Library Progress International *Print version ISSN 0970 1052*
Vol.44 No.3, Jul-Dec 2024: P. 28718-28725 *Online version ISSN 2320 317X*

Original Article *Available online at www.bpasjournals.com*

Online Education/ Technostress Impacts on Emotional Wellbeing of University Students

Rajnish Kumar Prof.(Dr.)Dhrub Kumar

Assistant Professor
G.D college Begusarai
Research Scholar
Department of Psychology
LNMU Darbhanga
University Department of Psychology
LNMU Darbhanga

How to cite this article: Rajnish Kumar Prof.(Dr.)Dhrub Kumar, (2024) Online Education/ Technostress Impacts on Emotional Wellbeing of University Students. Library Progress International, 44(3) 28726-2736

ABSTRACT
In today's technology-driven world, technostress has emerged as a critical concern, especially in the competitive academic environment. Technological advancements have made life increasingly dependent on digital tools, a reliance that was significantly amplified during the COVID-19 pandemic. Historically, technology use was predominantly associated with businesses and employees; however, students in formal education institutions are now heavily reliant on technology for academic, social, and leisure activities. With online learning becoming the norm across schools, colleges, and universities, the widespread use of technology for course delivery, exam administration, and daily communication has become a defining feature of modern education. While technology undoubtedly streamlines many aspects of life, its pervasive use also has a darker side, particularly in the form of technostress. This research focuses on how technostress affects the emotional well-being of university students, emphasizing its role in shaping their mental health and overall academic experiences. Technostress arises when individuals struggle to adapt to or effectively use information and communication technologies, leading to frustration, anxiety, and emotional exhaustion. University students, hailing from both urban and rural backgrounds, are especially vulnerable to the adverse emotional effects of technostress. Public universities, where many of these students are enrolled, are central to this study. Technostress can be broken down into distinct components, including **techno-invasion** (constant connectivity), **techno-complexity** (challenges in learning new technologies), **techno-insecurity** (fear of being replaced by technology), and **techno-uncertainty** (rapid changes in technological tools). Despite the growing relevance of this issue, there is limited empirical research examining the link between technostress and emotional well-being, particularly in regions like Bihar. This study aims to address this gap by investigating the prevalence and impact of technostress among postgraduate students in public universities. The findings are intended to provide valuable insights for academics and practitioners, shedding light on how technostress influences students' emotional resilience and mental health in contemporary academic settings.
Keywords: Technostress, Emotional well-being, Online learning, Mental health, Techno-invasion, Techno-complexity, Techno-insecurity, Techno-uncertainty.

1. Introduction

In the modern era of ubiquitous technology, the rapid integration of Information and Communication Technology (ICT) into everyday life has significantly transformed various sectors, including education. The widespread availability of affordable internet and compact devices has revolutionised access to information and communication. The increasing reliance on technology for personal and academic activities has created an environment where university students are constantly connected, influencing their academic performance, emotional well-being, and social interactions.

The growth of ICT has facilitated tremendous advances in communication, learning, and productivity. As technological tools become more accessible, university students are expected to master new digital platforms to maintain competitiveness in their academic and future professional careers. While these technological advancements offer several benefits, including improved learning opportunities and efficiency, they can also create a range of challenges. The rapid pace of technological change, constant connectivity, and the pressure to stay updated with the latest innovations have led to a phenomenon known as technostress, which affects emotional and psychological well-being.

Technostress, a form of stress triggered by the use of digital technology, has been increasingly recognized as a significant issue in academic settings. Students face pressure to be constantly available, manage a heavy load of digital tasks, and adapt quickly to new technological tools, which can lead to anxiety, burnout, and a decline in mental health. Moreover, the increased demands placed on students by educational technology—such as the need for constant online presence, multitasking, and managing multiple platforms simultaneously—can lead to a feeling of overload and emotional distress.

On one hand, ICT can enhance students' learning experiences by providing personalized opportunities and better access to quality resources. On the other hand, the growing dependence on technology has introduced new psychological challenges, particularly about students' ability to cope with technological demands. This maladaptive response to technology, often referred to as technostress, occurs when students struggle to manage the psychological and social pressures associated with constant technological use.

The integration of digital tools in education has redefined students' relationships with technology, but this shift has not been without challenges. Many students experience uncertainty, stress, and fear related to new learning methods and digital platforms, which may further exacerbate issues such as low self-esteem, decreased academic performance, and emotional distress. The overwhelming influx of information and the need to constantly upgrade digital skills can create a sense of insecurity and mental exhaustion among students, making it more difficult for them to achieve a balanced academic and emotional state.

