International Journal of Electronic Business

ISSN online: 1741-5063 - ISSN print: 1470-6067
https://www.inderscience.com/ijeb

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M. Beulah Viji Christiana, M. Joseph Sasi Rajan

DOI: 10.1504/IJEB.2023.10055575

Article History:

Received:	02 December 2022
Last revised:	27 January 2023
Accepted:	18 February 2023
Published online:	20 December 2023

Technostress and users of emerging technologies in knowledge-based professions – an Indian outlook

M. Beulah Viji Christiana*

Department of Management Studies,
Panimalar Engineering College,
Chennai, India
Email: beulah_christiana2@yahoo.com
*Corresponding author

M. Joseph Sasi Rajan

Innova Solutions Inc.,
Chennai, India
Email: joseph.sasirm@gmail.com

Abstract: The world today has gone through a dramatic change due to heavy reliance on emerging technologies because of a knowledge based economy where knowledge-based professions abound beyond measure. Employees in knowledge-based professions rely heavily on knowledge as capital. And this heavy reliance has imposed on them a specific stress termed as technostress. This study throws light on the opinion of users of emerging technologies in knowledge-based professions in India. Descriptive research design is used and the sample size is 340. Disproportinate stratified random sampling technique is used. Both primary and secondary data are used in the study. A structured questionnaire based on the perceived stress scale (PSS) and work stress (WS) is used. Analysis is carried out with SPSS 27. The study reflected the fact that users in diversified professions have a sense of job satisfaction and commitment due to their exposure to emerging technologies.

Keywords: users; emerging technologies; knowledge; profession; technostress.

Reference to this paper should be made as follows: Christiana, M.B.V. and Rajan, M.J.S. (2024) 'Technostress and users of emerging technologies in knowledge-based professions – an Indian outlook', *Int. J. Electronic Business*, Vol. 19, No. 1, pp.1–21.

Biographical notes: M. Beulah Viji Christiana is a Professor at the Department of Management Studies, Panimalar Engineering College has got a rich teaching experience which spans over 21 years. She is an experienced and innovative student focused professional and mentor with a proven track record of excellent teaching skills. Her academic qualification encompasses post-graduate degrees in English Literature and Business Administration from Madurai Kamaraj University, MPhil in Management Studies from Bharathidasan University and PhD in Management Studies from Mother Teresa Women's University, Kodaikanal. She has published more than 40 research articles in various national and international journals and has authored four books.

M. Joseph Sasi Rajan an Engineer by profession has done various roles in his career as a Software Developer, QA Lead, Technical Project Manager, etc. in IT arena and is professionally certified in Lean Six Sigma Green Belt, Black

Belt and Scrum Master. His academic qualification records a BE in ECE from Madurai Kamaraj University and MBA in Technology Management from Anna University and his work experience spans around 17 years. He has published various research papers in national and international journals of repute and has also an active participation in various professional workshop.

1 Introduction

The 21st-century world has necessitated technological advancement in almost all Professions because today's economy is knowledge-based. The nature of work has gone through a dramatic change especially due to technological advancement as employees are prone to more usage of emerging technologies based on which these users are frequently prone to information overload, multitasking, continuous and spontaneous connectivity with emerging technologies, complex Information Technology systems and continuous up gradation to new systems which have almost become an integral part of an employee's everyday life. Users of emerging technologies in knowledge based professions are considered to be the most valuable and incredible assets because of their high level of productivity (Malik, 2018; Navimipour and Zareie, 2015). To be very specific, Technology has gone through a rapid and drastic change in the past three decades, and in this changed technological scenario, users of emerging technologies are prone to a special kind of stress termed as techno stress when they find it difficult to cope up with the speed and pace of emerging technologies. Users of emerging technologies experience a great deal of techno stress when they are unable to cope with the pace and speed of the changing technologies (Salanova et al., 2014). Multitasking skills due to upgraded technologies have become mandatory for almost all employees in knowledge based organisations and employees are forced and pressurised to work, faster, and quicker as the information flow due to technological advancement is rapid.

Technology is supposed to play an inevitable role in almost all knowledge based jobs either in terms of offering a product or rendering a service. This is mainly because product and service quality largely depends upon the usage of upgraded technologies which in turn provides the organisation a competitive advantage. Users of emerging technologies in knowledge based professions rely heavily on technology mainly because of the fact that they have to make important decisions pertaining to their job in workplaces, solve complicated problems, need to be innovative by offering new products or services in time. Besides this, they are also expected to be multitaskers. For all these, appropriate and timely information is essential, which is possible only through technological accessibility. Employees in knowledge based jobs are therefore forced to cope with emerging technologies to perform their jobs effectively and efficiently (Sellberg and Susi, 2014; Cadieux et al., 2021). Inability to adopt to the rapid pace of technological advancement, inadequate training, inability to understand and cope with emerging technologies, heavy workload, and usage of upgraded technologies in the day to day activities are some of the reasons that are found to be the reasons for technostress and earlier researches have confirmed this fact to a very great extent.

Users of emerging technologies in knowledge based professions like technocrats in the software profession, engineers, managers, academicians, and healthcare professionals have been taken for this study as they are supposed to have increased usage of emerging

technologies due to the nature and complexity of work they undertake. Healthcare professionals are supposed to experience a moderate level of technostress (Golz et al., 2021). To extend a sustainable level of services healthcare professionals are expected to analyse the significance of technological advancement from cognitive and social perspectives. Software Experts are exposed to a greater level of technostress (Vaskari and Sugumaran, 2020) due to the nature of work processes and it is suggested to conduct more stress awareness programs, which is important due to technological advancement so that the technocrats can effectively manage the same. Technostress is supposed to have a significant impact on gender, age, and awareness of the technological advancement experience of academicians. Managers in Competent organisations are expected to experience a great deal of technostress when compared to their non-managerial counterparts (Pflügner et al., 2021). Managers face a great deal of demand in terms of techno-overload and techno-invasion. The impacts of techno stressors draw special attention not only in the current scenario but also in the near future and distant future. The research study was presented to analyse the technostress and users of emerging technologies in knowledge based professions. With a descriptive research design, questionnaire data has been analysed. Further, the hypotheses were generated and tested with various statistical tools. Further, this study examined the impact of techno stress among users of emerging technologies and identified the influence of the various dimensions of technostress on the performance of users.

