
International Journal of Management, Finance and Accounting

Subdimensions of Technostress Across Industries: A Systematic Review

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Abstract

Technostress is the stress induced by the use of digital technologies, which has attracted growing academic interest due to its multidimensional nature and impact across various industries. In this light, the aim of this systematic review was to analyse the most frequently reported sub-dimensions of the technostress creator's framework, identify the issues related to the dimensions of technostress and to evaluate how technostress is conceptualised as a unidimensional or multidimensional construct. Based on Scopus as the single database, 52 empirical papers were retrieved that have been published from 2020 to 2025 mid and were subject to a structured dimension-mapping approach. These findings highlight five core sub-dimensions of technostress creators consistently reported in the literature (techno-overload, techno-complexity, techno-invasion, techno-insecurity, and techno-uncertainty) and the emergence of new emotions such as techno-anxiety, fatigue and addiction. Both dimensions imply different psychological and organisational challenges, confirming the necessity for stress-specific intervention programs. Approximately 36 out of 52 of the reviewed studies adopted a multidimensional approach, indicating a methodological trend towards a more detailed measurement on technostress. This review underscores the lack of terminological uniformity between studies and suggests that future research should establish common frameworks, investigate context-specific stressors, and evaluate selective interventions. The expected outcome is to provide insights into how technostress is conceptualised and measured across industries, highlighting the most common dimensions, emerging constructs, and the shift from unidimensional to multidimensional perspectives.

Keywords: Technostress, Unidimensional, Multidimensional, Systematic Review, Technostress Creators

Received on 29 June 2025; Accepted on 31 October 2025; Published on 28 February 2026.

To cite this article: Jogtika, R. & Nasreen, K. T. O. (2026). Subdimensions of technostress across industries: A systematic review. *International Journal of Management, Finance and Accounting*, 7(1), 506–546. <https://doi.org/10.33093/ijomfa.2026.7.1.18>

1.0 Introduction

In the past decade, digital transformation has accelerated across every sector, driven by artificial-intelligence tools, cloud platforms, and always-on mobile apps. While these technologies promise efficiency and innovation, they also introduce novel psychological demands, including information overload, constant connectivity, and blurred work–life boundaries (Beauvais et al., 2024; Valkhof et al., 2024). Surveys conducted during the post-pandemic shift to hybrid work show that more than 60% of employees report elevated stress directly linked to digital tools and platforms (Svensson & KPMG, 2024). Against this backdrop, understanding “technostress” and its specific drivers is essential for both scholars and practitioners. The rapid growth of digital technologies and their integration into work, educational, and personal life have given rise to a body of literature on technostress. Technostress refers to the stress individuals experience in their interactions with technology. Brod (1984) introduced the term “technostress,” defining it as an adaptation syndrome related to information, communication technology, and a technology-based lifestyle.

As digital dependence continues to grow, understanding the stressors associated with negative psychological, cognitive, and behavioural consequences is becoming increasingly important (Ayyagari et al., 2011; Tarafdar et al., 2014). Technostress is increasingly recognised as a multidimensional construct rather than a single phenomenon (Califf et al., 2020; Tarafdar et al., 2007). The traditional researchers have developed different kinds of stressors, such as cognitive saturation, invasiveness of privacy, technological anxiety and obsolescence anxiety. These sub-dimensions form the foundation of what we accept today as the multidimensional nature of technostress (Ragu-Nathan et al., 2008; Salanova et al., 2012). In technostress literature, a widely accepted conceptual framework is that of Technostress Creators, originally introduced by Tarafdar et al. (2007) and Ragu-Nathan et al. (2008). This framework encompasses five key sub-dimensions: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty, each describing a distinct way in which technology acts as a stressor.

Table 1 provides a chronological summary of major scholarly contributions to the classification of technostress dimensions.

Table 1: Chorological Summary of Technostress Dimensions

Researcher	Sub-Dimensions	No. of Dimensions
Brod (1984)	Work Overload, Invasion of Individual Life, High Complexity of Technology, Occupational Crisis	4
Brillhart (2004)	Data Smog, Multitasking Madness, Computer Hassles, Burn-Out	4
Tarafdar et al. (2007)	Techno-Overload, Techno-Invasion, Techno-Complexity, Techno-Insecurity, Techno-Uncertainty	5
Ragu-Nathan et al. (2008)	Techno-Overload, Techno-Complexity, Techno-Anxiety, Techno-Uncertainty	4
Ayyagari et al. (2011)	Work-Home Conflict, Work Overload, Invasion of Privacy, Role Ambiguity, Job Insecurity	5

Recent empirical evidence by Kaltenecker et al. (2024), Banerjee and Gupta (2023), Begum et al. (2024) shows that unmanaged technostress is no longer a theoretical concern but a costly, real-world problem. In acute-care hospitals, higher technostress scores are linked to clinically significant burnout and elevated hair-cortisol levels among nurses, signalling chronic physiological strain (Kaltenecker et al., 2024). A three-wave panel of private-bank employees found that techno-insecurity and techno-overload substantially increase turnover intention and “quiet-quitting” behaviours, undermining workforce stability (Banerjee & Gupta, 2023). Among remote knowledge workers, techno-invasion and techno-overload heighten cognitive load, intensify work–family conflict, and depress task performance ratings (Begum et al., 2024). These findings demonstrate that technostress threatens employee well-being, retention, and productivity

across industries, making it imperative to understand its underlying dimensions and patterns.

Despite a sharp rise in technostress research over the last five years, current secondary studies are limited in scope. Recent reviews tend to: (a) Examine narrow industry or technology contexts such as artificial-intelligence adoption in healthcare (Arvai et al., 2024) or social-media overload (Tyrväinen et al., 2025), (b) Provide mainly descriptive overviews without systematically counting how often each stressor is measured (Kumar, 2024), (c) Focus on coping and leadership factors rather than detailing the stressor structure itself (Rademaker et al., 2025; Rohwer et al., 2022). As a result, there is still no integrative synthesis that (i) identifies which technostress dimensions are most frequently operationalised, (ii) maps the empirical challenges linked to each dimension, and (iii) clarifies the shift from unidimensional to multidimensional measurement models. Filling this gap is essential for advancing theory, standardising measurement tools, and guiding targeted interventions in today's technology-intensive workplaces.

This review aims to develop a comprehensive understanding of the trends and state of the art on technostress dimensions across industries. It is guided by three key research questions: (1) which dimensions of technostress are most frequently reported, (2) what challenges are associated with each dimension, and (3) how often is technostress measured as a unidimensional versus a multidimensional construct? Therefore, this study contributes by providing a structured synthesis of technostress dimensions, identifying the associated challenges and highlighting the evolution from unidimensional to multidimensional perspectives. Moreover, it draws attention to emerging dimensions or lesser explored that have not been addressed in existing reviews. Hence, the findings of the systematic review can serve as a valuable reference for future researchers to understand the complexity of technostress and to inform the development of targeted interventions that reduce its impact and promote digital well-being.

