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Exploring Technostress: A Comprehensive Analysis Of Emerging Trends And Themes In Research

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***Abstract*:** This study examines the literature on technostress related to the extensive use of technology in modern life. As digital tools enhance productivity and communication, they also create challenges. This research identifies publication trends, influential articles, and emerging themes in technostress literature through bibliometric analysis of Scopus data. Findings show significant growth in research from 2013 to 2024, reflecting concerns about individuals' well-being. The paper highlights the need for effective prevention strategies and recommends future research to address technostress's impacts on individual and organizational health.

Keywords: Technostress, Techno anxiety, Digital tools, Bibliometric Analysis.

I. INTRODUCTION

Technology has fundamentally transformed various aspects of modern life, influenced daily routines and contributed to macroeconomic growth, which further affects society (Roztocki et al., 2019). The advancements in technology have undeniably propelled improvements in productivity, streamlined communication, and heightened overall convenience for individuals across all age groups. For instance, smartphones and messaging apps have made communication faster and easier (Rogers, 2019). Similarly, automation in the workplace has boosted efficiency by reducing manual tasks in place (Perez, 2023). However, this increasing dependence on technological tools has also given rise to a series of complex challenges. One prominent issue is technostress, a term first coined by Craig Brod in 1984, which encompasses the anxiety, confusion, and fear that can accompany computer usage (Variya and Patel, 2020). Over time, the concept of technostress has evolved, and in 2007, it was officially recognized as an occupational disease, underscoring the necessity for thorough workplace risk assessments and effective prevention strategies (Chiappetta, 2017). As our engagement with the digital realm deepens, understanding the potential repercussions of technostress on both individual well-being and organizational health has become increasingly essential. This understanding is crucial for navigating the challenges presented by our pervasive digital landscape (Kumar, 2024). While digital technologies can enhance productivity and communication, they also contribute to increased workload, complexity, and work-life conflicts (Dragano and Lunau, 2020). Users of information and communication technologies often feel stressed, which has led to concerns about

technostress. This has become an important area of study. Researchers are examining its causes, consequences, and strategies for mitigation. (Ragu-Nathan et al., 2008). Bibliometric analysis provides a structured approach to understanding the evolution of research on technostress (Salazar-Concha et al., 2021). By examining publication trends, citation analysis and thematic development, this study aims to map the intellectual landscape of technostress research.

The study will contribute to answer the following research questions through bibliometric analysis to represent the present state of Technostress research accurately:

RQ1: What are the trends in publication related to technostress research?
RQ2: Which articles and journals are most notable in technostress research?
RQ3: What emerging themes are present in technostress research?

The review on technostress literature has six sections. First section includes introduction to technostress. Next, it explains the methodology used in the study and shares the research findings. Finally, the review suggests the future studies in this area and concludes with a summary of the findings.

2. **Methodology**

The research collects data from the Scopus database regarding technostress for its review. The Scopus database is known as the most comprehensive source for research articles (Baas et al., 2020). Our research used the PRISMA framework to conduct the review. It consists of identification, screening, eligibility, and selection (Mathew et al,2021). To ensure the inclusion of all the relevant studies, we meticulously analyze the existing literature on technostress and adopt the keywords following the recommendations of Ali et.al (2021), Uddin et al. (2023), Kaur et.al (2024). For collecting relevant literature from the Scopus database, the following search string was used:
(“technology anxiety" OR "technology stress" OR "technostress”)