2 Significance of the study

The study gains momentum mainly because of the fact that technology has become an inevitable part of work-life, especially in knowledge based professions. Technostress is found to have a significant impact on the productivity of knowledge workers as they rely heavily on emerging technologies to have more involvement and commitment in their daily routines. They are forced to work faster and quicker as the flow of information is relatively quick due to technological advancement. Technology in the 21st century has surpassed human imagination and many times, employees in knowledge based Professions find it relatively difficult to cope up with it successfully. Usage of emerging technologies has also become increasingly significant for effective performance. Technostress has also a significant impact on the physical, mental and emotional aspects of its users. Knowledge workers can adopt suitable strategies that alleviate the effects of technostress to a very great extent if they are aware of the factors causing technostress and the consequences they face. It is in this perspective that the study has wide significance in the current scenario.

3 Review of literature

- Jena and Mahanti (2014) made an attempt to study the impact of techno stress on people in the teaching profession in India and concluded that variables like gender, age, and experience have a major effect.
- Christiana and Rajan (2018) identified the influence of various demographic variables on the creation of technical stress among professionals belonging to

information technology. The various techniques that are resorted to moderate and reduce technostress are given special emphasis.

- Laspinas (2015) made an attempt to study the trends and challenges that librarians face in their profession. The technostress level of librarians with respect to physical, emotional, behavioural, and psychological aspects is also given special consideration. Coping techniques in the above mentioned dimensions are also given special attention and consideration
- Kaveri and Mohan (2020) in their research studied the impact of technostress on IT sector employees of Bengaluru City and identified that the swift renewal of advanced technologies generates enormous pressure among IT Professionals. The level of technological advancement and the work pressure due to the same is found to have an adverse effect on IT Professionals.
- Jena (2015) studied the influence of technostress on pleasure in job among teaching professionals in the Indian scenario and based on this, a model was developed. The model depicted a negative impact of stress due to technology on job pleasure.
- Harahap and Effiyanti (2015) in their research evaluated individual perceptions on acceptance of technology, overload of work, insecurity due to loss of jobs and technostress that are evident from the physical and psychological responses of individuals. The research concludes with the finding that technostress can be overcome to a very great extent if the effective implementation of ICT in educational services.
- Wang et al. (2005) in their paper proposed a conceptual framework of computer-related technostress based on the role of inhibitors. Results of the study indicated that advanced training in information technology will contribute a lot in alleviating technostress created by the usage of computers.
- Sareen (2019) attempted to derive the various creators of technostress. Special efforts were also taken to establish the continuity between the originators of techno stress and gender. Research revealed that male employees feel highly insecure when compared to that female in terms of usage of technology.
- Kumar et al. (2013) in their study made with IT Professionals made an attempt to find the association between job satisfaction and organisational commitment to technostress. Technostress is supposed to have a negative correlation with the two variables.
- Merced and Franco (2015) in their study found that there exists a significant affinity between techno stressors and coping mechanisms resorted to by academic librarians. Library heads are suggested to regularly conduct programs on accepting responsibility, self-controlling, and organising training programs on emerging technologies so that it will be easy for them to cope up with it successfully.
- Tagurum et al. (2017) in their study found that the majority of their respondent's teaching professionals experienced a great deal of technostress and it also had a severe impact on their job performance. Further, more severe consequences were also experienced. It is suggested in the study that the employment of technical

experts for guidance and support of academicians will alleviate technostress among the academicians to a very great extent

- Tiemo and Owajeme (2010) examined the motives and confronting strategies resorted to by university librarians in managing technostress. It is recommended in the study that adequate training programs should be given in the area of emerging technologies so that librarians will feel comfortable in carrying out their normal activities.
- Al-Ansari and Alshare (2019) focused their study on the impact of technostressors on satisfaction, commitment at work, and on organisational performance. At the end of the study, it is found that stressors of technology have a negative impact on satisfaction in the workplace.
- Oh and Park (2016) in their study identified that the conflict experienced by smart workers in the workplace as well as at home even after their regular work and holidays is mainly due to their continuous connectivity with technology.
- Curbano (2019) developed a prototype for technostress and the various uncertain factors related to ergonomics involved in managing technostress effectively in BPOs. The study identified important predictors of technostress in work place body postures and design. The study threw significant light on managers of BPOs in understanding how ergonomics contribute towards managing technostress to a very great extent in the call centres and thereby create a healthy work environment.

4 Objectives of the study

- to have an outlook on the professionals in knowledge based jobs towards experiencing technostress based on a demographic perspective
- to identify the influence of the various dimensions of technostress on the performance of users of emerging technologies in knowledge based jobs
- to know the satisfaction level of employees regarding the usage of emerging technologies and their various prospects in knowledge based jobs
- to analyse the impact of techno stress among users of emerging technologies in knowledge based jobs pertaining to organisational commitment.

5 Research hypotheses

H01 There is no notable variation in the opinion of male and female users of technology towards their extreme dependability on emerging technologies.

H02 Notable variation is not found among the employees with varying experience levels in knowledge based jobs with respect to the means of their opinion towards experiencing techno stress.

H03 There is no notable difference in the means of the opinion of the users of emerging technologies regarding extreme technological dependence with respect to that of their Profession.

H04a There is no significant influence of age on the users of emerging technologies towards the means of the various dimensions of technostress.

H04b There is no significant impact of the Profession on the users of emerging technologies towards the means of the various dimensions of techno stress.

H04c Age does not have a noteworthy interconnection effect on profession among the users of emerging technologies pertaining to means of the techno stress dimensions.

H05 There may be no huge courting among technological lack of confidence and exchange in work behaviour.