2.0 Literature Review

Over the past two decades, research on technostress has developed tremendously. In early research, burnout was often considered a unidimensional concept, which regarded it as a general strain of the use of technology (Ayyagari et al., 2011). Although this methodology was built on a basis, it did not account for the parallel nature of various stressors. Recent conceptualisations, such as the Technostress Creators model (Tarafdar et al., 2007) and its modifications (Golz et al., 2024), acknowledge the multi-dimensional aspect of technostress in the identification of various techno stressors (i.e. overload, invasion, complexity, insecurity, and uncertainty), separately from Technostress model components. This change mirrors an increasing recognition that dissimilar stressors will be associated with different psychological and behavioural responses. For instance, Kumar (2024) provided a review of the literature that outlined the primary dimensions of technostress and its consequences. Although useful as descriptive summaries, the study did not estimate relative frequencies or importance of the dimensions, and it remains an open question which stressors tend to dominate in the first place. This constraint underscores the importance of systematic reviews, which transcend description, integrating synthesis with quantification to obtain comparative lessons that apply across sectors.

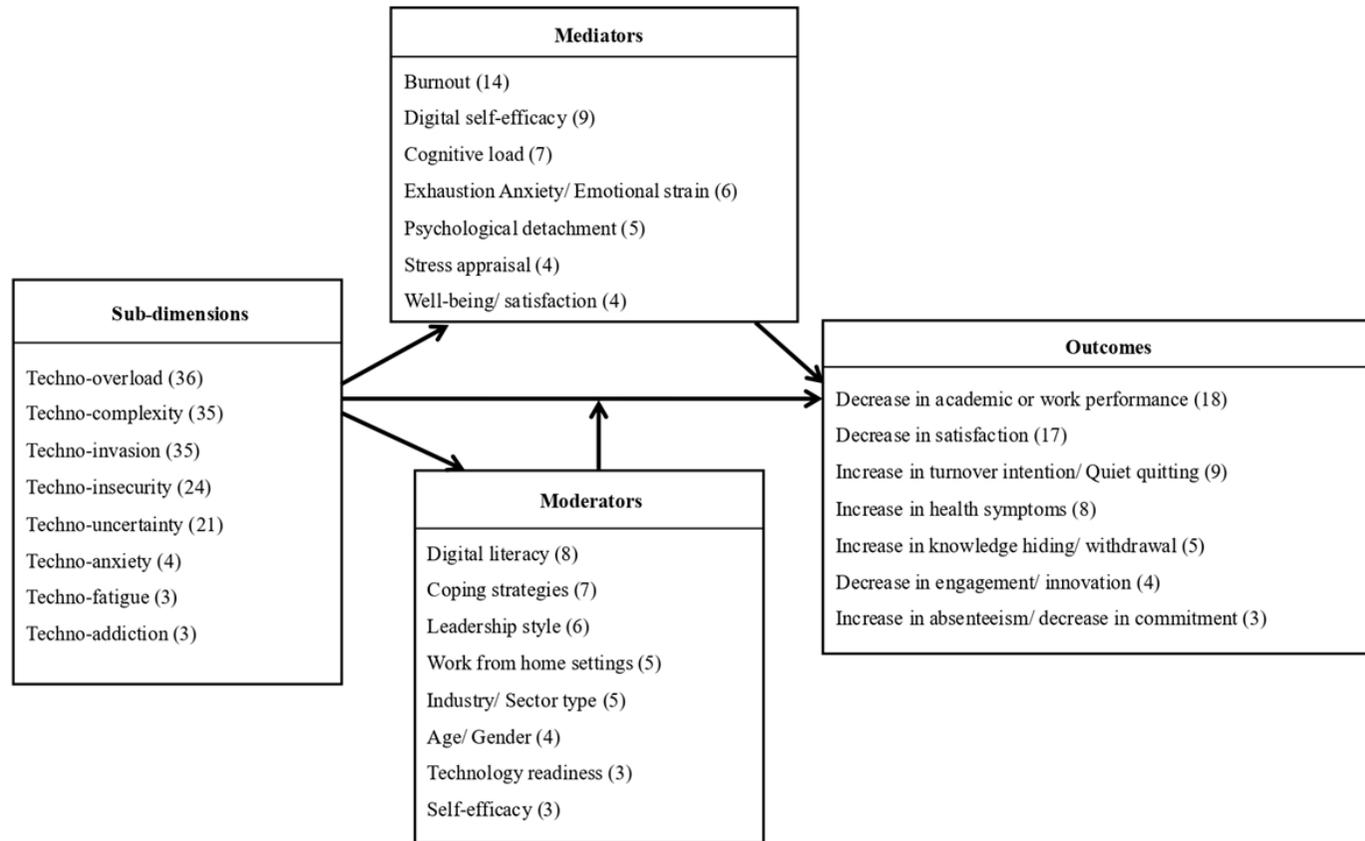
The sensitivity of the issue is even more evident when considering that technostress takes on different forms depending on the work context. In healthcare, Arvai et al. (2024) analysed psychological barriers to the acceptance of AI and discovered that uncertainty and complexity caused significant resistance to be enacted. Their research showed how technostress is strongly related to psychological readiness for technological change, but its applicability to other forms of technology is limited, due to its underlying narrow focus on AI. Complementing this, Kaltenecker et al. (2023) observed that techno-complexity is an important factor in generating decision fatigue among clinicians, demonstrating how disjointed systems and steep learning curves undermine digital effectiveness in high-stakes settings. Taken together, these studies converge in pointing to complexity as a core stressor within healthcare, although their sectoral focus leaves it open whether similar patterns may be found in other domains.

In the context of higher education, Lanzl (2023) demonstrated how techno-invasion disrupts the work–life balance of academic staff. Persistent alerts, digital grading systems and “learning management” software blurred the lines of personal and professional life, creating stress not just inside the classroom but in what had been considered personal time. This has been important in that it has shown that not all technostress is related to technical proficiency; management of boundaries is a stressor in and of itself. However, although the analysis focused exclusively on invasion, this stressor was not contextualised in a broader multidimensional manner, thus reducing its comparability with other situations. For gig work on platforms, techno-insecurity is an important predictor of silent quitting, as shown by Gupta and Banerjee (2025). Their results connected stressors and a behavioural effect, such as withdrawal of discretionary effort, i.e., insecurity about the digital divide, which can hinder labour market participation. Though influential, their research was limited and narrow, studying only insecurity, apart from how it interacts with other sources of stress like overload or complexity. Overall, these studies show the relative importance of different dimensions within different ‘knowledge systems’ and stimulate a cross-contextual synthesis.

Moreover, further studies have examined specific stressor-outcome pathways. Tyrväinen et al. (2025) also conducted a meta-analysis on techno-overload and found that techno-overload is a strong predictor of IT addiction. Their analysis offered strong quantitative evidence for one stressor-outcome association, and their exclusion of other dimensions and outcomes served as a constraint for their study. On the other hand, Rohwer et al. (2022) provided a scoping review of coping and preventive strategies at work, and highlighted interventions such as training and organisational support. While useful in drawing attention to the management response, they did not generate a clear sense of which particular dimensions contribute to coping needs. These findings highlight that existing work is fragmented, while some explore certain dimensions or interventions, none evolve a holistic view of technostress, capturing all its stressors. Conceptual restrictions have also been evidenced in studies conducted within academic systems. Hossain et al. (2021) integrated technostress with the expectation-confirmation model to explain continuance intention in academic information systems.

