

## An Empirical study of Technostress among Indian Academicians

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### **Abstract**

*Information and Communication Technology (ICT) is becoming a fast changing and renewing technology in education sector. The use of these fast changing and renewing technologies create a source of pressure among academicians. This study analyzes the factors affecting the technostress among Indian academicians. This research is conducted on 116 academicians in India using an online questionnaire. The study concluded that technostress has significant effect on gender, age, technology awareness and tenure of academicians.*

**Keywords:** *Technostress, Indian Academicians, ICT Pressure*

### **1. Introduction**

The advent of computers and other fast changing information technology tools and their frequent use in academics has indeed induced stress called technostress among academicians. Technostress is the negative psychological link between people and the new technologies. Technostress is a result of altered habits of work and collaboration due to the use of modern information and communication technologies at workplace [1, 2]. Employees experience technostress when they are unable to adapt or cope with information technologies in a hassle free and healthy manner. They feel compulsive about being connected to work-related information in real-time, and engage in habitual multi-tasking manner. They also feel compelled to work faster because information flows faster, and have little time to spend on sustained thinking and creative analysis. Craig Brod (1984) [3], a leader in the field of technostress research, states technostress as "... a modern disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner". The earlier scholarly studies in this area show that technostress is an undesirable phenomenon spawned by use of computing and communication tools.

Technology has changed very fast since 1988, when the term technostress was coined for the first time by Dr. Craig. The utilization of information and communication technologies (ICTs) in today's information driven society is very essential. No meaningful professional and economic growth and development can be accomplished without ICT utilization. Several benefits such as increased productivity, efficiency, accuracy, space economy and reduction in drudgery and routine are derivable from the utilization of ICT [4]. On the other hand, many factors have been indentified to define technostress more precisely. Tarafdar, Tu, Ragu-Nathan, and Ragu-Nathan [5, 6] described technostress as a problem of adaptation and inability to cope with or to get used to Technology. They have identified five components of technostress, which are:

- **Techno-overload:** Describes situations where use of technologies forces people to work more and work faster.

- **Techno-invasion:** Describes being “always exposed”, where people feel the need to be constantly connected irrespective of place and time.
- **Techno-complexity:** Describes situations where the complex technologies force people to spend recourses in learning and understanding the use of new applications.
- **Techno-insecurity:** Associated with situations where people feel insecure about their jobs with other people, who are better equipped with new tools and technologies.
- **Techno-uncertainty:** A situation where technology (ICT) users feel uncertain and unsettled since technology is continuously changing and need upgrading. Continuous changes and upgrades restrain people to experience at a particular system.

Technostress has various psychological as-well-as physiological impacts on human being. It includes decreased job satisfaction, organizational commitment and productivity. The major causes of technostress are due to [7]:

- the quick change of technology;
- lack of proper training and awareness;
- an increased workload;
- lack of technology standardization;
- Reliability and availability of proper and adequate hardware and software.

The rest of the paper is organized as follows: Section 2 discusses the related previous research in technostress. Section 3 discusses the theoretical framework of the research and list proposed hypothesis for this study. Section 4 and Section 5 explain the methodology and data analysis respectively. The discussions about the results are elaborated in Section 6. The paper is concluded with a conclusion in Section 7.

## 2. Literature Review

In 21<sup>st</sup> Century, the use of Information and Communication Technologies (ICTs) has become a necessity in every individual’s life. Early interactions with ICTs were mostly limited to the organization. But, with the advances in ICTs, the interactions now pervade organizational and personal spheres. These interactions force individuals to adjust to the use of ICTs [8]. These adjustments range from integration of ICTs into workplace, to the fear of becoming obsolete, to the phenomenon of technostress [9].