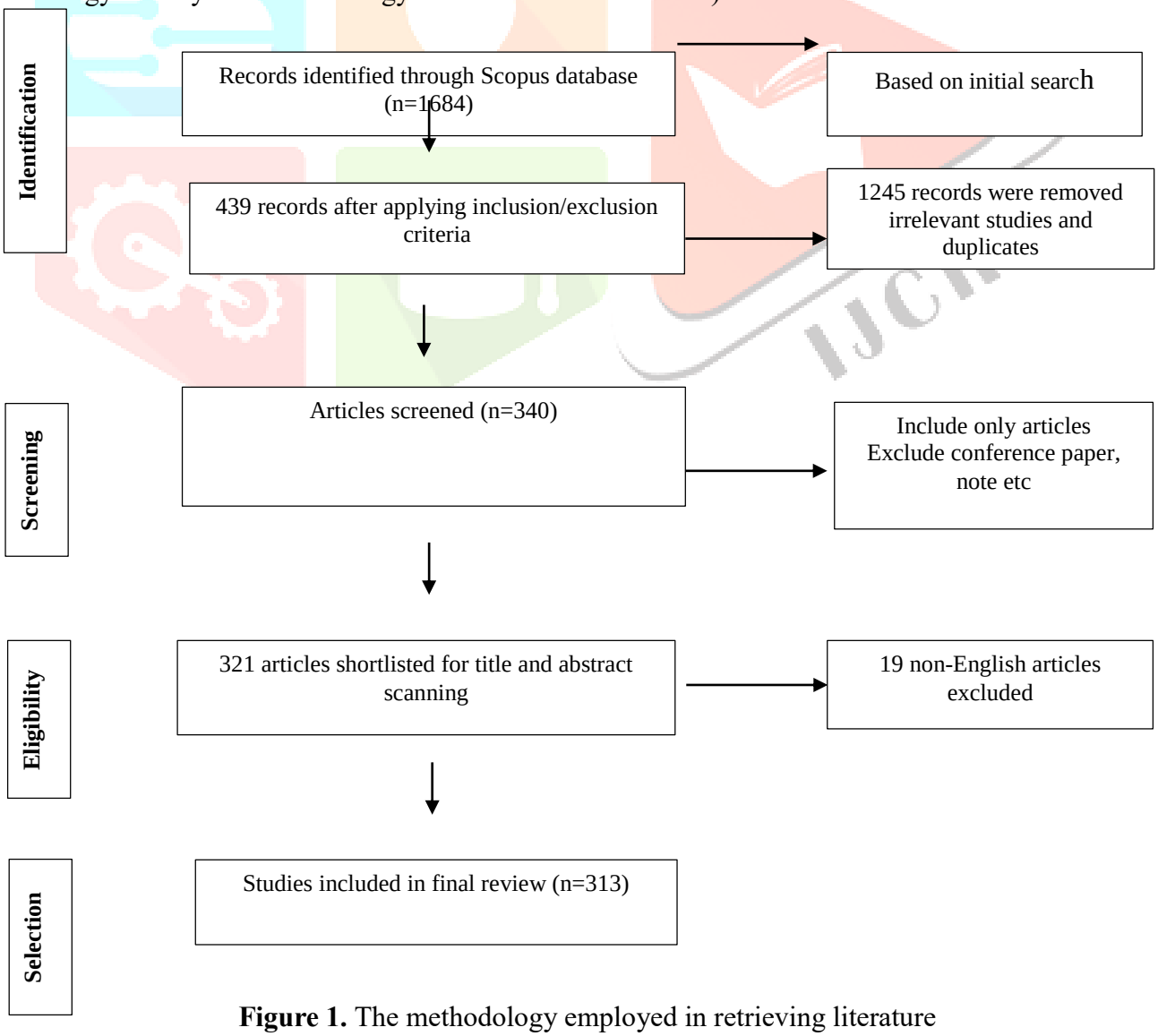

Figure 1. The methodology employed in retrieving literature
Source: Authors’ creation

R-studio is a powerful tool for conducting bibliometric analysis (Bhat et al., 2023). The data was analyzed using Biblioshiny in R Studio, to examine publication trend, most prominent authors, sources, and countries. For network analysis, Vos viewer was used for co-occurrence analysis, as Vos viewer is suggested as one of the bibliometric software that offers good visual mapping (Arruda, 2022).