Despite this progress of the integrative approach on the impact of stress on technology use, the authors had considered technostress as a single construct. This one-dimensional framework overlooked the unique effects of overload, invasion or complexity, which might respectively affect users' intention to adopt or to continue with new systems divergently. These approaches are indicative of the broader theme in previous research, which limited the capacity to capture the intricate mechanisms through which technology contributes to strain. As a whole, these papers reflect the advances and shortcomings in technostress research. On one side, they illustrate the shift from the one-dimensional to the multi-dimensional models and the diversity of the stress factors among different industries. On the other hand, they lack uniformity: some reviews are primarily descriptive (Kumar, 2024), others are limited to sectors (Arvai et al., 2024; Kaltenecker et al., 2023; Lanzl, 2023; Gupta & Banerjee, 2025), to dimensions (Tyrväinen et al., 2025); to interventions (Rohwer et al., 2022), or unidimensional in conceptualisation (Hossain et al., 2021). No review has thus far quantitatively established the dominance of the dimensions of technostress, transferred the associated challenges across contexts or attempted to reconcile confusions in the definition of the new emotional construct like techno-anxiety and techno-fatigue (Feng & Liu, 2024).

In order to bridge this gap, this review adopts the Technostress Creators model as a conceptual model (Tarafdar et al., 2007) and focuses mainly on five stressors: techno-overload, techno-complexity, techno-invasion, techno-insecurity and techno-uncertainty. The review examines the frequency of these stressors, the primary challenges associated with them, and where the new set of mediators and moderators fits within a larger conceptual model. This approach not only aggregates the dispersed evidence but also contributes to theoretical development by highlighting the changing character of technostress and revealing how it has implications for different areas, such as academic and work. Figure 1 presents the conceptual model that guides this review.



Notes: This conceptual model illustrates the primary technostress sub-dimensions (antecedents), along with moderators and mediators identified in the review. The arrows depict proposed relationships among constructs based on the synthesis of the reviewed studies. The numbers in parentheses represent the frequency of occurrence of each construct across the reviewed literature.

Figure 1: Conceptual Model Based on the Systematic Literature Review

3.0 Methodology

The study adopts the PRISMA criteria for systematic review implementation. The process consists of the following steps: 1) defining a clear research question, 2) choosing the appropriate data sources to search, 3) formulating an extensive search strategy, 4) setting up clear inclusion and exclusion criteria for study selection, 5) conducting a quality assessment, and 6) systematically extracting valuable data.

3.1 Data Sources

To ensure a comprehensive review of technostress dimensions, this study sourced literature solely from the Scopus database. Scopus was chosen as a database because of its wide, multidisciplinary coverage of quality, peer-reviewed literature in various discipline groups such as social science, business, computer science, and health disciplines, closely aligned with technostress research. According to Falagas et al. (2008), Scopus offers a broader journal range compared to Web of Science, and superior indexing of international publications, especially in non-US contexts. Its robust search and reliable metadata make it easy to search, extract, screen, and sort relevant studies. Scopus database also includes powerful filtering by document type, language and year; this added value reflects the increase in replicability and transparency in systematic reviews. As a result of concentrating on a recognised single database, this study prevents redundancies in the collection of searches and simplifies the process of search consolidation, while ensuring the reliability of the selected sources.

3.2 Search Strategy

The search keywords were carefully selected to capture literature discussing technostress and its dimensional structure comprehensively. The objective was to retrieve publications focusing specifically on the categorisation, definition, and analysis of technostress dimensions. The search for relevant literature was conducted using the following query: ("technostress" AND "dimension"). Table 2 presents the complete

search string, parameters, and filters applied in the Scopus database to ensure a precise and replicable search process.

Table 2: Search String and Filters for Paper Selection

Database	Search Field(s)	Full Boolean Query*	Year Range	Language	Document Type(s)
Scopus	TITLE ABS KEY	"technostress" AND (dimension OR dimensions)	2020 - 2025	English	Article (ar), Conference Paper (cp)

3.3 Study Selection

Throughout the search of the one database, a filter was consistently used to narrow down the results from the year 2020 to 2025. Additionally, Table 3 shows the database-specific measures that were taken to ensure a thorough search within the database.

Table 3: Database Search Parameters and Hits

Database	Database-specific Measure	Hits
Scopus	Search within TITLE-ABS-KEY ("technostress" AND "dimension") AND PUBYEAR > 2020 AND PUBYEAR < 2025 AND (LIMIT-TO (LANGUAGE , "english")) AND (LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ar"))	124

A comprehensive search yielded 75 records. Using Zotero, a reference management software (Ahmed & Dhubaib, 2011), steps 1-4 were conducted to filter and select the most relevant papers for quality assessment. The detailed selection process is as follows:

- 1) *Duplicate and Type Filter (DT)*: A total of 124 records were initially retrieved from the Scopus database using the search string: TITLE-ABS-KEY ("technostress" AND "dimension").
 - a. *DT1*: 32 records were excluded due to the publication year filter.
 - b. *DT2*: 9 records were excluded due to the language filter.
 - c. *DT3*: 8 records were excluded as non-journal/conference papers.This filtering process resulted in a total of 75 papers retained for screening.
- 2) *Field Screening*: The keyword "technostress" and "dimension" was used to search in Zotero, which screened the titles and abstracts to find relevant papers. The number of papers remained at 75 after screening.
- 3) *Exclusion Criteria 1 (EC1)*: Secondary papers, identified by the presence of keywords such as "review," "study," and "report" in the title were discarded after abstract review. 1 paper was excluded, leaving a total of 74 papers.
- 4) *Exclusion Criteria (EC2)*: 12 of the 74 papers were inaccessible or could not be downloaded, reducing the count to 62 accessible papers. In a final count of 62 papers that were carefully examined.

Figure 2 presents the flowchart of the selection process, illustrating the systematic approach taken from the initial pool of 124 records to the final selection of 62 papers included in this study.