H06 Career growth, job security, and salary does not influence the job satisfaction of users of emerging technologies.

H07 There's no large relationship between the job pleasure of users of emerging technologies and the influence of technostress.

H08 Enormous difference between the average ranks of prospects of emerging technologies is found in terms of experiencing the consequences of technostress irrespective of their profession.

H09 Technostress does not have a noteworthy difference in the average dedication of emerging technology prospects with respect to that of their profession.

6 Research methodology

A descriptive study layout is selected for this study because it explains the state of affairs as it currently exists. Descriptive research is a research technique elucidating the characteristics of the population or else phenomenon studied. While the research focuses to detect characteristics, frequencies, trends, together with categories, descriptive research is an appropriate choice in emerging technologies. The sample size is 340, which is confined through a pilot study. Users of emerging technologies in knowledge based Professions have been taken as the target respondents. Various technological developments and emerging technologies are impacting businesses and citizens across the globe. They continue to transform our society and economy and impact almost every aspect of life. It is more important than ever to enhance the necessary skills to understand the impact and functioning of these technologies on the targeted populations. The emerging technologies' attributes and challenges are relatively fast growth, prominent impact, coherence, uncertainty, and ambiguity, along with the challenges are facing a scarce and competitive talent market, decreased diversity, and becoming geographically constrained. For this professionals belonging to software jobs, academicians, managers, engineers, and healthcare were taken into consideration. The sampling technique that is adopted for this study is disproportionate stratified random sampling, which is a probability sampling technique. It is the system of stratifying sampling where the sample size from every stratum or level is not proportioned to the stratum or level size of the

entire populace. In the sample, every stratum is taken as proportionate to the stratum's population size by proportionate sampling. The strata's proportions were not retained by the disproportionate stratified random sampling usage in the population. The accurate estimates of each group and the differences between them can be acquired by employing this technique. For ensuring that there is sufficient analysis evens the smallest groups in a population, this technique is detected. The total sample size between the subgroups could be divided by utilising this methodology or else deploy different proportions that make sense for the study. The selection of appropriate strata for the sample may be difficult in stratified sampling, which is the major problem. Different professions, which are knowledge based are taken as strata, and from each stratum, Professionals were selected as samples in a disproportionate manner. The records which are collected for the study are both primary and secondary in nature. Primary data are gathered via a structured questionnaire based on the perceived stress scale (PSS) and work stress (WS). In primary data, to gauge stress perception, the PSS is a hugely deployed psychological instrument. It is a gauge of the degree to which situations in one's life are estimated as stressful. The harmful physical along with emotional responses, which take place when the job requirements do not match the capabilities, resources, or else needs of the worker, is termed the WS. Secondary data are collected via journals, magazines together with news reports pertaining to that of technostress experienced among users in knowledge based professions. Various statistical tools like Independent Sample t-test, one way ANOVA (analysis of variance), two way ANOVA, Carl Pearson's correlation, multi linear regression, Kruskal Wallis H Test, etc are used for analysis and the findings and interpretation of the same have been discussed. For detecting whether there are any statistically important differences betwixt the means of '3' or else more independent groups, the ANOVA is deployed. Then, Carl Pearson's correlation is applied to measure the level of relation between linearly related variables. Moreover, multiple linear regression is required for calculating the relationship betwixt '2' or else more independent variables and '1' dependent variable. There is a '1' independent variable in one way ANOVA and a '2' independent variable in two way ANOVA.

7 Analysis and interpretation

7.1 Demographic profile of users of emerging technologies

Demographic analysis of the users of emerging technologies is done on the basis of variables such as gender, age, profession, experience, etc. The analysis clearly depicts that 40% of the respondents taken for the study are women and 60% of the participants are men. Most of the participants in this study are found to be above 35 years of age (i.e.) 43% are observed to be within the age frequency of 36–40 and 22% of them are more than 40 years.

Software professionals constitute a major chunk taken for the study with 24% followed by engineers and managers who constitute 23% and 22% respectively. Academicians constitute 15% and medical professionals comprise 16% of respondents taken in the study. 56% of the users of emerging technologies in this study are found to be having 11–15 years of experience in their profession and 17% of them are found to have an experience of 16–20 years. It is therefore implied that most of the users of emerging technologies in this study are found to have a sound experience.

Table 1 Demographic profile

Demographic variables	*Characteristics*	*No. of respondents*	*Percentage*
Gender	Female	136	40
	Male	204	60
Age	<25 years	38	11
	26–30 years	43	13
	31–35 years	38	11
	36–35 years	146	43
	>40 years	75	22
Profession	Academicians	51	15
	Engineers	79	23
	Managers	73	22
	Software professionals	80	24
	Medicine professionals	57	17
Experience	<5 years	35	10
	6-10 years	35	10
	11-15 years	190	56
	16-20 years	55	17
	>20years	25	7

Source: Primary data

7.2 Gender opinion on extreme dependability of emerging technologies

Research earlier has indicated that in certain professions, male and female users of emerging technologies differ in their opinion towards technological dependence. Psychological and physical issues and difficulty in focusing on important tasks caused by technological dependence have been linked to anxiety and depression. Increasing satisfaction, better communication channels, and eliminating geographical boundaries are a few of them. When weighed against females, males embrace technological innovation considerably; in addition, more skilled in computer-related tasks and more attracted to modern technology than females. The men and women had a superior attitude and similarities betwixt the social networking cities and the behavioural pattern of system usage, which are fairly similar to the male and female. Moreover, the education and learning process, communication, healthcare, transportation, and many other infrastructure business areas are augmented by the impact of technology on human life. Hence, the practice of developing technology is considered as the initial cause of technological changes in society. Gender's opinion towards their extreme dependability on their work life is analysed with the help of independent sample 't' tests , the results of which are depicted below. A two-sample t-test has been involved in the independent sample 't' tests. Thus, it is used to compare two means of gender opinion in order to find out whether they are different and determined whether those gender opinions on their work-life difference could've occurred by chance.