Despite the significant expansion of the literature on technostress, particularly in the workplace, there remains a gap in understanding how technostress impacts the emotional well-being of university students. Studies examining the specific factors contributing to technostress in higher education settings and its effects on students' mental health and academic performance, remain limited (Ragu-Nathan et al., 2008). This research targets to achieve the factors exploring how technostress affects the emotional well-being of university students and identifying the key factors that contribute to this stress.

This study is informed by two primary research questions:

RQ1: What are the primary variables that cause stress among university students after employing technology for academic excellence?

RQ2: What effects does technostress have on the emotional well-being of university students?

Additionally, the study will test the following hypotheses:

H_a: Technostress has a substantial impact on university students' mental well-being.

H_o: No substantial correlation exists between technostress and emotional well-being among university students.

As university students increasingly rely on digital technologies for academic tasks, the pressure to keep up with technological advances can lead to negative outcomes such as anxiety, decreased self-confidence, and poor academic performance. In some cases, excessive reliance on technology can also impair social interactions and hinder personal well-being. To address these concerns, It's critical to comprehend the elements that lead to technological stress and its impact on students' mental health. By examining these issues, this study will provide valuable insights into how universities can better support students in managing the emotional challenges associated with technology use, thereby improving both their academic success and overall well-being.

2. Conceptual framework

Innovation is ubiquitous and deeply ingrained in daily life. While technology offers numerous benefits, it also introduces significant challenges, particularly in the form of technostress—an emotional response triggered by the pressures and demands of constant technological use. University students, like adults, are increasingly reliant on digital tools for academic purposes, leading to heightened exposure to technostress. Previous study has mostly concentrated on the stress that individuals experience as a result of new technologies. This research has identified five essential characteristics of technostress, which are as follows: techno overload, techno invasion, techno insecurity, techno complexity, and techno uncertainty. These dimensions encapsulate the various stressors that contribute to the overall experience of technostress among students. This study examines the influence of these techno-stressors on the emotional well-being of university students. It employs the Stressor-Strain Outcomes (SSO) Model to determine how techno-stress results in psychological strain, which subsequently impacts their academic and personal outcomes. The SSO Model, which was initially devised by Koeske and Koeske (2010) to elucidate the impact of stressors on individuals' work and personal lives, posits that stressors induce strain, which subsequently serves as a mediator between the stressors and their consequences. In the context of university students, techno stressors such as the overwhelming use of technology, constant connectivity, insecurity about technological proficiency, and the complexity of digital tools, are considered the primary stressors that induce strain. This strain can manifest in various forms, including anxiety, emotional exhaustion, and diminished academic performance, which in turn can have a negative impact on students' overall well-being.

The SSO Model provides a framework to explore how these stressors (e.g., techno overload, techno invasion) act as mediators between technological demands and students' emotional well-being. By examining the relationship between these stressors and strain, the study aims to understand how technostress influences students' emotional state, and how this strain might ultimately affect their academic outcomes and mental health.

3. Literature Review

With its unmatched access to information, flexible learning, and digital tools, online education has completely changed higher education. Technostress has become a major concern, but it has also brought up serious problems for students' emotional health. Craig Brod used the term in 1984 in his book *Technostress: The Human Cost of the Computer Revolution* to describe the mental stress brought on by an inability to adapt to the demands of modern technology. Students who depend more and more on information and communication technologies (ICT) for academic assignments are particularly impacted by technostress. ICT facilitates cooperation, makes study materials accessible, and improves learning effectiveness, yet overuse can result in feelings of overwhelm, anxiety, and dissatisfaction. These impacts are exacerbated in online learning, as learners must manage enormous volumes of data, traverse several digital platforms, and adjust to quickly changing technical landscapes. The main causes of technostress Tarafdar et al.'s research (2007, 2010) highlights five important aspects of technostress that are especially pertinent in academic settings:
Techno-overload: Information and task overload brought on by technology.
Techno-invasion: The permeation of technology into both academic and personal spheres, fostering a sense of perpetual connectedness.
Techno-insecurity: The fear of being supplanted by technology or of being inadequate.
Technological complexity: The difficulty of learning sophisticated digital tools.
Techno-uncertainty: Fear of the quick speed at which technology is changing.