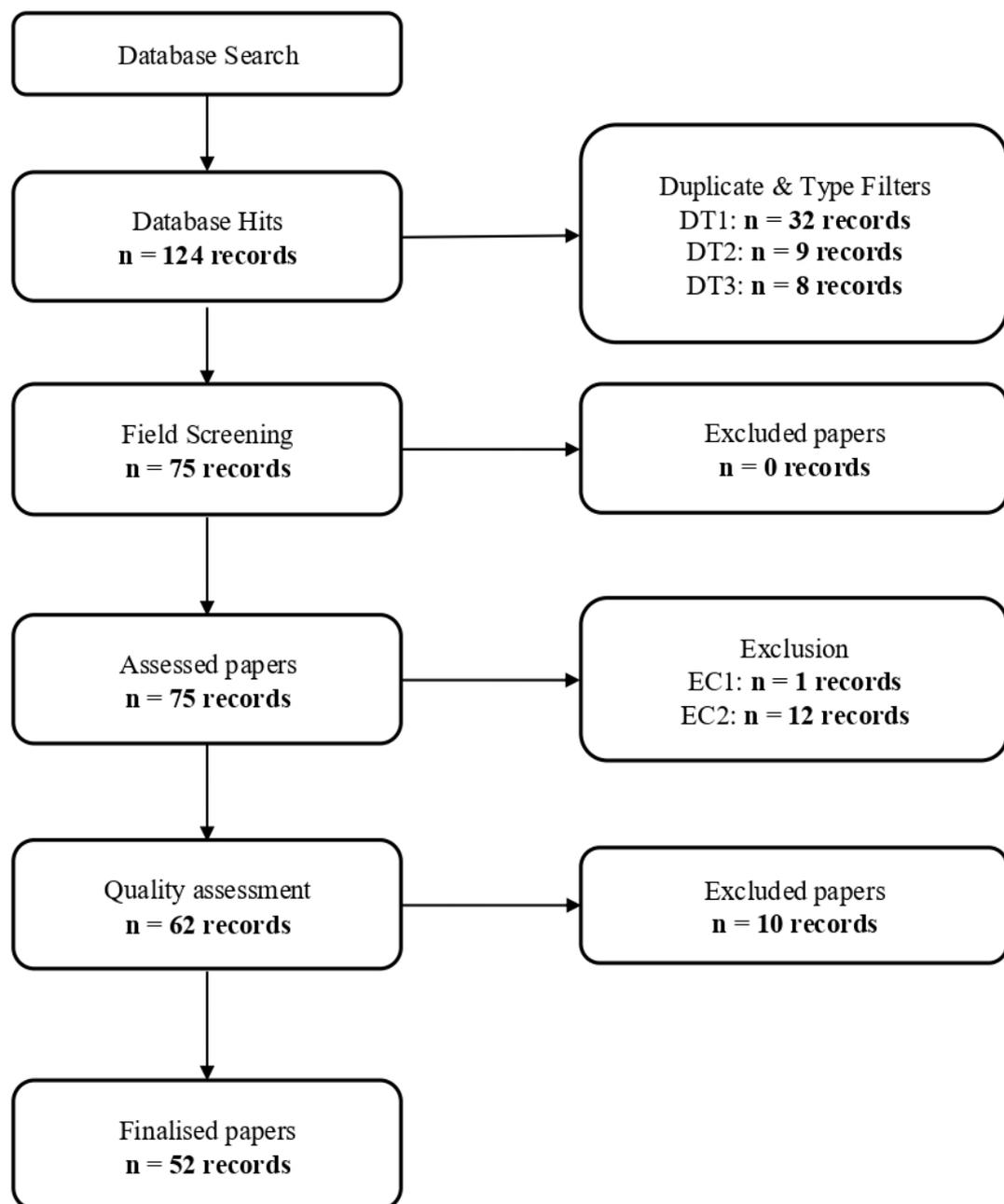


Figure 2: Flowchart of the Paper Selection Process

3.4 Quality Assessment

To maintain the rigour of the methodology and the reliability of the findings, the 62 included studies were examined by three quality assessment criteria in Table 4. These criteria were developed to provide clear direction for the inclusion process and to ensure

methodological consistency across the reviewed studies. Each criterion was scored according to a scoring rubric category used to determine the relevance, conceptual clarity, and empirical basis of each article.

Table 4: Quality Assessment Criteria

Item	Criteria	Score	Description
QA1	Does the study clearly identify or discuss specific technostress dimensions?	+1	Clearly names and describes dimensions with contextual relevance.
		+0.5	Mentions dimensions without full elaboration.
		0	Lacks dimension-specific focus or clarity.
QA2	Is the concept of technostress clearly defined and framed in terms of unidimensional or multidimensional measurement?	+1	Well-articulated and explicitly aligned with the study's objective.
		+0.5	Defined but with vague or limited explanation.
		0	Poorly defined or missing entirely.
QA3	Is the study based on empirical evidence with clear methodological support?	+1	Robust empirical basis with strong methodological justification.
		+0.5	Provides partial empirical insights but lacks depth.
		0	No clear empirical foundation or method is described.

The use of the quality assessment criteria allowed a formal assessment of all 62 papers. Table 5 presents a selection of studies to illustrate how the scoring was applied for each of the three quality criteria, along with their total scores and eligibility for inclusion in the final synthesis. The complete quality assessment scores for all 62 studies are provided in Appendix A.

Table 5: Selection of Studies with Quality Assessment Scores

No.	Sources	Score			Total
		QA1	QA2	QA3	
1.	Boyer-Davis and Berry (2022)	1	1	0.5	2.5
2.	Castillo et al. (2023)	1	1	1	3
3.	Choque-Cabrera et al. (2021)	0.5	0.5	0.5	1.5
4.	Christian et al. (2024)	1	1	0.5	2.5
5.	Correa et al. (2024)	0.5	0.5	0.5	1.5
6.	Datta et al. (2024)	1	0.5	1	2.5
7.	Intapunya and Mohan (2025)	1	1	0.5	2.5

This process ensured that only studies meeting rigorous methodological criteria were included in the review. Studies scoring more than 2 out of 3 on the quality assessment were classified as high quality and included in the final synthesis. As a result, 52 papers were selected for the final synthesis.

3.5 Data Extraction

To organise the analysis based on the core issue of technostress dimensions, a dimension-mapping strategy was used. In this process, we systematised each of the 52 studies by identifying the dimensions of technostress that were measured, to what extent the dimensions are represented across the studies, and whether their individual components were assessed or their multidimensionality was considered. Each paper was manually examined to identify if classic dimensions (eg, techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty) were present, along with newer aspects like techno-anxiety, techno-fatigue, and techno-addiction. When authors used specific terminology, wherever possible, this was noted verbatim and then listed according to conceptual similarity. This mapping resulted in a synthesis table that showed:

- The quantity of research applied to each dimension.
- Co-occurrence of dimensions in multi-dimensional models.
- Any unique dimension developed or modified throughout context-specific

research (i.e., healthcare, education, remote work).

- Distribution of included studies by use of 1, 2–4 or 5+ dimensions.

This mapping approach led to the identification of patterns for the conceptualisation and operationalisation of technostress, which supports evidence-based comparability and the identification of both consistency and inconsistency between empirical researchers.

4.0 Results

RQ1. What dimensions of technostress are most frequently reported?

Across the 36 empirical studies on the multidimensionals, five core dimensions consistently appeared: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Tarafdar et al. (2007) originally proposed that these dimensions were the most frequently cited and formed the backbone of technostress conceptualisation in all multidimensional studies. Table 6 provides a detailed frequency and context breakdown.

Table 6: Frequency and Context of Technostress Dimensions Reported

Sub-dimension	Frequency	Common Contexts
Techno-Overload	36	All Multidimensional Models
Techno-Complexity	35	Higher Education, Remote Work
Techno-Invasion	35	Teachers, Seafarers, Hybrid Roles
Techno-Insecurity	24	Hospital Staff, Developers
Techno-Uncertainty	21	Entrepreneurial Settings
Techno-Anxiety / Fatigue / Addiction	4	Healthcare, Students, IT Workforce

Moreover, Figure 3 shows that techno-overload, techno-complexity, and techno-invasion dominate the multidimensional technostress literature, whereas techno-anxiety, fatigue, and addiction remain relatively underexplored.