3. Results

3.1 Annual production of literature on technostress

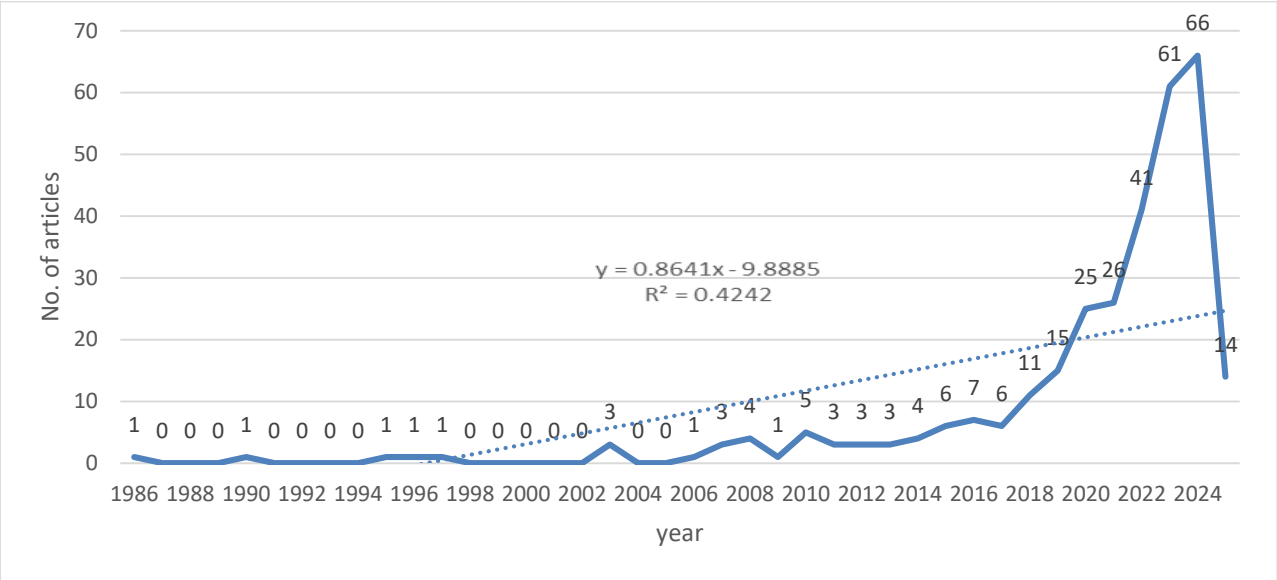

Figure 2. Annual growth of documents in technostress literature (1986-2025)
Source: Authors' creation

The year-wise trend of publications in Technostress research is presented in Figure 2. The figure shows the first article in this domain was by (Caro and Sethi, 1986), which was published in 1986. The figure also indicates that publication in the field has been growing over 11 years (2013-2024). In 2024, there was the highest publication in the research field of technostress, this may be due to the wellbeing issues millennials are facing due to the increased digital work environment (KS et al., 2024). The presence of 14 papers in 2025 shows that research is still going in this field.

3.2 Most prominent journals in technostress research

Table 1. Top Ten sources

Sources	Articles
Technological Forecasting and Social Change	10
Journal Of Retailing and Consumer Services	9
Journal of Business Research	8
Technology In Society	8
Information And Management	6
Electronic Markets	5
International Journal of Contemporary Hospitality Management	5
International Journal of Retail and Distribution management	5
Journal Of Management Information Systems	5
Problems And Perspectives in Management	5

Source: Authors' creation

Table 1 shows the top ten prominent sources of literature on technostress. The Journal of Technological Forecasting and Social Change has the highest production in the field of technostress, followed by the Journal of Retailing and Consumer Services and Journal of Business Research, having 10, 9, and 8 publications respectively. The top ten sources contribute to 21.08 percent of articles in the field of technostress that have been published at least five articles on this subject in these journals.

3.3 **Most prominent affiliations in technostress research**

Table 2. Top Ten Affiliation

Affiliation	Articles
National Economics University	17
UCSI university	10
Kyung Hee University	9
University of Bamberg	9
Royal Free London NHS Foundation Trust	8
University Of Toledo	8
University Tunku Abdul Rahman	7
University Of Nevada	7
Auburn University	6
Southwestern University of Finance and Economics	6

Source: Authors' creation

Table 2 shows the most prominent affiliations researching technostress, National Economics University leads with 7 articles, indicating a significant contribution to the field. UCSI University follows with 10 articles, suggesting a growing interest in technostress, particularly in the context of rapid technological adoption in the region. Kyung Hee University of Bamberg each contributes 9 articles, highlighting their active engagement in understanding the psychological and organizational impacts of technology. The distribution of articles suggests that technostress is a globally recognized issue, with researchers from diverse disciplines and regions contributing to its understanding.