Universities all over the world are among the major organizations, where ICT facilities are being used on a large scale to increase the productivity [10]. However, while the benefits of ICTs adoption and utilization are not in doubt, it is also true that the adoption, rapid diffusion and utilization of ICTs in teaching and learning have brought about a number of demands and challenges such as technostress and job burnout into workplace. Technostress is described as one’s inability to cope or deal with ICTs in a healthy manner (Brod, 1984) [3]. Addressing technostress is very important for organizations, because it can impact individuals’ health and productivity [5, 9]. Previous research in technostress has mostly focused on the consequences of technostress [5, 6]. Researchers further extend this line of research by studying the impact of information overload and task-technology fit on technostress. The results from 664 working individuals suggest that information overload due to ICTs has an adverse impact on technostress, whereas task-technology fit alleviates technostress. Past literature found that the rise of occupational stress is one of the major challenges of technological revolution in the workplace today [11-13]. It is also found that technostress is the feeling of anxiety and it has a negative impact on thoughts, behaviours, attitudes, and body when a person is expected to deal with technology [14-15]. The usage of advanced ICT technologies like computer integrated system, CD-ROMs, multiple databases, the Internet and World Wide Web has also caused an enormous amount of strain on academicians. Occupational stress in academic

institutions has been found to have negative influence on employee satisfaction. It has been found that the higher levels of stress have been associated with lower organizational commitment and satisfaction [16-17].

In the past, researchers have established the effect of education, age, gender, and computer confidence on technostress. Educational qualification is found to positively influence the technostress [18-19], the assumption being that more educated users would have less anxiety about learning how to use new ICTs and would learn faster than less educated users. Hence, it is expected that the more educated users would experience less technostress. Findings with respect to the effect of age on technostress vary from research to research in different settings. Burton-Jones and Hubona (2005) [20] found that age negatively influences perceived ease of technology use. Studies on computer-related stress, however, suggest that age does not affect computer phobia [21] or computer-related stress [22]. That is, older people do not experience more computer anxiety or computer phobia than younger people. With respect to gender, studies suggest that men and women are influenced by different factors in their decision to use technology. Women are influenced by subjective organizational norms and perceived behavioral control. Men are influenced by their attitudes towards the technology [23]. Women are less likely to use computers in the workplace [23, 24]. Women also tend to have higher computer anxiety [25] and computer phobia [21] than men. Research also demonstrates a strong link between technology awareness and individual reactions to computing technology [26-27]. Higher computer technology awareness leads to lower computer-related anxiety and computer phobia [26]. Therefore, from the above discussion, it is evident that technology has effect on demographic and environmental factors. The next section discusses the theoretical framework relating age, gender, marital status and tenure and technology awareness with technostress.

### 3. Theoretical Framework and Hypothesis

This study mainly focuses on the influence of five important demographic factors *e.g.*, gender, age, tenure, marital status and technological awareness on technostress creators (Techno-overload, Techno-invasion, Techno-complexity, Techno-insecurity, and Techno-uncertainty). The relationship diagram shown in Figure 1 relates the dependent variable to independent variables. In this model, demographic factors are treated as independent variables whereas technostress creator is treated as dependent variables.

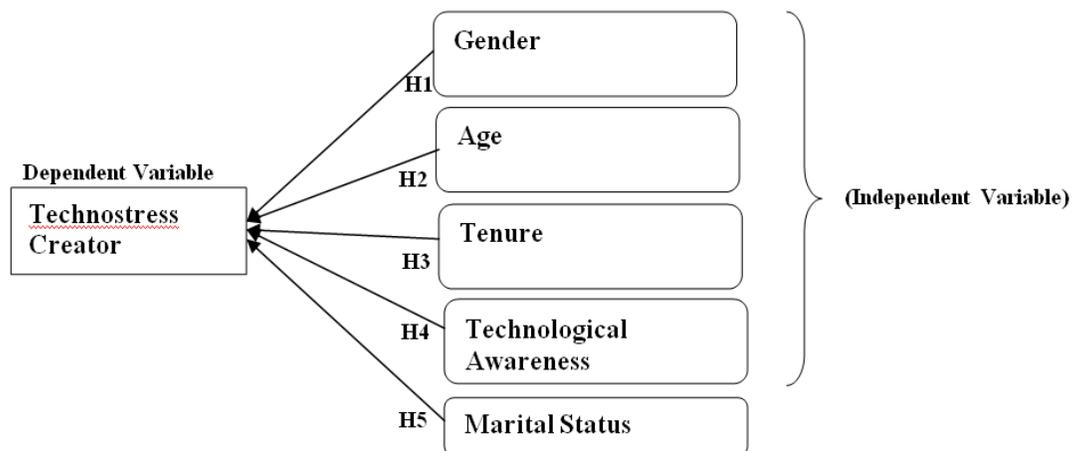


Figure 1. Proposed Relationship Diagram

Based on the evidences from the literature and the relationship diagram shown in Figure 1, the present study has formulated the following hypotheses:

- H1:** There is a statistically significant relationship between technostress and gender among Indian academicians.
- H2:** There is a statistically significant relationship between technostress and age among Indian academicians.
- H3:** There is a statistically significant relationship between technostress and tenure among Indian academicians.
- H4:** There is a statistically significant relationship between technostress and technological awareness Indian among academicians.
- H5:** There is a statistically significant relationship between technostress and marital status among Indian academicians.