Independent sample 't' test

H01 There is no notable variation in the opinion of male and female users of technology towards their extreme dependability on emerging technologies.

H1 There is notable variation in the opinion of male and female users of technology towards their extreme dependability on emerging technologies.

Table 2 Gender opinion towards extreme technological dependence

Variable	*Mean*	*t*	*df*	*Sig. (two tailed)*
Men	3.30	.284	338	.776
Women	3.27			

It is clearly implied from Table 2 that the probability value of .776 is greater than the 0.05 alpha value. Henceforth, H0 is accepted which is an implication of the fact that there is no notable variation in the opinion of male and female users of technology towards their extreme dependability on emerging technologies. This may be because of the fact that techno stress has become inevitable and which is again evident from the mean values of the opinion of males (3.30) and females (3.27).

7.3 Influence of experience on technostress of employees using emerging technologies

Attempts have been made in earlier research whether technostress among employees in knowledge based jobs increases or decreases with experience. The term technostress refers to one's inability to cope with technology that results in distress. The employees' knowledge-hiding behaviour, and work exhaustion, along with job autonomy are augmented by the technostress. The factors which are associated with the technostress are techno-invasion, techno-overload, techno-complexity, techno-insecurity, together with techno-uncertainty. The stress that employee knowledge-based job analysis feels because of multitasking, information overload, constant contact, frequent system updates, and the resulting uncertainty and resulting job-related uncertainty and technical issues associated with the organisation's use of ICT. Then, the positive and negative technology training impacts on an employee towards experiencing techno stress are hedonic, eudemonic, social/interpersonal, learning barriers, decreased communication, and intimacy. In human lives, modern tech has gained such a presence that it is easy to become addicted to various technology uses to the point it starts impacting our lives. Sequentially, even more, stress is caused to build up throughout the day, which results in a cycle of stress accumulation. The influence of technostress on employees in knowledge based jobs is analysed using *one way ANOVA*. It is a sort of statistical test, which evaluates the variance in the group means in a sample while considering just '1' independent variable or factor from the effect of technostress on employees in knowledge along with evaluate the multiple mutually exclusive theories about our data.

H02 Notable variation is not found among the employees with varying experience levels in knowledge based jobs with respect to the means of their opinion towards experiencing techno stress.

H2 Notable variation is found among the employees with varying experience levels in knowledge based jobs with respect to the means of their opinion towards experiencing techno stress.

Table 3 Influence of job experience

Job experience (in years)	*Mean*	*F*	*df*	*Sig. (two tailed)*
Less than 5	3.74	3.679	4	.006
6–10	3.49			
11–15	3.43			
16–20	3.38			
>20	3.80			

It is inferred from Table 3 that the probability value of .006 is less than 0.05 alpha value and therefore, H02 cannot be accepted. The null hypothesis will be accepted if the probability value is greater than 1 when analogised to the alpha value. It is therefore concluded that notable variation is found among the employees with varying experience levels in knowledge based jobs with respect to the means of their opinion towards experiencing techno stress.

Moreover, it is identified through the above analysis that techno stress is experienced more by employees who have more than 20 years of experience are found to experience a high level of technostress which is evident from the mean value of 3.80 because, in the fast-changing world, they may find it a little bit difficult to cope up as they have to unlearn their old way of performing jobs and learn a new way of doing this which involves a great deal of time and understanding which may be the major reason for technostress. The case is also the same for employees with less than 5 years of experience as they are also supposed to experience a high level of technostress which is inferred through the mean value of 3.74. This may be due to the fact while keeping in pace with the changing technologies and because of the fact they are overloaded with the task, they would have experienced stress due to technologies.

7.4 Influence of profession on technostress of users of emerging technologies

H03 There is no sizeable distinction in the manner of the opinion of the users of emerging technology concerning excessive technological dependence with respect to that in their careers.

H3 There is a sizeable distinction in the manner of the opinion of the users of emerging technology concerning excessive technological dependence with respect to that in their career.

Table 4 clearly depicts that the probability value of .001 is less than 0.05 alpha value, which implies that H03 cannot be accepted. It is therefore concluded that there is a sizeable distinction in the manner of the opinion of the users of emerging technology concerning excessive technological dependence with respect to that in their careers.

This is well implied through the mean values that are depicted in Table 4. Managers feel that they are extremely dependable on emerging technologies which is inferred from the mean value of 3.64 and the stress that is created through this factor is relatively very high which is the result of quick and suitable decisions they have to make based

on advancement in possession of information and communication technologies. Academicians also follow managers in their opinion with a mean of 3.51 followed by software professionals.

Table 4 Influence of profession

Profession	*Mean*	*F*	*df*	*Sig. (two tailed)*
Academicians	3.51	5.714	4	<.001
Engineers	2.96			
Managers	3.64			
Software professionals	3.25			
Medical professionals	3.11			

7.5 Impact of dimensions of techno stress on knowledge workers based on age and profession

Techno stress can be perceived in different dimensions due to the way that employees experience them and the notable among them are

a techno overload

b techno invasion

c techno complexity

d techno insecurity together

e techno uncertainty.

The dimensions are stated below.

- *Techno overload* creates enormous pressure on employees as they are supposed to work for prolonged hours and quicker than they are supposed to carry out their normal tasks.
- *Techno invasion* refers to a situation where employees in knowledge based jobs are supposed to have a consistent relationship with emerging technologies with no limits of time, place, and space and have enormous pressure on them due to frequent job requests.
- *Techno insecurity* refers to a situation where employees in knowledge jobs have always a feeling of job insecurity because of their inability to cope up with emerging technologies.
- *Techno complexity* refers to the extent of complexity that employees in knowledge based jobs are prone to in understanding and grasping them.
- *Techno uncertainty* focuses on the inability of individuals to gain adequate experience in emerging technologies due to shorter life cycles of technology and moreover based on the fact that technology becomes obsolete so soon.

