

## Telework in Times of Crisis: Perceptions of Technostress and Job Performance

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### Abstract

Although organizations had already considered telework a viable option for several years, the COVID-19 pandemic heightened its importance, as it became the only feasible solution to maintain operations across most productive sectors. Currently, an increasing number of companies adopt this work modality. However, little is known about how levels of stress and job performance evolved during the lockdown. This article aims to describe how the forced implementation of telework influenced technostress levels and employee performance. A qualitative, descriptive, cross-sectional study was conducted, drawing on ten semi-structured interviews with teleworkers from various sectors. The main findings revealed negative manifestations of technostress, yet also highlighted positive aspects such as learning and sustainability. Regarding performance, personal values, individual skills, technological proficiency, and self-management contributed to maintaining or enhancing it. The article offers recommendations for mitigating and managing technostress.

**Keywords:** Telework, covid-19, technostress and performance.

## **Introduction**

The COVID-19 pandemic triggered profound changes in organizational structures—many of them unforeseen—such as the forced implementation of telework as an attempt to adapt to shifting environmental conditions in order to sustain operations and preserve economic activity (Belzunegui-Eraso & Erro-Garcés, 2020; Chang et al., 2020).

This imposed transition to telework disrupted both organizations and individuals. According to several scholars (Blau, 1981; Tarafdar et al., 2017), when environmental demands exceed workers' abilities and knowledge, mismatches arise that may induce stress responses, including anxiety and fatigue.

Recent years have witnessed growing interest in how organizations manage transitions involving new technologies (Ayyagari et al., 2011; Tarafdar et al., 2017; Salanova et al., 2007, 2013; Borle et al., 2021). For this reason, implementing telework should not be treated as a mere shift in work modality. Instead, it requires a systemic organizational transformation that enables employees and their teams to navigate the adaptation process (Kossek et al., 2015).

Although some evidence suggests that work flexibility may enhance performance (Quaglia & Gutiérrez, 2020), it remains crucial to understand how externally imposed changes, such as mandatory telework, affect technostress levels and employee performance.

This inquiry calls for a closer examination of individual experiences during the mandatory adoption of telework. Against this backdrop, the present article seeks to describe how forced telework influenced technostress and job performance among teleworkers.

## **Studies on Telework**

Telework refers to a flexible, subordinate, and paid work arrangement in which employees carry out tasks away from the employer's premises, relying primarily on information and communication technologies (ICTs) to facilitate interaction and oversight between workers and employers (De Vries et al., 2019; Gálvez, Tirado & Alcaraz, 2019; Ley Federal del Trabajo, 2021: 79). For the purposes of this study, ICTs include the internet, email, telephone, chat tools, and web conferencing platforms, among others.

Before the pandemic, telework had already attracted scholarly interest as a strategic response to environmental shifts. Its origins date back to the 1973 oil crisis, during which Nilles' contributions positioned him as the father of telework (Gentilin, 2020).

The study of telework intensified after the outbreak of COVID-19 (Kodama, 2020; Hodder, 2020; Katsabian, 2020). Nonetheless, previous research had examined it from a social perspective (Bailey & Kurland, 2002; Blount, 2015; Messenger & Gschwind, 2016; Gentilin, 2020; Santana & Cobo, 2020), emphasizing its role in achieving work–family balance (Gálvez et al., 2020; Kossek et al., 2015) and as a driver of social innovation and inclusion (Ernesto & Bernardino, 2019). In Mexico, scholars have explored the legal and labor frameworks of telework (Jiménez & Pérez, 2018), as has occurred in countries such as Spain, Argentina, and Colombia (Sierra, 2019; Gentilin, 2020).

The COVID-19 crisis compelled firms to adopt telework as a way to ensure employee safety while maintaining economic activity. This shift stemmed mainly from the need to prevent the spread of infectious diseases among workers (Belzunegui & Erro, 2020).

Baruch and Nicholson (1997) proposed four critical elements that influence the successful implementation of telework within organizations. The first centers on the organization itself and its strategic decision to adopt this modality in alignment with its corporate culture. This decision typically requires resource allocation, with the expectation of organizational returns.

The second element involves the home and family environment. Establishing a proper workspace at home—equipped with a desk, chair, electricity, lighting, and internet access—proves essential. This setup must coexist with household dynamics involving partners, parents, children, or siblings (Baruch & Nicholson, 1997).