There are two common frameworks used to assess pupils' emotional health:
Subjective well-being (SWB), which measures how happy one is with life and how one feels about their situation.
The goal of psychological well-being (PWB) is to achieve a sense of purpose, personal development, and self-fulfilment (Samaha & Hawi, 2016).
Both of these aspects suffer from technological stress. For example, the pressure to be technologically savvy and always connected can lead to feelings of inadequacy, impair emotional resilience, and lower overall life pleasure. Numerous research on the relationship between stress and online learning have shown that this strain frequently shows up as academic disengagement, decreased productivity, and even burnout, according to Wikipedia Search works.
Factors that contribute and difficulties
The following factors make online learning even more stressful:

1. Lack of dependable gadgets and poor internet access are examples of inadequate infrastructure.
2. **Minimal technical assistance:** Resolving platform and software-related problems is challenging.
3. **Time-related restrictions:** tight deadlines and an increased workload related to digital schooling.
4. **Gaps in instruction:** Lack of preparedness for efficient use of digital tools (Borle et al., 2021).

Online learning has made education more accessible, but it has also brought about serious emotional difficulties. Due to the continual demands of technology, students may experience psychological pressure known as technostress, which can impair their wellbeing and result in anxiety, burnout, and poorer academic performance. It is crucial to comprehend these effects in order to create supportive interventions that foster emotional resilience and a more wholesome virtual learning environment.

3.1 Antecedents of Technostress in Online Education

The integration of online education technologies has significantly influenced university students' perspectives, skills, time management, and responsibilities, often reshaping their interaction with learning environments. Increased psychological and physiological stress levels are caused by a number of factors, including inadequate training, a lack of digital literacy, poor technical infrastructure, time restrictions, uncertainty, and a lack of technical expert help (Mushtaque et al., 2022). Factors that increase the stressors associated with technology use are known as antecedents of technostress, and they may cause chronic technostress or worsen its consequences. Among university students, individual factors like age, gender, educational background, study-life conflict, rapid technological changes, and a lack of support mechanisms serve as key predictors of technostress (Borle et al., 2021). Environmental factors such as inadequate internet connectivity, outdated devices, compatibility issues, software limitations, sudden disruptions, and data loss can further compound the stress associated with technology use, disrupting their academic performance and emotional well-being.

3.2 Who are Technostress?

The term "techno-stressors" describes the elements that cause stress when using information and communication technologies (ICTs) in educational contexts. Five fundamental aspects of techno-stressors are identified by researchers (Aziz et al., 2021).

3.2.1 Techno-Invasion

This refers to the pervasive nature of ICTs, which blur boundaries between personal and academic life by requiring students to remain constantly connected, even during non-academic hours.

3.2.2 Techno-Complexity

Techno-complexity arises when students feel inadequate in their ability to use complex digital tools, leaving them overwhelmed and uncertain about their technological competencies.

3.2.3 Techno-Uncertainty

Frequent upgrades and changes in educational software or platforms contribute to a sense of unpredictability, making it challenging for students to keep up and adapt.

3.2.4 Techno-Overload

Techno-overload involves the pressure to process information quickly and multitask across various platforms, often leaving insufficient time to focus on academic priorities or personal well-being.

3.2.5 Techno-Insecurity

This reflects students' fear of underperforming academically or lagging behind peers due to limited access to technology or inadequate technological skills.

3.3 Technostress Inhibitors

To mitigate the negative effects of technostress on students' emotional well-being, various inhibitors play a crucial role (Hang, Hussain, & Amin, 2022):

- **Technical Support Provision**: Accessible and responsive technical support reduces stress by helping students resolve ICT-related challenges efficiently.
- **Involvement Facilitation**: Actively involving students in the design and implementation of educational technologies fosters familiarity and satisfaction with the tools.
- **Literacy Facilitation**: Offering training sessions or documentation on the effective use of educational technologies empowers students with essential skills, reducing anxiety and boosting confidence.

3.4 Coping Strategies for Technostress

Coping strategies help students manage the challenges posed by technostress, with their effectiveness influenced by individual resources and external factors (Tarafdar et al., 2015):

- **Affect-Based Coping**: This involves managing emotional distress through mindfulness, relaxation techniques, or seeking social support.
- **Problem-Focused Coping**: Students address stressors by actively solving issues, such as learning new software or optimizing their study schedules.
- **Distress Venting**: Expressing frustrations through communication with peers or mentors can provide temporary relief from emotional strain.
- **Distancing Coping**: Some students may withdraw from technology temporarily to minimize stress, though this may have mixed outcomes.
- **Cognitive Appraisal**: Evaluating technological challenges positively or perceiving them as manageable can enhance students' resilience and emotional well-being.