The effect of techno overload and techno complexity was found to be moderate. A *two way ANOVA* is carried out to find the impact of age and profession as well as the

interaction effect of the two variables on the technostress of the users of emerging technologies.

H04a There is no significant influence of age on the users of emerging technologies towards the means of the various dimensions of techno stress.

H4a There is a significant influence of age on the users of emerging technologies towards the means of the various dimensions of techno stress.

H04b There is no significant impact of the profession on the users of emerging technologies towards the means of the various dimensions of technostress.

H4b There is a significant impact of the profession on the users of emerging technologies towards the means of the various dimensions of techno stress.

H04c Age does not have a noteworthy interconnection effect on profession among the users of emerging technologies pertaining to means of the techno stress dimensions.

H4c There is a significant impact of the interaction effect of both age and profession on users of emerging technologies pertaining to the means of techno stress dimensions.

Levene's test of equality of error variances

Levene's test is implemented to test if the samples have equal variances. It can be used to verify the assumption and is often used before a comparison of means. It does not require the normality of the underlying data. The variances will be considerably different if Levene's test is significant. The '2' variances will not be considerably different if it is not significant. Levene's tests that are carried out clearly indicate that null hypothesis cannot be rejected as the level of significance is greater than 0.05, which is a clear indication that the error variance of the dependent variable is identical across groups.

Table 5 Levene's test

F	*df1*	*df2*	*Sig.*
1.343	23	315	.137

Note: Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

- Dependent variable: Technostress_Dimensions
- Design Intercept + Age + Profession + Age *Profession

Tests of between subject effects

It is quite evident from the table that:

- The critical F value for the impact of age on users of emerging technologies towards experiencing the various dimensions of techno stress is found to be 1.825 which is not significant at a .05 level(.124) and the effect size is observed to be .023(partial eta squared value)
- The critical F value for the impact of Profession on users of emerging technologies towards experiencing the various dimensions of techno stress is found to be 1.351

which is not significant at .05 level (.251) and the effect size is observed to be .017 (partial eta squared value)

- But, there is an interaction effect based on the age and profession of users of emerging technology towards experiencing the various dimensions of techno stress since it is found to be significant with .000 which is less than a .05 significance level, and the F value is found to be 2.871 and the effect size is found to be .127.

Henceforth, it can be inferred that there is no significant impact of age and profession of users of emerging technologies in knowledge based jobs towards experiencing the means of the various dimensions of technostress. But, there is a significant interaction effect pertaining to the same which is inferred from Table 6.

Table 6 Impact of age and profession on emerging technology users

Source	*Type III sum of squares*	*df*	*Mean square*	*F*	*Sig.*	*Partial eta squared*
Corrected model	432.960[a]	24	18.040	2.525	.000	.161
Intercept	50,114.612	1	50,114.612	7,014.829	.000	.957
Age	52.156	4	13.039	1.825	.124	.023
Profession	38.599	4	9.650	1.351	.251	.017
Age * Profession	328.203	16	20.513	2.871	.000	.127
Error	2250.390	315	7.144			
Total	102,685.00	340				
Corrected total	2,683.350	339				

Note: [a]R squared = .161 (adjusted R squared = .097)

7.6 Correlation between degree of technostress and influence of technostress dimensions

Table 7 clearly depicts that there exists a positive correlation between the degree of technostress experienced by the users of emerging technologies and the various technostress dimensions. Still, the correlation is positive the relationship is not found to be strong.

Table 7 Influence of technostress dimensions

Techno stress dimensions	*Overload*	*Invasion*	*Insecurity*	*Complexity*	*Uncertainty*	*Degree of technostress*
Overload	1	.410**	.278**	.195**	.344**	.154**
Invasion		1	.244**	.318**	.363**	.221**
Insecurity			1	.477**	.411**	.170**
Complexity				1	.505**	.195**
Uncertainty					1	.197**

Note: **Correlation is significant at the .0.01 level (two-tailed)

7.7 Correlation between technological insecurity and behavioural changes

Organisational achievement largely depends on the behaviour of the personnel. Technological advancement is the key factor that provides the organisation with a competitive edge. Because it serves customers better, reduces costs, gets actionable information faster, and makes better investments in technology. Organisation's sustainability in a complex and dynamic environment depends on the extent to which employees are adaptable to emerging technologies. In an organisation, the principle of enhancing the societal, environmental, and economic systems within which a business operates is termed sustainability. For building sustainability in an organisation's environment, we must ensure the support of senior leadership and develop and disseminate strategic imperatives for partnering effectively to make sustainability in the organisations. Users of emerging technologies are prone to a greater degree of technological insecurity, which always creates a sense of job insecurity due to the inability of the employees in knowledge based jobs to cope up with the emerging technologies. This technological insecurity is supposed to create behavioural changes in the employees which in turn affect their work and personal life. This technology could nudge us to think and act in specific ways at specific times. Moreover, it augmented productivity, cooperative collaboration, better security, improved cost management, and increased communication; thus, it creates behavioural changes in the employees. In their personal life which leads to physical and psychological issues.

A Pearson product moment correlation was carried out to find whether there was any relationship between technological insecurity and change in work behaviour. One among the measures of correlation which quantifies the strength and the direction of such a relationship is termed the Pearson product moment correlation.

H05 There is no huge courting among technological lack of confidence and exchange in work behaviour.

H5 There is huge courting among technological lack of confidence and exchange in work behaviour.

Table 8 Influence of technological insecurity on behavioural changes

Change in behaviour	Pearson correlation	1	.435**
	Sig. (two-tailed)		<.001
	N	340	340
Techno insecurity	Pearson correlation	.435**	1
	Sig. (two-tailed)	<.001	
	N	340	340

Note: **Correlation is significant at the 0.01 level (two-tailed)

Table 8 depicts that Pearson's Correlation coefficient r = .435 and that it is statistically significant. (p = <.001). Therefore, H05 is rejected. Hence, it can be inferred that there is huge courting among technological lack of confidence and exchange in work behaviour. Positive correlation between techno insecurity and change in behaviour of the beneficiaries of emerging technologies is found to be moderate, which is implied from the 'r' value of .435 which was statistically significant.