3.4 Most prominent documents in technostress research

Table 3. Most influential articles

Document	Year	Local Citations	Global Citations
Ayyagari et al. (2011)	2011	113	1353
Tarafdar et al. (2007)	2007	111	986
Ragu-Nathan et al. (2008)	2008	104	1266
Tarafdar et al. (2010)	2010	65	640
Meuter et al. (2003)	2003	64	809
Pirkkalainen et al. (2019)	2019	28	153
Califf et al. (2020)	2020	26	266
Maier et al. (2019)	2019	21	152
Benlian (2020)	2020	15	112
Khedhaouria and Cucchi (2019)	2019	15	89

Source: Authors' creation

The most prominent articles for technostress research in terms of citations are presented in the Table. 3. “Technostress: Technological antecedents and implications”, 2011 is the most cited article in the field of technostress with local citation of 113 and global citation of 1353. Whereas the article “The impact of technostress on role stress and productivity”,2007, has local citation of 111 and global citation of 986, is a

second prominent article in the field of technostress. It is also pertinent to mention that the top 10 most cited articles in this field have a comprehensive 5826 citations, demonstrating the significant impact of technostress.

3.5 Most productive countries in technostress research

Table 4. Most productive countries

Country	Freq
USA	178
China	102
India	85
Germany	65
UK	44
Malaysia	40
Canada	30
France	28
South Korea	27
Australia	21

Source: Authors' creation

Table 4 highlights the most productive countries in technostress research, with the United States leading by the substantial number of contributing 178 articles. American workplaces early and pervasive adoption of digital technologies has created a high prevalence of technostress (Wang et al., 2008). It is followed by developing countries like China with 102 articles, underscoring its rapid technological advancement and associated challenges and India ranks third with 85 articles indicating growing awareness of technostress as the country undergoes rapid digital transformation and faces unique socio-economic challenges related to technology adoption (Jena and Mahanti, 2014).

3.6 Most prominent authors in technostress research

Table 5. Top ten authors

Author	h_index	TC	NP	PY_start
Tarafdar M	9	3334	9	2007
Kim J	6	824	7	2008
Forsythe S	5	787	5	2008
Maier C	4	229	5	2019
Weitzel T	4	229	5	2019
Califf CB	3	288	4	2020
Duong CD	3	262	5	2023
Laumer S	3	221	3	2019
Lee H-J	3	233	3	2010
Lee S	3	59	3	2016

Source: Authors' creation

The Table 5. Shows the most prominent authors in the research field of technostress. The analysis of the most prominent authors in technostress research highlights that Tarafdar M stands out as the most prominent author, with an h-index of 9, total citations of 3,334, and 9 publications. Kim J follows with an h-index of 6, citations of 7 and 7 articles, whereas Forsythe S has an h-index of 5, 5 articles, and citations of 787, suggesting impactful research. The diversity in publication years and citation counts highlights the evolving nature of technostress research.

3.7 Thematic analysis

Figure 3. Word cloud of most frequently used research keywords

The word cloud in Figure 3 visualizes key themes related to "technostress", suggesting a multifaceted issue affecting work, psychological well-being, technology adoption, and societal structures, especially in the post-COVID-19 era. The central theme is technostress, which refers to the stress and negative psychological effects caused by the use of technology. Work related factors include the terms "Job satisfaction," "job demand," "personnel," "human resource, these suggest that technostress impacts employee wellbeing, work performance and satisfaction. Psychological and emotional impact include the key terms like technology anxiety, mental health, wellbeing, perception, which highlight how excessive technology use may lead to psychological distress, anxiety, and overall wellbeing outcomes. Technological development and adoption include Information and communication technologies, technology adoption, innovation, and Rapid technological advancements. These can contribute to stress as individuals and organizations struggle to keep up with new tools and systems. Emerging technologies and complexity in human interactions, potentially causing stress.