3.5 Consequences of Technostress

Technostress adversely impacts university students' physiological, emotional, behavioural, and psychological well-being. Key consequences include:

- **Physiological Effects**: Chronic stress can lead to headaches, neck pain, fatigue, and disrupted sleep patterns.
- **Emotional Effects**: Feelings of frustration, anxiety, demotivation, and burnout are prevalent among students experiencing technostress.
- **Behavioural Effects**: Students may exhibit social withdrawal, procrastination, or reluctance to engage in online learning activities.
- **Psychological Effects**: Cognitive overload, reduced academic performance, and diminished motivation to explore technological advancements are common outcomes.

Moreover, technostress may lead to academic dropouts, reduced engagement with online learning, and lower overall satisfaction with educational experiences. Institutions that fail to address these challenges risk seeing a decline in students' well-being and academic achievements.

Methodology

The methodology part comprises four essential components. An initial summary of the research strategy is provided. The research paradigm and justification for the selected study design are examined. The research design is detailed. The building of the research instrument and the data analysis methodologies are delineated.

Research Strategy

This study primarily relies on a comprehensive review of secondary data extracted through systematic electronic searches. A thesaurus-based approach was employed to refine the search strategy, using a combination of key terms related to the study's focus. The primary search terms included **"Technostress," "Technostress Inhibitors," "Technostress in Online Education,"** and **"Emotional Well-being in University Students."** Iterative adjustments were made by adding or excluding synonyms and related terms to yield more precise results.

Rationale

The primary aim of this review is to analyze existing literature on the impact of technostress on the emotional well-being of university students engaged in online education. It also seeks to identify the key stressors contributing to technostress, the inhibitors that alleviate its effects, and the coping strategies suggested in research. This exploration aims to bridge knowledge gaps and provide actionable insights for improving the online learning environment.

4.1 Research Paradigm

The study adopts a **positivist research paradigm**, grounded in an empiricist metaphysical perspective. This approach aligns with the study's goal of systematically analyzing measurable data to understand the impacts of technostress. A positivist stance supports the belief in universal, observable truths. This study assumes that technostress and its effects can be measured, analysed, and interpreted through objective methods, emphasizing logical and structured data collection and analysis. The methodology is designed to ensure unbiased observation and interpretation, with all aspects of data collection predetermined to maintain reliability and validity.

By applying this paradigm, the study seeks to identify patterns, relationships, and outcomes linked to technostress among university students, providing a clear and evidence-based understanding of its implications for emotional well-being and academic performance in the context of online education.

4.2. Research Design

This research employs a small-scale, cross-sectional methodology to investigate the effects of technostress in online education on the emotional well-being of university students. A correlational research design is employed to determine the relationship between technostress (independent variable) and emotional well-being (dependent variable). Data will be gathered using a structured questionnaire based on a five-point Likert scale, and a survey method will be used to collect responses. The study will analyse statistical results to draw meaningful conclusions about how technostress affects students' psychological well-being in the context of online learning. The target population comprises university students engaged in online education, with a focus on private institutions in Bihar.

4.3. Instrument Development, Data Collection, and Analysis

The study instrument was modified from Ragu-Nathan et al. (2008) and subsequently assessed to confirm its relevance and suitability for the online education context. Content validity was evaluated via a comprehensive literature analysis and consultations with university subject matter experts. In response to feedback, the instrument was enhanced, and pilot research with 30 participants was executed to verify the clarity and reliability of the items. The instrument comprises 28 statements, organized under six headings: Techno-Overload, Techno-Invasion, Techno-Complexity, Techno-Uncertainty, Techno-Insecurity, and Emotional Well-Being. Responses were recorded on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Data were gathered through purposive sampling from postgraduate students enrolled in online programs at a private university in Bihar. A total of 465 responses were received, predominantly from individuals in the young to middle-aged demographic. The analysis was performed using SPSS version 27.0. The reliability test yielded a combined Cronbach's alpha of 0.856, demonstrating high internal consistency.

To assess data normality, the Shapiro-Wilk test was applied, showing that the data were not normally distributed, as all constructs had significance values below 0.05. Given the violation of normality assumptions, non-parametric methods, specifically the Spearman correlation test, were employed to examine the connections between technostress and emotional well-being. This methodological framework supports robust data collection and analysis, offering valuable insights into how technostress influences the psychological health of university students in the context of online learning.