7.8 Factors influencing user satisfaction towards usage of emerging technologies

Technological improvement has highly impacted the work performance of employees both in manufacturing and service-oriented organisations. Users of emerging technologies have become more productive, effective, and efficient than ever before. If the users of emerging technologies are able to grasp the changes in technology, they are found to be effective and therefore experience a sense of satisfaction and accomplishment. To identify the influence of key factors that contribute to the satisfaction level of users of technology, a multiple linear regression analysis is carried out. The various factors that contribute towards employee satisfaction due to technological advancement are identified through earlier research such as career growth, job security, and company benefits.

Table 9 Model summary

Model	*R*	*R square*	*Adjusted R square*	*Std. error of the estimate*
1.	.760[a]	.577	.559	5.69

Table 9 depicts an r value of .760 and a coefficient of determination value r^2 value of.577 which implies 57.7% of dependent variable deviations is well explained by variables that are independent.

H06 Career growth, job security, and salary do not influence the job satisfaction of users of emerging technologies.

H6 Career growth, job security, and salary influence the job satisfaction of users of emerging technologies.

Statistical significance

The goodness of Fit for the data is computed using the F Ratio in the ANOVA table to judge whether the overall regression model is perfect. A clear depiction is identified from Table 10, which is a very good indication of the fact that the dependent variable $F(3,336) = 20.789$, $p<.05$ is predicted by the independent variables and therefore, it can be concluded that the model is a perfect fit.

Table 10 ANOVA

Model	*Sum of squares*	*df*	*Mean square*	*F*	*Sig.*
Regression	24.607	3	8.202	20.789	.000[b]
Residual	132.569	336	.395		
Total	157.176	339			

Notes: Dependent variable: technology user's satisfaction
Predictors: (constant) career growth, job security, salary

Table 11 depicts there is no multicollinearity problem among the independent variables which is evident from the VIF values, which are less than the threshold values of less than 4. The probability value of all the independent variables like career growth, Job security,

Table 11 Regression analysis

Variables	*Unstandardised coefficients*		*Standardised coefficients*	*t*	*Sig.*	*VIF*
	Beta	*Std. error*	*Beta*			
Constant	2.075	.217		9.559	.000	
Career growth	.185	.063	.182	2.927	.004	1.545
Job security	.123	.053	.133	2.333	.020	1.290
Salary	.177	.066	.173	2.686	.008	1.657

Salary is found to be .004, .002, .008 is less than the probability value of .05 level of significance and henceforth, H06 cannot be accepted. It is therefore concluded that there is a significant influence of the above mentioned variables on user satisfaction levels due to emerging technologies.

A multiple regression analysis was conducted to predict user satisfaction with emerging technologies on the basis of Career growth, Job security, and salary. These variables with statistical significance predicted user satisfaction with emerging technologies F (3,336) = 20.789, $p<.05$, $R^2 = .577$. All three independent variables are found to be good predictors.

7.9 Influence of technostress on user satisfaction due to emerging technologies

In organisations, innovation culture, self-efficacy, task complexity, and coping strategy are the factors that influence the levels of technostress. Technological advancement also at times paved way for viewing the impact of technostress from a positive perspective. It has resulted in enhancing the productivity and efficiency of the users of emerging technologies. It enhanced communication, expanded security, and education, and increased information on the performance of users. An attempt has been made to check out whether users of emerging technologies who experience technostress have got an impact on job satisfaction due to the influence of the same. Pearson's Product Moment Correlation is carried out to find whether technostress has got any relationship in influencing user satisfaction due to emerging technologies. The analysis implied the results depicted in Table 12.

Table 12 Technostress influence on user satisfaction

Technostress influence	Pearson correlation	1	.296**
	Sig. (two-tailed)		<.001
	N	340	340
Job satisfaction due to emerging technologies	Pearson correlation	.296**	1
	Sig. (two-tailed)	<.001	
	N	340	340

Note: **Correlation is significant at the 0.01 level (two-tailed)

H07 There's no large relationship between the job pleasure of emerging technology users and the influence of technostress.

H7 There's a significant relationship between the job pleasure of emerging technology users and the influence of technostress.

It is a clear indication from Table 12 that Pearson's correlation coefficient r = .296 and that it is statistically significant. (p = <.001). A Meagre positive association is found between the influence of technostress and job satisfaction in users of emerging technologies which is implied from the 'r' value of .296, which is statistically significant. H07 is rejected as the p-value is less than .001 which is less than the .05 level of significance. Therefore, it is concluded that there exists a large relationship between the job pleasure of emerging technology users and the influence of technostress. This is because stress sometimes is supposed to have a good influence on the work performance of employees. As per the study, the stress that is created due to the usage of technological advancement is supposed to have a positive contribution to the performance of users. Though technostress has got a positive influence in stimulating the satisfaction level of the users of emerging technologies, the relationship was not found to be very strong.

7.10 Consequences due to technostress experienced by users of different profession

The analysis is carried out using Kruskal Wallis Test to check out whether there are any notable deviations among the users of emerging technologies belonging to different professions in terms of experiencing the various consequences due to technostress like sleeping disorders, health problems like stomach disorders, headache, etc, delay in accomplishing the target, poor decision making, job turnover, etc. The significance of the Kruskal-Wallis test was calculated as the statistical significance of a value that is a non-parametric test for evaluating samples as of '2' or else more groups of independent observations. Since this test doesn't requisite the groups to be usually distributed and is more stable to outliers, this test was chosen.

H08 Enormous difference between the average ranks of prospects of emerging technologies is not found in terms of experiencing the consequences of technostress irrespective of their profession.

H8 Enormous difference between the average ranks of prospects of emerging technologies is found in terms of experiencing the consequences of technostress irrespective of their profession.