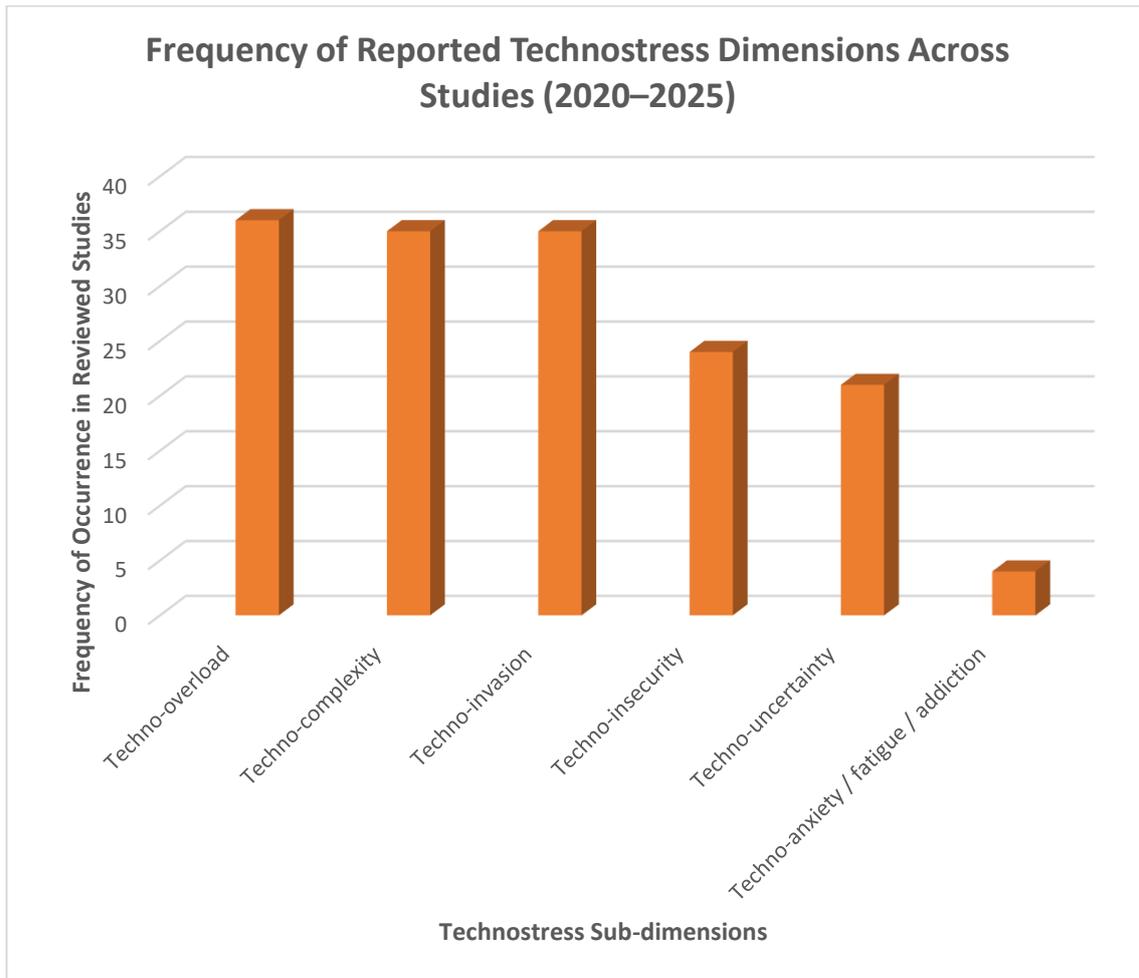


Figure 3: Frequency of Reported Technostress Dimensions Across Studies (2020–2025)

Figure 3 illustrates the annual distribution of technostress studies based on the number of dimensions measured from 2020 to 2025. The trend indicates a noticeable increase in studies employing more than three dimensions between 2023 and 2024, reflecting a shift toward multidimensional conceptualisations. In contrast, single-dimensional studies show a gradual decline, suggesting a growing consensus on the complexity of technostress measurement.

RQ2. What challenges are associated with each dimension of technostress?

Table 7 summarises the common challenges associated with each dimension that present the distinct psychological, behavioural, or environmental challenges, which were extracted through qualitative synthesis:

Table 7: Common Challenges Associated with Technostress Dimensions

Sub-dimensions	Common Challenges	Frequency
Techno-Overload	Information glut, 24/7 connectivity, pace pressure, burnout	30
Techno-Complexity	Steep learning curves, fragmented toolsets, loss of digital efficacy	28
Techno-Invasion	Work-life conflict, constant notifications, digital interruption	28
Techno-Insecurity	Job instability, fear of obsolescence, resistance to new tech	19
Techno-Uncertainty	Ambiguity in digital transitions, unclear system upgrades, and anxiety	17
Techno-Anxiety	Apprehension, panic attacks, and fear responses to tech interaction	4
Techno-Fatigue	Exhaustion due to screen time, repetitive digital exposure	3
Techno-Addiction	Compulsive tech use, lack of control, withdrawal-like symptoms	3

The analysis shows that each dimension manifests in unique psychological and contextual stressors. These challenges are particularly amplified in high-demand or high-tech environments such as remote work, healthcare, fintech, and academic settings.