4.4. Comparison with Other Qualitative Studies

Our quantitative analysis, corroborated by non-parametric tests like the Spearman correlation, was juxtaposed with results from contemporary qualitative investigations in the literature. This comparison fulfilled the subsequent objectives:

- **Enhancing and Validating Findings:** By aligning our statistical results with insights from qualitative research, we aimed to strengthen the understanding of how technostress impacts the emotional well-being of university students engaged in online education, particularly postgraduate learners.
- **Strengthening the Discussion Section:** The comparative analysis was integrated into the discussion to provide a more robust and comprehensive narrative. This approach allowed us to corroborate the facts

derived from our study with the perspectives and themes identified in qualitative studies, further validating the key implications of our research.

This dual-method comparison provides a deeper, multifaceted view of the relationship between technostress and emotional well-being in the context of online education, ensuring that the findings are both reliable and contextually grounded.

5. Results and Findings

This section presents the findings derived from analyzing primary data collected using a survey tool designed to meet the study's objectives. The results validate the research hypotheses and provide insights into the relationship between technostress and the emotional well-being of university students engaged in online education. The tables below present descriptive statistics and Spearman correlation test results, followed by their interpretation. Initially, construct-wise descriptive analyses are reported. Only the items with the highest and lowest means are interpreted based on the mean range by Hassam (2015). Finally, the Spearman correlation test results are explained.

5.1. Descriptive Analysis

5.1.1. Descriptive Analysis of Techno-Overload

Techno-Overload	N	Mean	Std. Deviation
Learners need to modify their study habits to keep up with evolving technologies.	465	3.6821	0.97035
Learners are required to manage extremely tight schedules due to advancing technologies.	465	3.4672	1.11874
Learners often feel overworked as technology demands exceed their capacity.	465	3.6235	1.05512
Technology compels learners to complete tasks at a faster pace.	465	3.7402	0.91860
Increased technological complexity results in a greater workload for learners.	465	3.7920	1.15288
Valid N (listwise)	**465**		

Table: 1

Techno-overload represents the first techno-stressor analyzed. As detailed in Table 1, the descriptive analysis reveals that four of the five indicators fall within the "strongly satisfied" range, with mean scores exceeding 3.50. The highest-rated indicator, **"Increased technological complexity results in a greater workload for learners,"** records a mean score of **3.79** (SD = 1.15). This finding highlights a significant perception among learners that the complexity of technology amplifies their workload.

Conversely, the indicator **"Learners are required to manage extremely tight schedules due to advancing technologies"** falls within the "satisfied" or moderate range, with a mean score of **3.47** (SD = 1.12). This suggests that while time management due to technological advancements is a concern, it is perceived as slightly less burdensome compared to other techno-overload factors.

5.1.2. Descriptive Analysis of Techno-Invasion

Techno-Invasion	N	Mean	Std. Deviation
Learners spend less time with family because of technology.	465	4.12	0.91
Learners feel their personal lives are frequently interrupted by technology.	465	3.88	0.94
Learners feel pressured to respond to communications immediately due to technology.	465	3.76	1.02
Learners have to be always available due to this technology.	465	3.52	0.97
Valid N (listwise)	**465**		

Table 2

Table 2 presents the descriptive statistics for techno-invasion, highlighting its impact on learners' personal and academic lives. All four indicators fall under the "strongly satisfied" category (mean > 3.50). The highest-rated indicator is **"Learners spend less time with family because of technology"** (mean = **4.12**, SD = **0.91**), suggesting a significant intrusion of technology into personal life. The second highest is **"Learners feel their**

personal lives are frequently interrupted by technology" (mean = **3.88**, SD = **0.94**), reinforcing the perception of technology as a disruptor.

The indicator **"Learners feel pressured to respond to communications immediately due to technology"** scores a mean of **3.76** (SD = **1.02**), reflecting the urgency and immediacy created by technological demands. The lowest-rated indicator, **"Learners have to be always available due to this technology"** (mean = **3.52**, SD = **0.97**), still indicates a significant perceived burden of constant availability.

5.1.3. Descriptive Analysis of Techno-Complexity

Descriptive Statistics for Techno-Complexity

Techno-Complexity Indicators	N	Mean	Std. Deviation
Learners need much effort to understand new technologies.	465	3.72	0.98
Learners struggle to adapt to frequent software updates.	465	3.60	1.05
Learners find it hard to integrate new technologies into their workflow.	465	3.45	0.92
Learners feel overwhelmed by the complexity of digital tools.	465	3.38	1.08
Valid N (listwise)	**465**		

Table :3

The highest-scoring indicator, "Learners need much effort to understand new technologies" (mean = 3.72, SD = 0.98), reflects a significant challenge for students in adapting to new systems in online learning. The lowest-scoring indicator, "Learners feel overwhelmed by the complexity of digital tools" (mean = 3.38, SD = 1.08), still falls within the moderate range, highlighting ongoing stress due to complex platforms.