Table 13 Technostress consequences based on profession

Professionals	*Mean rank*	*H value*	*Df*	*Sig. (two-tailed)*
Academicians	179.22	11.950	4	.018
Engineers	169.70			
Managers	173.67			
Software professionals	142.73			
Medical profession	198.73			

It is inferred from Table 13 that the probability value of .018 is less than the .05 level of significance. Hence, H0 is rejected. It is therefore concluded that an enormous difference

between the average ranks of prospects of emerging technologies is found in terms of experiencing the consequences of technostress irrespective of their profession.

This is also evident from the mean rank values of academicians at 179.22, engineers at 169.70, managers at 173.67, software professionals at 142.73, and medical profession at 198.73. The reason for the low value related to the users belonging to the software profession may be due to the fact that their job profile totally revolves around the technological environment based on which they are quite used to it and therefore the technostress consequences they face are found to be relatively less when compared to that of users belonging to other profession.

7.11 Impact of profession on commitment of users of emerging technologies besides experiencing technostress

The analysis is carried out with one way ANOVA to find out whether there is a difference in the level of commitment shown among the users of emerging technologies belonging to various professions in spite of experiencing technostress.

Table 14 Commitment of users towards emerging technologies

Profession	*Mean*	*F*	*Df*	*Sig. (two-tailed)*
Academicians	18.39	3.465	4	.009
Engineers	18.96			
Managers	19.03			
Software professionals	19.14			
Medical professionals	17.12			

H09 Technostress does not have a noteworthy difference in the average dedication of emerging technology prospects with respect to that of their profession.

H9 Technostress does have a noteworthy difference in the average dedication of emerging technology prospects with respect to that of their profession.

Table 14 clearly depicts that the probability value of .009 is less than 0.05 alpha value, which implies that H09 has to be rejected. It is therefore concluded that technostress does have a noteworthy difference in the average dedication of emerging technology prospects with respect to that of their profession.

This is well implied through the mean values that are depicted in Table 13. Software professionals have more sense of commitment due to their extreme dependence on emerging technologies, which is inferred from the mean value of 19.14 besides experiencing technostress.

Managers also show a high level of dedication toward the usage of emerging technologies which is implied by the mean value of 19.03. This high dedication may be due to the fact that they rely extremely on information for problem-solving and decision-making through the latest technological developments. Medical Professionals are found to have the least impact with a mean value of 17.12.

8 Findings and discussion

Demographic analysis of users of emerging technologies clearly depicts the fact that male respondents constitute around 60% and females around 40%. Most of the target respondents are found to be more than 35 years of age. Software Professionals form a major chunk in this study are followed by engineers and managers.56% of the Professionals are found to be having 11–15 years of experience and 17%of the respondents are found to be having experience of more than 15 years.

Notable differences of opinion are not found among men and women users of technology towards their extreme dependability on emerging technologies based on which techno stress has become inevitable. Technostress is found to be more experienced by employees who have more than 20 years of experience. This may be due to the fact that in this rapidly changing world, senior people may find it a little bit difficult as they have to unlearn their old way of doing things at work and learn a new way of doing which in turn requires a great deal of time and understanding. A noteworthy difference is identified between the means of the opinion of the users of emerging technologies regarding extreme technological dependence with respect to that of their Profession. Managers are found to be more influenced by the impact of technostress followed by academicians. Software Professionals are found to have relatively less impact as the very nature of their profession revolves around the technological environment. No significant impact of age and profession is found to be on the users of emerging technologies in knowledge based jobs pertaining to the means of the various dimensions of techno stress. But, there is a significant interaction effect pertaining to the age and profession of professionals in knowledge based jobs as per the study.

A positive correlation is identified between the degree of technostress experienced by the users of emerging technologies and the various technostress dimensions but the relationship is not found to be that much strong. This implies some factors of technostress dimensions are found to be influencing technostress in professionals in knowledge-based jobs. Significant influence of job security, career growth, and salary on user satisfaction level is identified due to the usage of emerging technologies as per the study. This is evident from the probability value of the independent variables like career growth, job security, and salary of .004, .002, and .008 which is less than the probability value of the .05 level of significance. There was a low positive correlation between the influences of techno stress on job satisfaction among the users of emerging technologies which is implied from the ‘r’ value of .296 which is statistically significant. This may be due to the positive impact of technostress which has driven the satisfaction level of the users in their profession.

Pertaining to the consequences of technostress among users of emerging technologies in a different profession, a significant difference is identified which is implied from the mean rank values of Academicians with 179.22, Engineers with 169.70, Managers with 173.67, Software Professionals with 142.73, Medical Profession with 198.73. Software Professionals are found to have relatively less impact. This may be due to the fact that they are used to it as a result of which the consequences are found to be relatively less when compared to that of users belonging to other Professions. Software Professionals are found to have a high sense of commitment due to their extreme dependence on emerging technologies which is inferred from the mean value of 19.14 besides experiencing technostress. The reason may be technostress may not affect their level of commitment as the very nature of the job is focused on technological advancement.

Managers also show a high level of commitment toward the usage of emerging technologies, which is implied by the mean value of 19.03. Managers are supposed to make quick and effective decisions for which emerging technologies contribute to a very great extent based on which they may have a commitment in spite of experiencing technostress.

9 Conclusions

The study highlighted the opinion of the users of emerging technologies in knowledge based professions where technology is supposed to have a major role to play. Both men and women are found to experience technostress more or less to the same extent, especially in terms of their extreme dependability on emerging technologies. Advancements in terms of emerging technologies have created a sense of job insecurity based on which users in knowledge based profession experience a great deal of technostress at work. Stress due to technological advancement, though it is found to have a serious adverse effect on the health and well-being of professionals in knowledge-based jobs ironically is found to have a favourable impact on the pleasure of employees at work. This may be due to the quick accessibility to information and the communication aspect involved in terms of decision making and problem solving. Consequences due to technostress that are experienced by knowledge professionals is found to be relatively very less in terms of users of emerging technologies in software companies as they are prone to work in such technological environment pertaining to their day-to-day activities. Professional commitment is also high among software professionals besides experiencing technostress. Users of emerging technologies in other knowledge based professions if they resort to suitable strategies in minimising the impacts of technostress on their job performance can become more productive and successful if tuned in the right perspective so that they experience a greater feeling of organisational commitment and job satisfaction.