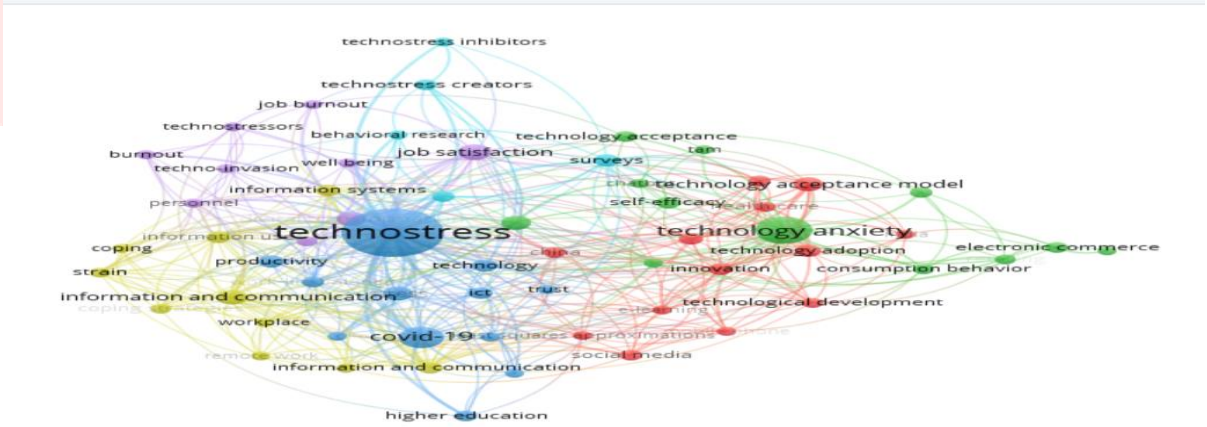

Figure 4 Cooccurrence of keywords using Vos Viewer

Table 6. Cluster analysis of research on technostress.

Cluster	Keyword	Occurrences	Total link strength
Cluster 1	Technostress	141	210
Blue	Technology	9	18
	Productivity	10	22
	COVID 19	28	60
	Higher education	7	13
	Trust	5	8
Cluster 2	Technology acceptance model	8	24
Red	Healthcare	6	18
	Technology adoption	10	29

	Innovation	8	27
	Technological development	6	18
	Social media	5	13
	Technology	9	18
Cluster 3	TAM	5	5
Green	Self-efficacy	8	13
	Consumption behavior	5	16
	Electronic commerce	7	12
Cluster 4	Technostress inhibitors	5	8
Sky blue	Technostress creators	7	12
	Behavioral research	5	13
	Surveys	9	35
Cluster 5	Job burnout	5	12
Purple	Techno stressors	5	12
	Job satisfaction	15	39
	Wellbeing	5	12
	Technology invasion	5	10
	Burnout	5	13
	Personnel	5	18
Cluster 6	Coping	5	15
Yellow	Strain	6	26
	Information and communication	13	51
	Workplace	5	15
	Information use	8	37
	Information systems	8	19

The results of the network analysis of keyword co-occurrence are shown in Figure 4 and Table 6, which highlight six major themes. These clusters are primarily related to technostress and technology adoption.

Cluster 1: Technology Adoption and its Main Theme

This cluster contains six items, and the most common word “technostress” has the highest link strength of 210, which occurs 141 times in the cluster. Other keywords within this cluster include technology, productivity, COVID-19, higher education, and trust. Studies suggest that enforced remote work during the pandemic exacerbated issues leading to increased technology exhaustion and decreased wellbeing (Singh et al., 2022).

Cluster 2: Technology Adoption and Social Impacts

The second cluster focuses on technology acceptance and adoption with innovation and social media as major themes. The presence of the keyword “healthcare” indicates focus on how technology is being integrated into the medical field. Studies that highlight technostress in healthcare are Califf et al. (2020); Issa et al. (2024); Lauwers et al. (2021). Understanding these technostress dynamics is crucial for healthcare specialists and organizations to enhance wellbeing.