5.1.4 Descriptive Analysis of Techno-Uncertainty

Techno-Uncertainty Indicators	N	Mean	Std. Deviation
Learning platforms are constantly updated without adequate training	**465**	**3.75**	**0.88**
Frequent updates require students to relearn previously mastered tools	**465**	**3.68**	**0.90**
New technologies are introduced with insufficient guidance or support	**465**	**3.61**	**0.89**
Frequent changes in university's technological systems disrupt workflow	**465**	**3.45**	**0.94**

Table: 4

The descriptive analysis of Techno-Uncertainty reveals that only one indicator, "Learning platforms are constantly updated without adequate training," falls in the "strongly satisfied" range (mean = 3.75, SD = 0.88). The remaining indicators fall within the "moderate" range. The lowest-scoring indicator is "Frequent changes in university's technological systems disrupt workflow," with a mean value of 3.45 (SD = 0.94).

5.1.5 Descriptive Analysis of Techno-Insecurity

Techno-Insecurity Indicators	N	Mean	Std. Deviation
Learners feel anxious when peers excel at navigating new tools.	**465**	**3.85**	**0.84**
Learners hesitate to participate in discussions due to lack of technical skills.	**465**	**3.67**	**0.92**
Learners avoid using advanced features of online tools for fear of failure.	**465**	**3.51**	**1.10**
Learners avoid collaborating online due to fear of being overshadowed.	**465**	**3.21**	**1.15**

Table:5

The descriptive analysis for Techno-Insecurity reveals that the highest-scoring indicator is "Learners feel anxious when peers excel at navigating new tools," with a mean of 3.85 and SD = 0.84. The lowest-scoring indicator is "Learners avoid collaborating online due to fear of being overshadowed," with a mean of 3.21 and SD = 1.15.

5.1.6 Descriptive Analysis of Psychological Well-being

Indicator	N	Mean	Std. Deviation

Learners feel motivated to acquire new skills through online learning.	**465**	**4.30**	**0.86**
Learners feel confident in their ability to manage online learning.	**465**	**3.98**	**0.91**
Learners develop a sense of accomplishment through online courses.	**465**	**3.85**	**1.05**
Learners experience frustration due to extended screen time.	**465**	**3.62**	**1.10**

Table: 6

The analysis of Psychological Well-being indicates that all indicators fall within the "strongly satisfied" range (mean > 3.50). The highest-scoring indicator is "Learners feel motivated to acquire new skills through online learning," with a mean of 4.30 (SD = 0.86). Conversely, the lowest-scoring indicator is "Learner's experience frustration due to extended screen time," with a mean of 3.62 (SD = 1.10).

5.2 Spearman Correlation Analysis

Variable	Techno-Invasion	Techno-Complexity	Techno-Uncertainty	Techno-Insecurity	Psychological Well-being
Techno-Invasion	1.00	0.41**	0.35**	0.44**	-0.36**
Techno-Complexity	0.41**	1.00	0.38**	0.32**	-0.29**
Techno-Uncertainty	0.35**	0.38**	1.00	0.40**	-0.33**
Techno-Insecurity	0.44**	0.32**	0.40**	1.00	-0.42**
Psychological Well-being	-0.36**	-0.29**	-0.33**	-0.42**	1.00

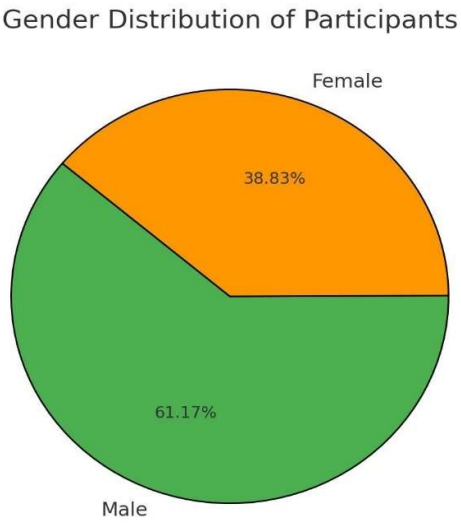
Significance Level:

