-0.047), Techno-Invasion (-0.023) & General Technostress (-0.011), as not good indications to measure technostress. The outcome varies with the results of[12] Penado Abilleira, M., et.al.(2021),[18] Syvänen et al., (2016), Rebman and Kitchens (2014)[14] & Jena & Mahanti (2014),[7] who stated that Gender does have an influence on technostress. But studies of Coklar &Akçay (2016)[6] stated that though technostress existed overall; gender did not significantly contribute for the technostress

The significance value of Marital status shows higher than 0.05 and so it is not significant with technostress dimensions(Techno-Overload = 0.877, Techno-Invasion=0.356, Techno-Complexity=0.432, Techno-Insecurity=0.898, Techno-Uncertainty = 0.795). All the dimensions of technostress are having negative R value and so none of the dimensions can be considered as suitable to assess the relation between marital status and technostress dimensions.

The significance value of Stream/Course is once again higher than 0.05 across all the dimensions of technostress (Techno-Overload = 0.551, Techno-Invasion=0.759, Techno-Complexity=0.286, Techno-Insecurity=0.229, Techno-Uncertainty = 0.061) and hence stream is not significant relationship with technostress in general. With Correlation, it can be said that Techno-Complexity(-0.118), Techno-Insecurity (-0.133), Techno-Uncertainty (-0.205), General Technostress (-0.076) are not good indicators of effect of stream on technostress.

The significance value of years of experience is showed on a higher scale, i.e., greater than 0.05 and have been not significant with dimensions of technostress(Techno-Overload = 0.116, Techno-Invasion=0.201, Techno-Complexity=0.258, Techno-Insecurity=0.548, Techno-Uncertainty = 0.789). The positive R value of all the dimensions indicate that as years of experience increase, technostress also increase across Techno-Overload, Techno-Invasion, Techno-Complexity, Techno-Insecurity, Techno-Uncertainty.

Jena & Mahanti (2014)[7] stated that tenure/years of experience has an impact on technostress, but the results of the present paper differ from the findings of Jena & Mahanti(2014).[7] Hence it can be concluded that Personal variables do not have an impact on Technostress among technical and non-technical faculty (Hn1)

With the significance value above 0.05, it can be stated that Technostress has no effect on Job satisfaction. This signifies that Technostress does not have an influence on Job satisfaction among technical and non-technical faculty (Hn2).

With the significance value above 0.05, it can be stated that Technostress has no effect on Organisational Commitment. This proves that Technostress does not have an influence on Organisational Commitment among technical and non-technical faculty (Hn3).

This result is in dissimilarity with the work of Zainun N. F. H (2013),[19] who concluded that technostress has an effect of job satisfaction and organisational commitment. The results so obtained is the result of the sample size chosen for the study. A larger sample size and in a different geographical location may give other value as technostress is subjective in nature and may change.

7. Conclusion

Traditionally, personal variables have been found to have a relationship with stress. However, more recent research has found that stress can be caused by a variety of factors. The purpose of this study was to determine whether or not the personal variables are associated with technostress in the same way. The findings of the study revealed that the personal variables chosen for the study –age, gender, marital status, years of experience, stream/coursehave no relationship with technostress, indicating that more in-depth research is required to determine the variables that influence technostress in higher education ([14]Ragu-Nathan et. al. , 2008).

Adoption of new technologies is the only way to avoid technostress. In fact, earlier adaptation and familiarization with the necessary educational ICT is a requirement of the hour and a standard for the foreseeable future. The paper calls for further research on external factors such as technical and technological assistance (Strudler & Hearrington, 2008), organisational infrastructure (Thomas & Knezek, 2008), managerial support (Dexter, 2008), and a variety of other factors (Kirschner, Wubbels, & Brekelmans, 2008) may have an impact on faculty technostress. The Institutes through their various initiatives can conduct regular trainings to the faculty as and when a new technology to support learning and teaching emerge in the

market. Support in terms of advance ICT infrastructure and empowerment to the teachers to try new gadgets, software, platforms and applications can be given to the teachers to enable them learn, clarify their doubts and practice before it is implemented. This will give time for the faculty to practice and get themselves comfortable with the ICT and this in turn will reduce the stress they encounter in their teaching and learning.