Cluster 3: Consumer Behavior and Commerce

The cluster consumer behavior and commerce contain 4 items. This cluster highlights the intersection between consumer behavior and technology, with keywords such as TAM (Technology Acceptance Model), self-efficacy, consumption behavior, and electronic commerce. The presence of self-efficacy implies that individual confidence in technology use plays a role in the acceptance of digital tools (Alharbi & Drew, 2018).

Cluster 4. Technostress Influencers and Behavioral research

Cluster 4, technostress and behavioral research, contains four items. This cluster focuses on technostress inhibitors, creators, and behavioral research. This includes surveys indicating that empirical research is commonly used in the study of technostress. The role of behavioral research suggests that studies in this cluster examine human responses to technology-induced stress.

Cluster 5: workplace stress and job satisfaction

This cluster contains workplace stress and job satisfaction, which contains eight items. This cluster is centered around workplace-related stress with keywords such as burnout and personnel. The presence of burnout and job satisfaction highlights the dual impact of technology on employees, both as stress and a factor influencing job engagement and productivity.

Cluster 6: Coping strategies and information management

This cluster, focusing on coping strategies and information management, contains six items. The final cluster focuses on coping mechanisms and the role of information management mitigating technostress. Keywords such as strain, information and communicator, workplace, information use and information systems suggest a focus on how the organizations and individuals manage the overwhelming flow of digital information. Coping strategies can help mitigate the negative effects of stress caused by technology. They may ease the relationship between stressors and the strain people experience, potentially lowering the harmful impacts of technostress (Tarafdar et al., 2014).

4. Future research directions

Future research directions are outlined in this section to enhance the understanding of technostress based on the review and findings from the analyses**.** With rapid development of artificial intelligence (AI), virtual reality (VR) studies should investigate their role in creating or mitigating technostress. While research on technostress has been dominated by studies in developed countries, there is a need for additional comparative studies. Across cultural and economic contexts. Longitudinal research could examine how individuals and organizations adapt to evolving technological landscape and now technostress change over time. Researchers should focus on how digital transformation in the education and health sectors affects productivity, job satisfaction, and mental wellbeing.

5. Implications and Limitations

This review enhances the understanding of technostress by systematically mapping its evolution, emerging themes, and influential studies. This study contributes to the growing body of knowledge on workplace stress in digital environments, providing the foundation for future interdisciplinary research. Additionally, the study aids organizations in understanding how technostress affects employee productivity, job satisfaction, and mental well-being, encouraging them to develop strategies for digital wellness. While this study provides valuable insights, it has certain limitations that should be acknowledged. First, it is solely on the Scopus database excluding studies from other sources. Second, exclusion of non-English publications may underrepresent contribution from other regions. Lastly, this review employs bibliometric analysis, which limits the in-depth exploration of theoretical and methodological aspects. Despite these limitations, this study provides a structured overview of technostress research and a foundation for further studies.

6. Discussion and conclusion

The study utilized a bibliometric analysis approach to systematically organize and present the literature on technostress. The study utilizes the Scopus database to explain the most contributing authors, influential articles, and the most significant journal, while also providing future research directions in this domain, and the main thematic areas in this field of technostress. 313 articles were selected after applying exclusion criteria. The publication trend shows the positive growth after 2013. The top journal in this field is Technological Forecasting and Social Change, and Journal of Retailing and Consumer Services. The most contributing organizations are the National Economics University and UCSI University, with 17 and 10 articles respectively in this domain. The most prominent studies are by Ayyagari et al. (2011) and Tarafdar et al. (2007), which have the highest citations. Developed countries like the USA, Germany, and the UK lead in technostress research publications. However, recent contributions from developing countries such as India and China indicate their growing influence in technostress research. The thematic analysis of the literature reveals several key research areas in technostress. The findings suggest that while much research has been conducted on workplace technostress, there is a need for further exploration in emerging domains such as remote work, AI-induced stress, and technostress in different settings.