## **4. Methodology**

### **4.1 Population and Sampling Techniques**

A survey method was employed to collect data regarding the demographic profile and important technostress creators of academicians in various universities and colleges across India. The target sample size of 162(N) is considered for this empirical investigation. Out of 162 distributed questionnaires through e-mails and online social forum, only 118 questionnaires were returned. After, initial data screening, only 116 questionnaires were found suitable after discarding missing, erroneous or incomplete data for further statistical analyses. Thus the survey response rate is calculated as 78%, confirms the established standards (> 30%) of social science research.

### **4.2. Measuring Instrument**

The five dimensions (total 20 items) of technostress questionnaire (Ragu-Nathan, *et al.*, 2008) [6] along with demographics scales are used for this study. Previous study by Ragu-Nathan, *et al.*, [6] confirms the reliability of the instrument. They found that Cronbach's alpha (coefficient of reliability) for all five factors of technostress creators are greater than 0.75 Responses on all items except demographic items is gathered through 5-point Likert scale anchored as 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. For demographic and environmental scale, the information regarding age, gender, tenure (duration of service), marital status and technological awareness are collected for this study. The technological awareness measures the extent of awareness of technological advancement and their uses in their job.

## **5. Data Analysis**

The results of data analysis are presented in form of descriptive and inferential statistics. Table 1 shows the demographic description of the sample.

**Table 1. Demographic Information of Sample**

Attribute	Characteristics	N	(%) (Aprox.)
Gender	Male	67	58
	Female	49	42
Age	Below 35	53	46
	Above 35	63	54
Marital Status	Bachelor	35	30
	Married	81	70
Duration of Service	≤ 5yrs	31	27
	6-15yrs	54	47
	16-25yrs	18	21
	≥ 26yrs	13	5
Technological Awareness	Yes	49	42
	No	67	58

Table -1 provides information about the demographic details of the respondents. There are 116 respondents who answered this questionnaire. Out of the total respondents, 67 are male (58%) and 49 are female (42%). Majority are in the age group above 35 years (63%) and 37% respondents are below 35 years of age. Among all respondents 81(70%) are married and 35(30%) are bachelor. 27% of respondents have less than five years of experience, 47% have 6-15 years of experience, 21% respondents have 16-25 years of experience and 5% of the respondents have above 26 years of experience in the same institute. Majority of the respondents (67%) have technological awareness *i.e.*, ICT education.

The reliabilities (Cronbach's alpha), means, and standard deviations of different technostress creators in the context of academicians in India are shown in Table 2. Nunnally (1978) [28] recommended at least 0.70 alpha coefficients for social sciences as acceptable. Under the psychometric properties, the internal reliabilities of overall scale was calculated and found all variables with high internal consistency and reliability in Indian context as provided in the Table 2.

**Table 2. Result of Descriptive Statistics**

	Mean	Standard Deviation	Cronbach's alpha
<b>Techno-overload (OV)</b>	3.01	0.72	0.83
<b>Techno-invasion (IN)</b>	2.12	0.81	0.87
<b>Techno-complexity (CO)</b>	2.89	0.67	0.82
<b>Techno-insecurity (INS)</b>	2.23	0.78	0.78
<b>Techno-uncertainty (UN)</b>	3.26	0.57	0.83

The relative influence of environmental and demographic variables on technostress is examined through bi-variant analysis. The independent t-test was used to measure the difference between the two subgroups and one-way ANOVA (F) was used to find out the difference between three or more subgroups. The results in Table-3 show that four out of five important demographic variables have statistically significant relationship with technostress among academicians in India. The higher levels of technostress difference are found in case of gender, technological awareness and age among academicians in India. Other factors like age and duration of service are less influenced by technostress. But technostress has no significant impact on marital status. The detailed results are presented as follows (Table 3):