- **p<0.05p < 0.05**
- **p<0.01p < 0.01 (denoted as **)**

1. **Negative:** relationships with Psychological Well-being: o All techno-stressors—Techno-Invasion, Techno-Complexity, Techno-Uncertainty, and Techno-Insecurity—exhibit negative relationships with Psychological Well-being. This suggests that elevated technostress correlates with diminished well-being.
2. **Inter-Stressor Correlations:** Moderate positive correlations among the stressors indicate common underlying mechanisms or impacts. For example, Techno-Insecurity exhibits a substantial correlation with Techno-Invasion (r=0.44**).
3. largest Impact on Well-being: Among the stressors, Techno-Insecurity displays the largest negative connection with Psychological Well-being (r=−0.42∗∗r = -0.42**). This highlights it as a crucial domain for focused interventions to improve learners' well-being.

5.3 Graphical Representation of Population Based on Gender

The chart below represents the gender distribution of participants. Out of 465 respondents, 345 (61.17%) were male, and 219 (38.83%) were female.



Discussion

The results of this study shed important light on the psychological difficulties presented by technology by examining the effects of technostress and how it affects college students' emotional health in the setting of online learning. The psychological well-being of students is greatly impacted by technostress, which is defined by stressors including techno-insecurity, techno-overload, techno-complexity, techno-invasion, and techno-uncertainty in a learning environment that depends more and more on digital resources.

1. One of the biggest stressors was discovered to be techno-invasion. According to students, technology frequently interferes with their personal life, causing them to spend less time with their families and putting pressure on them to be available at all times. These results are consistent with earlier research that highlighted how excessive technology use blurs the lines between work and personal life (Tarafdar et al., 2015).
2. Another significant contributing aspect was techno-complexity, which made students feel overburdened by the requirement to adjust to new technology platforms. Frustration results from this complexity, especially when technology is difficult to comprehend and effectively employ. According to the findings, even if a large number of students are proficient with technology, the rapid advancement of digital technology frequently leaves them feeling unprepared, which can negatively impact both their academic performance and emotional health.
3. Students' uneasiness is further exacerbated by techno-uncertainty, since frequent upgrades to learning platforms without enough training lead to confusion. Since students frequently find it difficult to keep up with changing technology tools without sufficient help or direction, this dynamic of perpetual change has been identified in the literature as a major source of stress.
4. Overall, students' motivation to learn new abilities through online learning had a beneficial impact on psychological well-being; yet, problems like screen time frustration persisted. This implies that whereas online learning offers chances for development and skill acquisition, it also introduces fresh stressors that may impair students' emotional health.

Conclusion

This study emphasises how, in the context of online learning, technostress has a significant negative influence on university students' mental health. Students' levels of stress and frustration are strongly correlated with technostress elements such techno-invasion, techno-complexity, and techno-uncertainty, which ultimately impacts their academic performance and psychological health. Institutions must be aware of the possible negative effects of technology and make sure that students receive enough assistance in adjusting to new technological surroundings, even while online learning presents growth prospects.

Universities should think about putting in place focused interventions to lessen the negative consequences of technostress, like offering students resources for emotional support, encouraging work-life balance techniques, and giving proper training on technology tools. Future studies should also examine the long-term impacts of technostress on mental health and academic performance, as well as how well institutional assistance works to lessen stresses.

In addition to calling for ongoing efforts to create a supportive, technology-enabled learning environment that minimises the psychological costs associated with online education, this study adds to the expanding body of

knowledge on the relationship between technology use and student well-being, particularly in higher education.