References

Agogo, D., & Hess, T. J. (2015). Technostress and Technology-Induced State Anxiety: Scale Development and Implications. In *Technostress and Technology Induced State Anxiety: Scale Development and Implications*.

Alharbi, S., & Drew, S. (2018). The role of self-efficacy in technology acceptance. In *Advances in intelligent systems and computing* (pp. 1142–1150). https://doi.org/10.1007/978-3-030-02686-8_85

Ali, A., Jan, S., & Iqbal, P. M. (2020). A BIBLIOMETRIC ANALYSIS ON TECHNOSTRESS: AN EMERGING DISCIPLINE. *JOURNAL OF INDIAN LIBRARY ASSOCIATION*, *57*.

Ayyagari, N., Grover, N., & Purvis, N. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly*, *35*(4), 831. https://doi.org/10.2307/41409963

Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, *1*(1), 377–386. https://doi.org/10.1162/qss_a_00019

Benlian, A. (2020). A Daily Field Investigation of Technology-Driven Spillovers from Work to Home. *MIS Quarterly*, *44*(3), 1259–1300. https://doi.org/10.25300/misq/2020/14911

Califf, C. B., Sarker, S., & Sarker, S. (2020a). The Bright and Dark Sides of Technostress: A Mixed-Methods Study involving Healthcare IT. *MIS Quarterly*, *44*(2), 809–856. https://doi.org/10.25300/misq/2020/14818

Califf, C. B., Sarker, S., & Sarker, S. (2020b). The Bright and Dark Sides of Technostress: A Mixed-Methods Study involving Healthcare IT. *MIS Quarterly*, *44*(2), 809–856. https://doi.org/10.25300/misq/2020/14818

Califf, C. B., Sarker, S., & Sarker, S. (2020c). The Bright and Dark Sides of Technostress: A Mixed-Methods Study involving Healthcare IT. *MIS Quarterly*, *44*(2), 809–856. https://doi.org/10.25300/misq/2020/14818

Caro, D. R., & Sethi, A. S. (1986). Technology strategy: The role of strategic planning and monitoring systems. *Human Systems Management*, *6*(2), 121–129. https://doi.org/10.3233/hsm-1986-6204

Chiappetta, M. (2017). The Technostress: definition, symptoms and risk prevention. *DOAJ (DOAJ: Directory of Open Access Journals)*. https://doi.org/10.14616/sands-2017-1-358361

Dragano, N., & Lunau, T. (2020). Technostress at work and mental health: concepts and research results. *Current Opinion in Psychiatry*, *33*(4), 407–413. https://doi.org/10.1097/yco.0000000000000613

Issa, H., Jaber, J., & Lakkis, H. (2024). Navigating AI unpredictability: Exploring technostress in AI-powered healthcare systems. *Technological Forecasting and Social Change*, *202*, 123311. https://doi.org/10.1016/j.techfore.2024.123311

Jena, R. K., & Mahanti, P. K. (2014). An Empirical study of Technostress among Indian Academicians. *International Journal of Education and Learning*, *3*(2), 1–10. https://doi.org/10.14257/ijel.2014.3.2.01

Khedhaouria, A., & Cucchi, A. (2019). Technostress creators, personality traits, and job burnout: A fuzzy-set configurational analysis. *Journal of Business Research*, *101*, 349–361. https://doi.org/10.1016/j.jbusres.2019.04.029

KS, K. D. W., Nurtantio, P., & Astuti, S. D. (2024). Exploring the Impact of Technostress on Millennial Work-Life Balance in Digital Work: The Mediating Role of Work Well-Being. *2020 International Seminar on Application for Technology of Information and Communication (iSemantic)*, 83–88. https://doi.org/10.1109/isemantic63362.2024.10762733

Kumar, P. S. (2024). TECHNOSTRESS: A comprehensive literature review on dimensions, impacts, and management strategies. *Computers in Human Behavior Reports*, *16*, 100475. https://doi.org/10.1016/j.chbr.2024.100475