The third concerns the nature of the job, which must allow remote execution through ICTs, without relying heavily on face-to-face interaction—as would be the case on a production line (Baruch & Nicholson, 1997).

Lastly, the individual plays a pivotal role. Employees' competencies, personalities, and motivation shape the outcome of telework implementation. In the absence of digital skills, teleworking may produce adverse effects, heightening stress levels as employees struggle to adapt—a phenomenon known as technostress (Baruch & Nicholson, 1997).

## **Technostress**

Technostress represents an emerging, interdisciplinary research phenomenon that establishes a theoretical bridge between the literature on information systems and psychological stress. Scholars in this field examine how and why the use of information and communication systems places various demands on individuals. Defined as the stress experienced due to excessive use of information and communication technologies (ICTs), technostress triggers coping responses that often lead to physical and psychological effects detrimental to workers (Tarafdar et al., 2017; Salanova et al., 2007, 2013; Elizalde, 2021). Recently, the term “digital burnout” has gained traction, describing a condition caused by the uncontrolled, excessive, and unconscious use of ICTs (Sharma et al., 2020; Özdemir, 2020).

In many organizations, the COVID-19 pandemic catalyzed the adoption of flexible work systems supported by ICTs (Elizalde, 2021; Hodder, 2020; Katsabian, 2020; Kodama, 2020). Consequently, measuring technostress levels and the performance of teleworkers poses a challenge for human resource management (Ramos-Villagrana et al., 2019).

The study of technostress among employees has gained prominence in recent years (Antonio-Javier, 2025; Ayyagari et al., 2011; Borle et al., 2021; Feng, 2021; Salanova et al., 2007, 2013; Salazar-Concha et al., 2021; Villavicencio-Ayub et al., 2020; Villavicencio-Ayub & Cazares, 2021), largely due to the sustained and intensive use of ICTs (Shirish, 2021) and the demands these tools impose—such as continuous learning and intrusion into personal life. These demands often lead to negative impacts on individual performance (Borle et al., 2021; Owusu-Ansah et al., 2016; Salanova et al., 2007), stemming from organizational expectations (Elizalde, 2021; Ragu-Nathan et al., 2008; Tarafdar et al., 2017).

In contrast to its negative consequences, technostress may also yield positive outcomes. Individual proficiency in digital systems can increase productivity and enhance job performance, while improving the ability to manage stress induced by technology (Shirish, 2021; Tarafdar et al., 2017).

According to Blau (1981), stress arises from mismatches triggered by work overload. Ayyagari et al. (2011) identified technology-related overload as a stressor that may lead to maladjustment and hinder adaptation.

Adding to this, technocomplexity refers to the effort employees must exert when they face compressed timelines for learning new technologies and adapting to changing work demands (Tarafdar et al., 2017).

Salanova (2007) noted that work overload constitutes one of the main causes of technostress. This condition typically emerges when individuals must complete tasks within tight deadlines, thereby increasing cognitive demands. The author distinguishes between two types of overload: quantitative, which relates to the number of tasks expected within a limited timeframe, and qualitative, which involves the complexity of tasks that push workers to their cognitive limits.

Technological overload arises from the intensive use of information and communication systems, which often flood users with information and functionalities. Employees must process this input to meet client or colleague expectations while complying with organizational security protocols (Tarafdar et al., 2017).

Technoaddiction refers to the excessive and compulsive use of ICTs, often during inappropriate times, including outside standard working hours (Villavicencio-Ayub & Cazares, 2021).

Srivastava et al. (2015) provided evidence of the potential benefits derived from frequent ICT use. These benefits relate to individual differences, particularly personality traits, which may moderate the relationship between technostressors and workplace outcomes such as job burnout and employee engagement.

## **Job Performance**

Job performance comprises a set of integrated systems aimed at achieving organizational objectives (Bautista, Cienfuegos & Alquilar, 2020). Its evaluation remains complex, as it must estimate “the employee’s overall performance and total contribution to the company” (Werther & Davis, 2008:302). Therefore, any assessment must account for a range of key elements and performance standards—whether individual or collective—including feedback mechanisms, personnel records, and human resources decisions.