References

1. Ahmad, U. N. U., & Amin, S.M. (2012). The dimensions of technostress among academic librarians. Social and Behavioral Sciences, 65, 266-271. DOI: https://doi.org/10.1016/j.sbspro.2012.11.121.
2. 2] Akgun, S. & Ciarrochi, J. (2003). Learned resourcefulness moderates the relationship between academic stress and academic performance. Educational Psychology, 23(3), 287–294. DOI: 10.1080/0144341032000060129.
3. Al-Fudail, M. & Mellar, H. (2008). Investigating teacher stress when using technology. Computers & Education, 51(3), 1103–1110. DOI: https://doi.org/10.1016/j.compedu.2007.11.004.
4. Anderson, M. & Jiang, J. (2018). Teens, social media & technology. Pew Research Center. Available at: https://www.pewresearch.org/internet/2018/05/31/teens social-media-technology-2018/.
5. Barnes & Noble College. (2015). Getting to know Gen Z – Exploring middle and high schoolers' expectations for higher education. Available https://www.bncollege.com/wp content/uploads/2015/10/Gen-Z-Research-Report Final.pdf.
6. Berger,R., Romeo, M., Gidion, G., & Poyato, L. (2016). Media use and technostress. In: 10th International Technology, Education and Development Conference. Valencia. DOI: 10.21125/inted.2016.1092.
7. Blummer, B. & Kenton, J.M. (2015,). Academic librarians' use of web 2.0 tools and new media to promote students' information literacy skills. Journal of Education Research, 09(2), 151-175.
8. Brod, C. (1984). Technostress: The human cost of the computer revolution. Addison-Wesley Publishing Company. DOI: 10.1177/089443938600400428.
9. Chiappetta, M. (2017). The Technostress: definition, symptoms and risk prevention. Senses and Sciences, 4(1), 358-361. DOI: 10.14616/sands-2017-1-358361.
10. Christian, M., Purwanto, E., & Wibowo, S. (2020). Technostress creators on teaching performance of private universities in Jakarta during Covid-19 pandemic. Technology Reports of Kansai University, 62(6), 2799 2809.
11. Daniel, R. (2019, July). Technostress: Why that new productivity tool could be doing your team more harm than good. Available at: https://blog.rescuetime.com/technostress/.
12. Dunn, T.J. & Kennedy, M. (2019). Technology enhanced learning in higher education; motivations, engagement and academic achievement. Computers & Education Review, 157. DOI: 10.1016/j.compedu.2019.04.004.
13. Fuglseth, A.M. & Sorebo,O. (2014). The effects of technostress within the context of employee use of ICT. Computers in Human Behavior, 40, 161–170. DOI: 10.1016/j.chb.2014.07.040.
14. Gunawardana, K. (2017). Current status of information technology and its issues in Sri Lanka. International Journal of The Computer, the Internet and Management, 1-25. Available at: https://www.academia.edu/32498929/Current_Status_of_Information_Technology_And_Its_Issues_in_Sri_Lanka.
15. Hayashi, R., Garcia, M., Maddawin, A., & Hewagamage, K. P. (2020). Online learning in Sri Lanka's higher education institutions during the COVID-19 pandemic. ADB Briefs, 151. DOI: 10.22617/BRF200260 2.
16. Henderson, M., Finger, G., Selwyn, N., & Aston, R. (2015). Students' everyday engagement with digital technology in university: exploring patterns of use and 'usefulness'. Journal of Higher Education Policy and Management, 1-12. DOI: 10.1080/1360080X.2015.1034424.
17. Higgins, S., Xiao, Z., & Katsipataki, M. (2012). The impact of digital technology on learning: A summary for the education endowment foundation. Digital Technology Review. Available at: https://eric.ed.gov/?id=ED612174.
18. Huna,T. L., Loy, C. K., & Hansaram, R. M. (2013). A study on predicting undergraduates' improvement of academic performances based on their characteristics of learning and approaches at a private higher educational institution. Social and Behavioral Sciences, 93, 1957 – 1965. DOI: 10.1016/j.sbspro.2013.10.148.
19. Jena, R. (2015). Impact of technostress on job satisfaction: An empirical study among Indian academician. The International Technology Management Review, 5(3), 117-124. DOI: https://dx.doi.org/10.2991/itmr.2015.5.3.1.
20. Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and validation. Information Systems Research, 19 (4), 417–433. 10.1287/isre.1070.0165.

21. Samaha, M., & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. Computers in human behavior, 57 , 321–325 .
22. Shahibi, M. S., & Aziz, F. A. (2017). The effect of smartphone that influence the compulsive usage among students. International Journal of Academic Research in Business and Social Sciences, 7 (8), 2222–6990.
23. Sharma, S., & Gupta, B. (2022). Investigating the role of technostress, cognitive appraisal and coping strategies on students' learning performance in higher education: A multi- dimensional transactional theory of stress approach. Information Technology & People. 10.1108/ITP-06-2021-0505.
24. Tarafdar, M., Pullins, E. B., & Ragu-Nathan, T. S. (2015). Technostress: negative effect on performance and possible mitigations. Information Systems Journal, 25 (2), 103–132.
25. Tarafdar, M., Tu, Q., & Ragu-Nathan, T. (2010). Impact of technostress on end-user satisfaction and performance. Journal of Management Information Systems, 27 (3), 303–334. 10.2753/MIS0742-1222270311.