References

Al-Ansari, M.A. and Alshare, K. (2019) 'The impact of technostress components on the employees satisfaction and perceived performance', *Journal of Global Information Management*, Vol. 27, No. 3, pp.65–86.

Cadieux, N., Fournier, P-L. Cadieux, J. and Gingues, M. (2021) 'New techno-stressors among knowledge professionals: The contribution of artificial intelligence and websites that misinform clients', *International Journal of Electronic Commerce*, Vol. 25, No. 2, pp.136-153,. https://doi.org/10.1080/10864415.2021.1887695

Christiana, M.B.V. and Rajan, M.J.S. (2018) 'Demographic implications of technostress on IT professionals and combating mechanisms – an Indian perspective', *Arabian Journal of Business and Management Review*, pp.27–35, DOI: 10.12816/0044902, ISSN: 2223-5833.

Curbano, R.J.P. (2019) 'Relationship model of technostress and ergonomics risk factors in call center industry', *International Journal of Innovative Technology and Exploring Engineering*, April, Vol. 8, No. 683, pp.91–102, ISSN: 2278-3075.

Golz, C., Peter, K.A., Zwakhalen, S.M.G. and Hahn, S. (2021) 'Technostress among health professionals – a multilevel model and group comparisons between settings and professions', *Informatics for Health and Social Care*, Vol. 46 No. 2, pp.136–147, DOI: 10.1080 /17538157.2021.1872579.

Harahap, K. and Effiyanti, T. (2015) 'Technostress among educators: a revisit of socio cognitive prespective', *Asia Pacific Journal of contemporary Education and Technology*, Vol. 1, No. 1, pp.108–120.

Jena, R.K. (2015) 'Impact of technostress on Job Satisfaction: an Empirical study among Indian academicians', *The International Technology Management Review*, Vol. 5, No. 3, pp.117–124.

Jena, R.K. and Mahanti, P.K. (2014) 'An empirical study of technostress among indian academicians', *International Journal of Education and Learning*, Vol. 3, No. 2, pp.1–10, http://dx.doi.org/10.14257/ijel.2014.3.2.01.

Kaveri, C.S. and Mohan, M. (2020) 'Impact of Technostress on IT sector employees in Bengaluru City', *Palarch's Journal of Archeology of Egypt*, Vol. 20, No. 11, pp.12886–12902.

Kumar, R. et al. (2013) 'Technostress in relation to job satisfaction and organisational commitment among IT professionals', *International Journal of Scientific and Research Publications*, December, Vol. 3, No. 12, pp.1–3, ISSN 2250-3153.

Laspinas, M.L. (2015) 'Trends and challenges in the 21st century knowledge management', *European Scientific Journal*, January, Vol. 11, No. 2, pp.205–217, ISSN: 1857 – 7881 (Print) e - ISSN 1857-7431.

Malik, R.S. (2018) 'Educational challenges in 21st century and sustainable development', *Journal of Sustainable Development Education and Research*, Vol. 2, No. 1, pp.9–20.

Merced, B.M. and Franco, M.T. (2015) 'Technostressors and coping mechanisms of academic librarians in Davao City', *The General Conference congress of South East Asian Librarians*, June.

Navimipour, N.J. and Zareie, B. (2015) 'A model for assessing the impact of e-learning systems on employees' satisfaction', *Computers in Human Behavior*, Vol. 53, pp.475–485, http://dx.doi.org/10.1016/j.chb.2015.07.026.

Oh, S.T. and Park, S. (2016) 'A study of the connected smart worker's techno-stress', *Information Technology and Quantitative Management*, Vol. 7, pp.725–733, ISSN: 1877-0509.

Pflügner, K., Baumann, A. and Maier, C. (2021) 'Managerial technostress: a qualitative study on causes and consequences', *Proceedings of the 2021 on Computers and People Research Conference*, pp.63–70.

Salanova, M., Llorens, S. and Ventura, M. (2014) *Technostress: The Dark Side of Technologies*, 1st ed., Springer, Dordrecht, ISBN: 978-94-017-8853-3, https://doi.org/10.1007/978-94-017-8854-0_6.

Sareen, P. (2019) 'Techno stress creators -an exploratory research on teaching and non teaching staff working in colleges', *International Journal of Management and Humanities (IJMH)*, May, Vol. 3, No. 9, pp.1–7, ISSN: 2394-0913.

Sellberg, C. and Susi, T. (2014) 'Technostress in the office: a distributed cognition perspective on human-technology interaction', *Cognition, Technology & Work*, Vol. 16, pp.187–201, https://doi.org/10.1007/s10111-013-0256-9.

Tagurum, Y.O., Okonoda, K.M. et al. (2017) 'Effect of technostress on job performance and coping strategies among academic staff of a tertiary institution in north-central Nigeria', *International Journal of Biomedical Research*, Vol. 8, No. 6, pp.312–319, ISSN: 0976-9633.

Tiemo, P.A. and Owajeme, O.J. (2010) 'Technostress: causes, symptoms and coping strategies among Librarians in University libraries', *Educational Research*, December, Vol. 1, No. 12, pp.713–720, ISSN: 2141-5161.

Vaskari, R.G. and Sugumaran, V.B. (2020) 'Prevalence of stress among software professionals in Hyderabad, Telangana State, India', *Central African Journal of Public Health*, August, Vol. 6, No. 4, pp.207–212, doi:10.11648/j.cajph.20200604.14.

Wang, K. et al. (2005) *Empirical Study of Coping Strategies for Computer-Related Technostress of Chinese Employees*, December, Vol. 10, pp.753–760, Tsinghua Science And Technology, ISSN 1007-0214.