Additionally, evaluators must define norms and guidelines grounded in job-related factors; otherwise, outcomes risk becoming vague or subjective, offering little value to the organization (Werther & Davis, 2008).

In individual assessments for office-based positions, performance rarely lends itself to direct productivity metrics. To address this challenge, scholars such as Koopmans et al. (2012) have developed instruments to measure individual job performance in white-collar roles—those

involving coordination, management, and administrative tasks—in both traditional office settings (Ramos-Villagrasa et al., 2019) and, more recently, virtual environments (Antonio-Javier et al., 2023). This evaluation framework comprises three dimensions: task performance, contextual performance, and counterproductive work behavior (Antonio-Javier et al., 2023; Koopmans et al., 2012; Ramos-Villagrasa et al., 2019).

Task performance refers to the execution of duties specific to the job itself. Contextual performance involves behaviors that support coworkers and foster a collaborative work environment. In contrast, counterproductive work behaviors encompass harmful actions that undermine individual or team performance (Antonio-Javier et al., 2023; Antonio-Javier & Nava-Rogel, 2023; Koopmans et al., 2012; Ramos-Villagrasa et al., 2019).

### **Telework and Job Performance**

According to Apgar (1998), one of the main reasons executives opt for flexible work systems lies in cost reduction and the potential to increase productivity. Additionally, the author argued that telework strengthens organizational competitiveness and supports talent retention by fostering motivation among employees.

Peters and Den Dulk (2003) attributed the slow adoption of telework to managers' lack of trust in employees' ability to work autonomously from home. Implementing telework systems often proves challenging due to deeply rooted behavioral norms and the complexities of managing cultural change (Apgar, 1998).

Building upon the critical factors identified by Baruch and Nicholson (1997)—namely the individual, the organization, the job, the home, and the family—Berube Kowalski and Swanson (2005) emphasized trust, support, and communication as key to telework success. These elements interact across all organizational levels. Without a culture grounded in trust, trust-based relationships between managers and teleworkers rarely emerge.

In practice, trust positively correlates with perceived performance and job satisfaction. A foundational element of a trust-based culture involves implementing performance management systems oriented toward results (Berube Kowalski & Swanson, 2005).

Clark et al. (2012) suggested that individuals whose personality traits align with the demands of remote work tend to adopt more favorable attitudes toward telework. Their findings linked agreeableness to positive attitudes, while neuroticism showed a negative association.

Smith, Patmos, and Pitts (2015) proposed that the Big Five personality traits—extraversion, openness, agreeableness, conscientiousness, and neuroticism—can help predict teleworkers' job satisfaction. Conscientious employees typically score higher on performance evaluations due to their organization, diligence, thoroughness, persistence, and tenacity, which also foster leadership potential (Clark et al., 2012).

Bohlander, Snell, and Sherman (2001) outlined three primary factors influencing employee performance:

1. Ability: including technical, analytical, interpersonal, problem-solving, and communication skills, along with physical limitations.
2. Motivation: encompassing professional ambition, frustration tolerance, job satisfaction, perceived fairness, and goal clarity.
3. Work Environment: such as tools and materials, job design, economic conditions, union presence, rules and policies, managerial support, and legal frameworks.

An employee who lacks access to proper resources or remains unaware of organizational rules and policies may struggle to perform effectively. Likewise, even with resources in place, insufficient technical knowledge or poor analytical and communication skills often result in underperformance. Conversely, employees with strong abilities and favorable conditions may still underdeliver if they lack motivation, potentially leaving the organization due to job dissatisfaction. “Talented employees with low motivation rarely succeed” (Bohlander & Snell, p. 343).