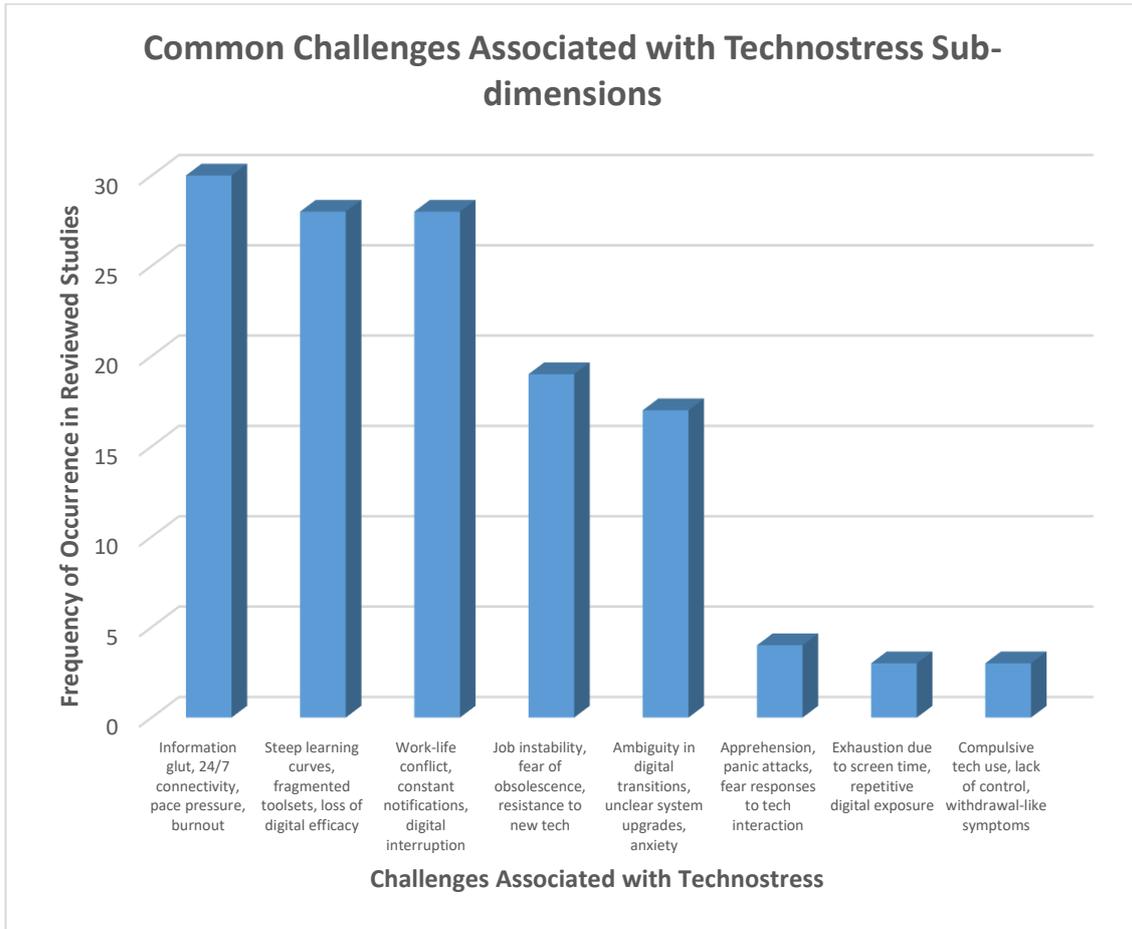


Figure 4: Common Challenges Associated with Technostress Sub-dimensions

Figure 4 shows that the highest reported issues were information glut, 24/7 connectivity, pace pressure, and burnout (n = 30), followed closely by steep learning curves, fragmented toolsets, and loss of digital efficacy (n = 28), as well as work–life conflict and constant notifications (n = 28). Less frequently reported challenges included apprehension and fear responses to technology (n = 4), exhaustion from prolonged screen time (n = 3), and compulsive technology use (n = 3). Therefore, Figure 5 presents the contexts in which the five core technostress dimensions most frequently appear. All multidimensional models reported these dimensions in 36 studies, followed closely by higher education and remote work settings (n = 35) and teachers, seafarers, and hybrid roles (n = 35). Hospital staff and developer contexts were cited in 24 studies, entrepreneurial settings in 21 studies, and healthcare, students, and IT workforce contexts in only four studies.

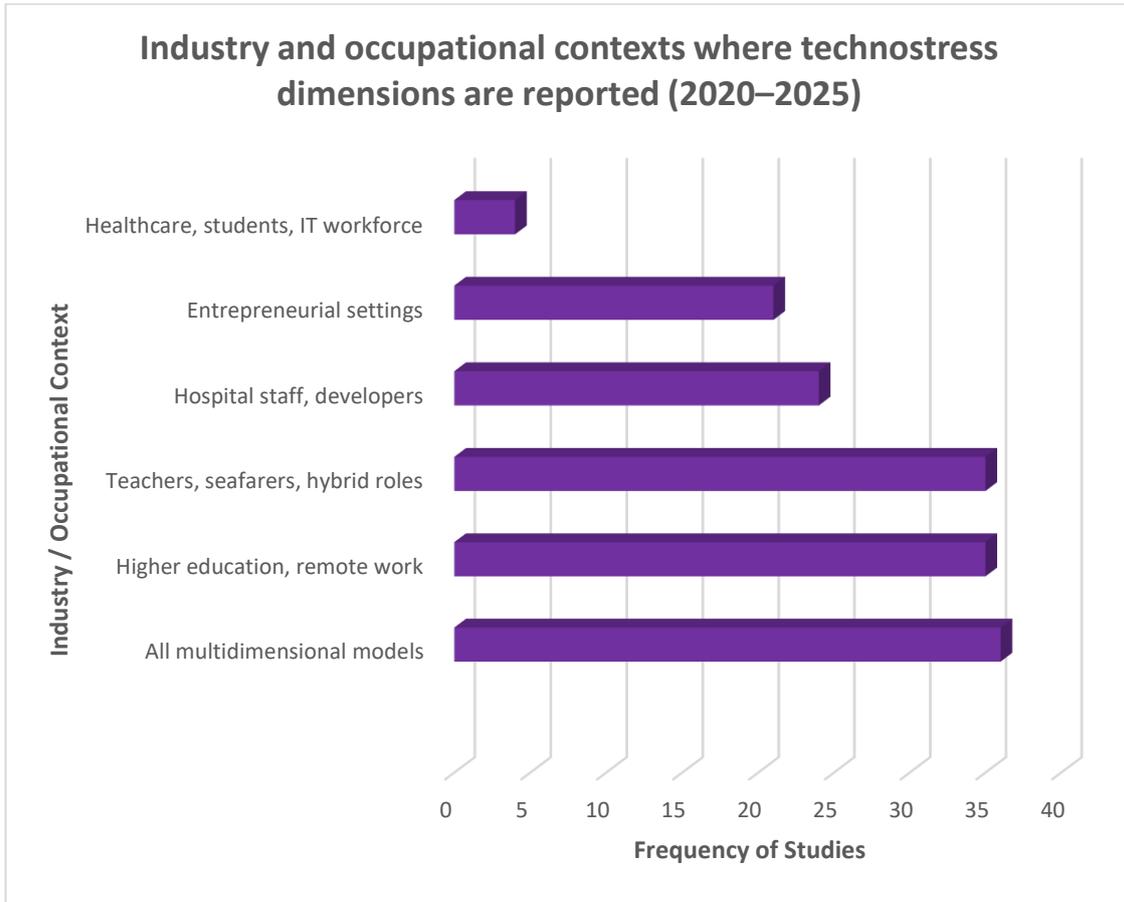


Figure 5: Industry and Occupational Contexts where Technostress Dimensions are Reported (2020–2025)

RQ3. How frequently is technostress measured as a unidimensional over multidimensional construct?

This review found a clear trend in Table 8 toward multidimensional measurement models, with 36 out of 52 of the studies using two or more technostress dimensions. The remaining 16 out of 52 of studies adopted a unidimensional approach, typically in exploratory or broad-scale surveys.

Table 8: Distribution of Unidimensional Versus Multidimensional Measurement Approaches

	No. of Dimensions	Frequency
Uni dimensional	1 dimension	16
TOTAL		16
	2 dimensions	1
Multidimension	3 dimensions	9
	4 dimensions	9
	5 dimensions	13
	More than 5 dimensions	4
TOTAL		36

Figure 6 illustrates the distribution of technostress measurement approaches across the reviewed studies between 2020 and 2025. A notable concentration of studies adopted a unidimensional approach ($n = 16$), indicating that many researchers continue to conceptualise technostress as a single, aggregated construct. In contrast, only one study measured two distinct dimensions. Studies employing three and four dimensions were more frequent ($n = 9$ each), while five-dimensional models accounted for 13 studies. A small subset of studies ($n = 4$) extended beyond five dimensions, incorporating emerging constructs such as techno-anxiety, techno-fatigue, and techno-addiction. This distribution highlights a split in methodological practices, where some scholars prioritise simplicity in measurement, while others aim to capture a broader spectrum of digital stressors.