Lauwers, M., Giangreco, A., Carugati, A., Maes, J., & Sebastiano, A. (2021). Healthcare information system use under techno-uncertainty: evidence from long-term care. *Systèmes D Information & Management*, *Volume 26*(3), 7–34. https://doi.org/10.3917/sim.213.0007

Maier, C., Laumer, S., Wirth, J., & Weitzel, T. (2019). Technostress and the hierarchical levels of personality: a two-wave study with multiple data samples. *European Journal of Information Systems*, *28*(5), 496–522. https://doi.org/10.1080/0960085x.2019.1614739

Meuter, M. L., Ostrom, A. L., Bitner, M. J., & Roundtree, R. (2003). The influence of technology anxiety on consumer use and experiences with self-service technologies. *Journal of Business Research*, *56*(11), 899–906. https://doi.org/10.1016/s0148-2963(01)00276-4

Perez, J. (2023, April 12). *How automation drives business growth and efficiency - SPONSOR CONTENT FROM SALESFORCE*. Harvard Business Review. https://hbr.org/sponsored/2023/04/how-automation-drives-business-growth-and-efficiency

Pirkkalainen, H., Salo, M., Tarafdar, M., & Makkonen, M. (2019). Deliberate or instinctive? Proactive and reactive coping for technostress. *Journal of Management Information Systems*, *36*(4), 1179–1212. https://doi.org/10.1080/07421222.2019.1661092

Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008a). The Consequences of technostress for end users in Organizations: Conceptual development and empirical validation. *Information Systems Research*, *19*(4), 417–433. https://doi.org/10.1287/isre.1070.0165

Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008b). The Consequences of technostress for end users in Organizations: Conceptual development and empirical validation. *Information Systems Research*, *19*(4), 417–433. https://doi.org/10.1287/isre.1070.0165

Rogers, S. (2019, October 15). *The role of technology in the evolution of communication*. Forbes. https://www.forbes.com/sites/solrogers/2019/10/15/the-role-of-technology-in-the-evolution-of-communication/

Roztocki, N., Soja, P., & Weistroffer, H. R. (2019). The role of information and communication technologies in socioeconomic development: towards a multi-dimensional framework. *Information Technology for Development*, *25*(2), 171–183. https://doi.org/10.1080/02681102.2019.1596654

Salazar-Concha, C., Ficapal-Cusí, P., Boada-Grau, J., & Camacho, L. J. (2021). Analyzing the evolution of technostress: A science mapping approach. *Heliyon*, *7*(4), e06726. https://doi.org/10.1016/j.heliyon.2021.e06726

Singh, P., Bala, H., Dey, B. L., & Filieri, R. (2022). Enforced remote working: The impact of digital platform-induced stress and remote working experience on technology exhaustion and subjective wellbeing. *Journal of Business Research*, *151*, 269–286. https://doi.org/10.1016/j.jbusres.2022.07.002

Tarafdar, M., Pullins, E. B., & Ragu-Nathan, T. S. (2014). Technostress: negative effect on performance and possible mitigations. *Information Systems Journal*, *25*(2), 103–132. https://doi.org/10.1111/isj.12042

Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, *24*(1), 301–328. https://doi.org/10.2753/mis0742-1222240109

Tarafdar, M., Tu, Q., & Ragu-Nathan, T. S. (2010). Impact of Technostress on End-User satisfaction and Performance. *Journal of Management Information Systems*, *27*(3), 303–334. https://doi.org/10.2753/mis0742-1222270311

Uddin, M. J., Ferdous, M., Rahaman, A., & Ahmad, S. (2023, May 17). *Mapping of Technostress Research Trends: A Bibliometric analysis*. IEEE Conference Publication | IEEE Xplore. https://ieeexplore.ieee.org/document/10142487

Variya, P. B., & Patel, N. K. (2020). Technostress: a Conceptual framework. *Studies in Indian Place Names*, *40*(23), 492–495. https://archives.tpnsindia.org/index.php/sipn/article/view/946

Wang, K., Shu, Q., & Tu, Q. (2008). Technostress under different organizational environments: An empirical investigation. *Computers in Human Behavior*, *24*(6), 3002–3013. https://doi.org/10.1016/j.chb.2008.05.007