8. Source of Funding

None.

9. Conflict of Interest

None.

10. Reference

References

1. Saras H. Shocking Statistics of Workplace Stress You Never Knew. ; 2018. Available from: https://www.harishsaras.com/stress-management/shocking-statistics-of-workplace-stress/.
2. Cotton P, Hart PM. Occupational wellbeing and performance: A review of organisational health research. *Aust Psychologist*. 2003;38(2):118–27. doi:10.1080/00050060310001707117.
3. Murphy LR, Cooper C. Healthy and Productive Work An International Perspective; 2000. p. 208.
4. Chiappetta M. The Technostress: definition, symptoms and risk prevention. *Senses Sci* . 2017;4(1):358361. doi:10.14616/sands-2017-1-358361.
5. Carlotto MS, Wendt GW, Jones AP. Technostress, career commitment, satisfaction with life, and work-family interaction among workers in information and communication technologies. *Actualidades Psicología*. 2017;31(122):91–102. doi:10.15517/ap.v31i122.22729..
6. Çoklar AN, Akçay A. Investigation Of Techno-Stress Levels of Teachers Who Were Included In Technology Integration Processes. *Turk Online J Educ Technol*. 2016;p. 1331–9.
7. Jena RK, Mahanti PK. An Empirical study of Technostress among Indian Academicians. *Int J Educ Learn*. 2014;3(2):1–10.
8. Johnson T, Wisniewski MA, Kuhlemeyer G, Isaacs G, Krzykowski J. Technology Adoption in Higher Education: Overcoming Anxiety Through Faculty Bootcamp. Online Learning. *J Asynchronous Learn Networks*. 2012;16(2):63–72. doi:10.24059/olj.v16i2.240.
9. Kirschner P, Wubbels T, Brekelmans M. Benchmarks for teacher education programs in the pedagogical use of ICT. In International handbook of information technology in primary and secondary education. vol. 20; 2008. p. 435–47. doi:10.1007/978-0-387-73315-9_26.
10. Mayank Y, Singh A. Effects and Measures of Technostress among Librarians in selected University Libraries of Delhi. *ProQuest*. 2015;0(1):1–11.
11. Parray WM, Kumar S, Awasthi P. Stress among teachers: A theoretical examination. *Int J Indian Psych*. 2016;3(4):88–97.
12. Abilleira MP, García MLR, Deus MPD, González MJM. Technostress in Spanish University Teachers During the COVID-19 Pandemic. *Front Psychol*. 2021;12(6):617650.
13. RNathan TS, Tarafdar M, Nathan BSR, Tu Q. The Consequences of Technostress for End Users in Organizations: Conceptual Development and Empirical Validation. *Inf Syst Res*. 2008;19(4):417–33. doi:10.1287/isre.1070.0165.
14. Rebman CM, Kitchens FL. A model for testing technostress in the online education environment: an exploratory study. *Issues Inf Syst*. 2014;15(2):214–22.
15. Saim MASM, Rashid WEW, Ma'on SN. Technostress creator and work life balance: a systematic literature review. *Rom J Inf Technol Automatic Control*. 2021;31(1):77–88.
16. Landingham VW. Embracing Technostress to Overcome Online Teaching Challenges; 2004. Available from: https://www.kent.edu/business/velvet-weems-landingham-phd.
17. Brennan F. Technostress and leadership: a case study in higher education during the COVID-19 crisis. *Technostress Leadersh*. 2021;p. 1–78.
18. Syvänen A, Mäkiniemi JP, Syrjä S, Tammi KH, Viteli J. When does the educational use of ICT become a source of technostress for Finnish teachers? *Seminarnet*. 2016;12(2):1–15.
19. Zainun NF. Technostress in Relation to Job Satisfaction and Organisational Commitment among IT Professionals. *Accelerating world's Res*;3(12):1–4.
20. Agbu JFO, Simeon OK. Technostress in the age of information communication technology: A case study of distance education. *Educ Res*. 2011;2(11):1654–60.

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