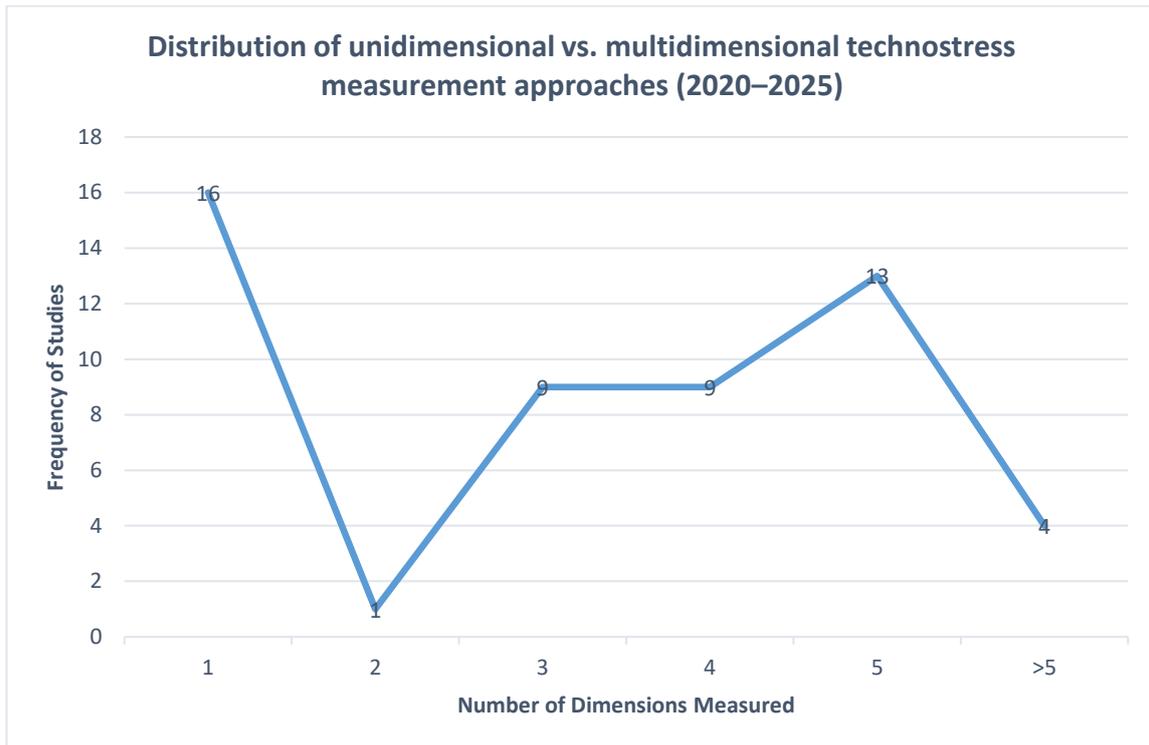


Figure 6: Distribution of Unidimensional Versus Multidimensional Technostress Measurement Approaches (2020–2025)

Multidimensional studies were typically more granular in their analysis and often employed structural equation modelling or factor analysis to distinguish between dimensions. In contrast, unidimensional approaches were more common in exploratory surveys or when technostress was used as a moderating or control variable. This suggests a growing consensus toward the benefits of multidimensional modelling, though unidimensional constructs remain valuable for simpler models or broad-scale scanning.

5.0 Discussion

This review provides a more holistic picture of how technostress is understood and measured in the recent literature from 2020 to 2025. The findings demonstrate the pre-

eminence of five key sub-dimensions (techno-overload, techno-complexity, techno-invasion, techno-insecurity and techno-uncertainty) that were present in 36 studies (described in Figure 3), highlighting their authoritative position in the current measurement practice (Golz et al., 2024; Kaltenecker et al., 2023). Meanwhile, emerging affective dimensions, such as techno-anxiety and techno-fatigue, underscore a greater realisation of the emotional and mental strains of technology (Califf et al., 2020; Gupta & Banerjee, 2025; Simba et al., 2025).

More than two-thirds of the studies reviewed applied multidimensional measurement (Figure 6), reflecting an acknowledgement of the complex and multifaceted nature of technostress. As illustrated in Figure 3 and Figure 4, techno-overload and techno-invasion dominate the challenge landscape, commonly associated with information glut and work–life conflict, respectively (Arnold et al., 2023; Harunavamwe & Kanengoni, 2023). These patterns illustrate the significance of stressor-specific responses where workload-reduction and pace-management strategies for techno-overload, versus boundary-management or “right-to-disconnect” policies for techno-invasion (Hopkins, 2024).

Recent studies also identify moderators and mediators that shape technostress outcomes. Moderators such as digital literacy, leadership style, and coping strategies, buffer technostress effects (Bauwens et al., 2021; Gupta & Banerjee, 2025). For instance, high digital literacy reduces the effect of techno-complexity on burnout, while empowering leadership dampens the impact of techno-insecurity (Kaltenecker et al., 2023). Mediators such as digital self-efficacy and cognitive load explain how technostress translates into outcomes. For instance, Gupta and Banerjee, (2025) showed that techno-insecurity reduces self-efficacy, which subsequently predicts quiet-quitting behaviours. Collectively, these findings position technostress research within a Job-Demands–Resources logic, where technology-related demands and personal or organisational resources jointly influence performance and well-being.

From a practical perspective, organisations can leverage these insights to design tiered interventions. At the primary level, simplifying workflows can help reduce techno-complexity. At the secondary level, providing digital-literacy training and fostering

leadership behaviours that model healthy technology use can buffer stress. At the tertiary level, individual coping strategies such as micro-breaks and digital-detox programmes provide additional relief (Verde-Avalos et al., 2025). Despite these advances, inconsistencies remain in how dimensions are conceptualised, labelled, and measured across studies. For instance, some researchers use different terms for similar constructs (e.g., “technological anxiety” versus “techno-anxiety”), while others differ in the number of dimensions included, even when employing the same framework. This lack of standardisation complicates meta-analyses and challenges future efforts to build cumulative knowledge.

6.0 Limitations and Future Studies

This review has several limitations. First, the articles were sourced from the Scopus database. The relevant research published in sources were not indexed by Scopus have been overlooked. Second, this review included only journal articles and excluded other sources such as book chapters, conference papers. This have prevented the search from finding any relevant publications. Future studies should focus the development of common measurement scales that can consistently capture the five established sub-dimensions of technostress (techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty), and additional affect categories such as techno-anxiety, techno-fatigue, and techno-addiction. These instruments should be cross-validated across sectors and cultural backgrounds for comparability of results. Additionally, an industry-specific adaptations are also needed since the pressures on healthcare (e.g., patient safety risks) vs from those in temporary or on-demand jobs (e.g., being managed and monitored by automated systems).