1. The male academicians experienced more technostress than female academicians ( $t = -3.57, p < 0.05$ ). So, hypothesis H1 is accepted.
2. The academicians having awareness about technology experienced less stress than the ones having less awareness about technology ( $t = -3.61, p < 0.05$ ). So, hypothesis H2 is accepted.
3. The older academicians feel more stress than younger academicians ( $t = 3.12, P < 0.05$ ). So, hypothesis H3 is accepted.
4. The experienced academicians experienced less stress than less experienced academicians ( $F = 2.34, p < 0.05$ ). So, hypothesis H4 is accepted.
5. There is no significant difference of marital status on technostress ( $t = 1.71, p > 0.05$ ). So the hypothesis H5 is rejected.

**Table 3. Association between Demographic Variables and Technostress**

Attribute	Test Statistics (t, F)	df	Sig. (p)
Gender	-3.57	114	0.000
Age	3.12	114	0.003
Marital Status	1.71	113	0.761
Duration of Service	2.34	4	0.012
Technological Awareness	-3.61	114	0.001

## 6. Discussion

From the above results, it is found that, three demographic factors *i.e.*, gender age and technological awareness has a major influence on technostress. Men academicians experience more technostress than women academicians because women find technology less easy to use than men [29]. Women academicians tend to use technology when they require, whereas men academicians are more inclined to use technology whenever they want to use. Men academicians are more inclined to use technology hence experienced a higher intensity of technostress than women academicians. Similar finding were also found in past literature [29-

30]. But in a study by Ahmet Naci Çoklar, Yusuf Levent Sahin (2011) [31] in Turkey among social network users, it was found that female users have higher technostress levels than male users. In the other hand, academicians with greater technological awareness have less technostress because they are likely to have more faith in their ability to handle the changes and pressures arising from technology. The results also show that the older academicians experience more technostress than younger academicians. Similar finding has been reported by Mahalakshmi, *et al.*, [32] in their study among library professionals in India the obvious reasoning suggests that the younger people are more familiar with latest technology and hence would experience less technostress. Our finding is well supported by the research of Ahmet Naci Çoklar [31] in Turkey. But this result is different from the finding of the study by Monideepa Tarafdar [33] and Hudiberg [34]. They found in their study that older people have experienced less techno pressure than younger people due to maturity. The difference of findings may be due to the extent of technology used in their work and work environment. This research is conducted among academicians, whereas the research which was conducted by Tarafdar and Hudiberg was in an industry setting. But this study also shows that academicians having greater organizational tenure have less technostress as compared to academicians with less duration of service with the organization. Firstly, this may be due to more organization-specific experience and better understanding of existing technologies in the academic setting. Secondly, greater tenure in academic institute possibly enhances the power of employee within organization, which may help them to reduce technology related pressure in academic institute by choosing more choices and latitude in his technology use. Similar results have been reported by Tarafdar [33] and Hudiberg [34]. Academicians with technology awareness (*i.e.*, having formal IT education) are more exposed to technology, so experienced less technostress than the academicians having less techno awareness. They also find easier to adapt to the fast changing technology in academic environment. Academicians having technical(IT) education and have used computers for a longer time experience less technostress because they are more familiar with the changes, upgrades, and evolutions with respect to technology(IT). They are also more familiar with, how the organization will react culturally to the future changes in technology. At the end it is found that there is no significant influence of married and unmarried academicians on technostress. Similar results have been reported by past researches [31, 33].

## 7. Conclusion

This research was conducted to study the influence of demographic and environmental factors on technostress among academician in India. Results concluded that there are significant influences of age, gender, technology awareness and tenure (duration of service) on technostress. But technostress has no impact on marital status of academicians. It is hoped that the results provided in this research will provide an avenue for academic institutions to address technostress. Given the fast changing ICT trend and an increasingly faster-paced stressful work environment, it seems reasonable to develop effective training and wellness programs to decrease academicians' stress levels and to enhance their sense of technological mastery and personal value in Indian conditions. Future research can include more samples with different demographics and environmental factors to arrive at a more generalized result.

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