Methodologically, future studies should adopt longitudinal and experience-sampling designs to capture the dynamic and causal nature of technostress. Combining self-report measures with objective digital-trace data (e.g., system logs, screen-time patterns) would provide richer insights into when and under what circumstances technostress arises. In addition, future researchers should investigate possible mediating variables (e.g., cognitive load or digital self-efficacy) and moderating factors (e.g.,

leadership style, work-from-home arrangements or digital literacy). For instance, experimental and field-based intervention studies could examine the effects of strategies like notification control, simplified user interfaces or right-to-disconnect policies on both performance and well-being. Finally, emerging dimensions should be validated with robust measurement tools, and multiple modelling approaches (unidimensional, multidimensional, hierarchical) should be compared to refine the conceptual boundaries of technostress.

7.0 Conclusion

This systematic review synthesised evidence from 52 empirical studies published between 2020 and 2025 to provide an updated understanding of technostress in the digital era. By mapping the frequency of technostress dimensions, identifying associated challenges, and examining measurement approaches, it offers new insights into how technostress is conceptualised and studied across different contexts. The findings confirm the dominance of the five core sub-dimensions while drawing attention to the emergence of affective dimensions such as techno-anxiety and techno-fatigue, signalling a shift toward the emotional and mental burden of technology use. This study makes both theoretical and practical contributions. Theoretically, it integrates dimension-specific frequency analysis into a systematic review, linking each dimension to empirically documented challenges, and tracks the methodological evolution from unidimensional to multidimensional models. Practically, these findings provide evidence-based guidance for organisations to design tiered interventions, for policymakers to consider supportive digital well-being regulations, and for digital system designers to incorporate user-centred design features that minimise overload and intrusion. This review advances theoretical understanding and practical strategies for addressing technostress by offering a multidimensional synthesis, clarifying current conceptual challenges, and providing actionable insights for researchers, practitioners, and decision-makers in an increasingly digitalised world.

Author Contributions Statement: The authors worked together for this research paper. Conceptualisation: J.R; Methodology: J.R; Formal analysis: J.R; Writing – original draft preparation; J.R, N.K; Supervision: N.K. All authors have read and agreed to the published version of the manuscript.

Funding Statement: No funding was received to assist with the preparation of this manuscript.

Informed Consent Statement: Informed consent was obtained from all the individual participants included in this study.

Data Availability Statement: The data are available from the corresponding author upon request.

Acknowledgement: The authors would like to extend their heartfelt gratitude to 2 reviewers of the International Journal of Management, Finance and Accounting (IJOMFA) for their precious feedback and comments, which were instrumental in the completion of this research.

Conflict of Interest Statement: Both authors have no competing interests to declare that are relevant to the content of this study.

Appendix A

No.	Source	Score			Total
		RQ1	RQ2	RQ3	
1.	Boyer-Davis and Berry (2022)	1	1	0.5	2.5
2.	Castillo et al. (2023)	1	1	1	3
3.	Choque-Cabrera et al. (2021)	0.5	0.5	0.5	1.5
4.	Christian et al. (2024)	1	1	0.5	2.5
5.	Correa et al. (2024)	0.5	0.5	0.5	1.5
6.	Datta et al. (2024)	1	0.5	1	2.5
7.	Intapunya and Mohan (2025)	1	1	0.5	2.5
8.	Koç, H. and J. Hynes (2023)	0.5	0.5	0	1
9.	Lanzl (2023)	1	0.5	0.5	2
10.	Lopes et al. (2024)	1	1	1	3
11.	Mahapatra, M., and A.-F. Cameron (2023)	1	0.5	0.5	2
12.	Margocahyo et al. (2023)	0.5	0.5	0.5	1.5
13.	Martínez-Navalón et al. (2023)	1	0.5	1	2.5
14.	Shadbad and Biroş (2020)	1	1	1	3
15.	Stana, R.A., and H.W. Nicolajsen (2024)	1	0.5	0.5	2
16.	Subchi et al. (2024)	1	1	0.5	2.5
17.	Z. Zhang et al. (2022)	1	1	1	3
18.	Aziz et al. (2021)	1	1	0.5	2.5
19.	Ardèvol-Abreu et al. (2022)	0.5	0.5	0.5	1.5
20.	Cuadrado et al. (2024)	1	0.5	0.5	2
21.	García et al. (2021)	1	0.5	0.5	2
22.	González-López et al. (2021)	1	0.5	0.5	2
23.	Kaltenegger et al. (2023)	1	0.5	1	2.5
24.	Lee (2021)	1	1	0.5	2.5
25.	Del Carmen Rey-Merchán and López-Arquillos (2022)	1	0.5	0.5	2
26.	Simba et al. (2025)	1	0.5	0.5	2
27.	Tarafdar et al. (2024)	1	1	1	3
28.	Bauwens et al. (2021)	1	0.5	0.5	2
29.	Bayrak and Muslu (2025)	1	0.5	0.5	2
30.	Cazan et al. (2024)	1	0.5	0.5	2

No.	Source	Score			Total
		RQ1	RQ2	RQ3	
31.	Charalampous et al. (2022)	0.5	0.5	0.5	1.5
32.	Fiore and Decataldo (2022)	1	0.5	0.5	2
33.	Dutta and Mishra (2023)	1	1	1	3
34.	Galicia and Ortiz (2023)	1	0.5	0.5	2
35.	Jurek et al. (2021)	1	0.5	0.5	2
36.	Saleem and Malik (2023)	1	1	1	3
37.	Verde-Avalos et al. (2025)	1	1	0.5	2.5
38.	Gupta and Banerjee (2025)	1	0.5	1	2.5
39.	Reyes and Santiago (2024)	1	1	0.5	2.5
40.	Golz et al. (2024)	1	1	0.5	2.5
41.	Rademaker et al. (2025)	1	1	0	2
42.	Vallone et al. (2023)	1	1	0.5	2.5
43.	Ata and Saltan (2023)	0.5	0.5	0.5	1.5
44.	Baabdullah et al. (2021)	0.5	0.5	0.5	1.5
45.	Chopra et al. (2025)	0.5	0.5	0.5	1.5
46.	Churampi-Cangalaya et al. (2023)	1	1	0.5	2.5
47.	Feng and Liu (2024)	1	1	0.5	2.5
48.	Feste et al (2023)	1	0.5	0.5	2
49.	Hämäläinen et al. (2024)	1	0.5	0.5	2
50.	Kashive et al. (2021)	1	0.5	0.5	2
51.	Korzynski et al. (2020)	1	0.5	0.5	2
52.	Kräft et al. (2024)	1	1	1	3
53.	Liu et al. (2025)	0.5	0.5	1	2
54.	Loh et al. (2022)	0.5	0.5	0.5	1.5
55.	Mehtälä et al. (2022)	1	1	1	3
56.	Meyer and Tisch (2023)	1	1	0.5	2.5
57.	Pang et al. (2022)	1	1	0.5	2.5
58.	Peters and Feste (2023)	1	0.5	0.5	2
59.	Shi et al. (2023)	1	1	1	3
60.	Solís et al. (2023)	1	1	0.5	2.5
61.	Thurik et al. (2023)	1	1	0.5	2.5
62.	Urrejola-Contreras (2023)	1	0.5	0.5	2

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