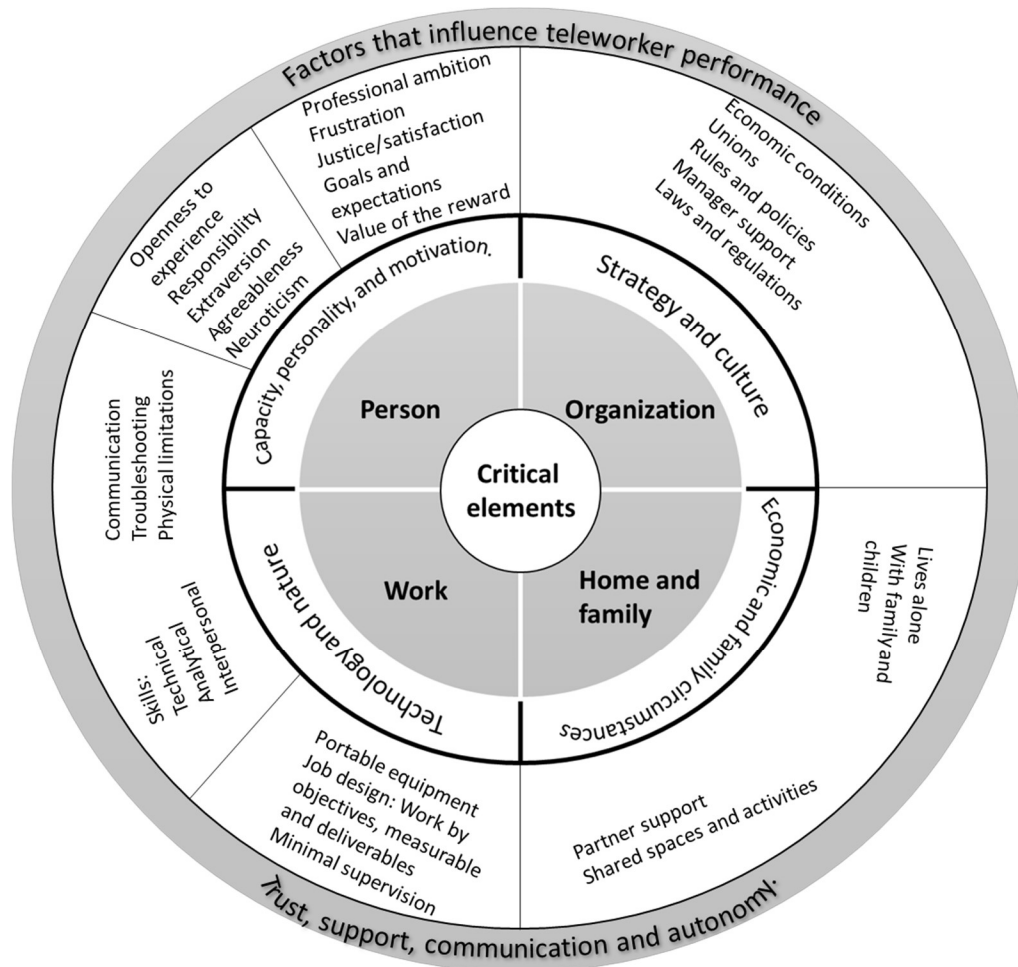
Werther and Davis (2008, p. 303) noted that external factors—such as family, health, and financial circumstances—may also influence performance. However, the most critical determinants often stem from individual effort, shaped by competencies, perceived value of rewards, belief in reward-effort linkage, and the employee’s general perception of their job’s purpose (Chiavenato, 2009). Furthermore, research has shown that increasing workplace autonomy tends to improve performance outcomes (Hackman & Oldham, 1976).

Figure 1 summarizes the factors affecting teleworker performance, emphasizing critical elements for effective and successful telework. Based on the theoretical review, the organization emerges as the first critical factor. It assumes responsibility for initiating telework, developing a migration strategy toward more flexible arrangements, and adapting to economic and structural conditions, union presence, internal policies, regulatory frameworks, and organizational culture—particularly managerial support for remote employees (Baruch & Nicholson, 1997).

The next factor influencing teleworker performance involves the nature of the job (job profile) and the skills required to fulfill it. Employees must work toward measurable, deliverable objectives and carry out their tasks with minimal supervision. The technology that enables task completion includes portable devices, laptops, mobile phones, broadband, and other tools (Baruch & Nicholson, 1997).

The third critical level pertains to the individual, specifically the teleworker’s capacity, which encompasses technical, analytical, interpersonal, and communication skills, as well as problem-solving abilities and, in certain cases, physical limitations (Baruch & Nicholson, 1997). Some authors argue that the worker’s personality traits—such as extroversion, candor, agreeableness, conscientiousness, and neuroticism—may influence job performance (Srivastava et al., 2015).

Figure 1. Factors influencing teleworker performance.



Source: Adapted from Hackman and Oldham (1976); Baruch and Nicholson (1997); Feldman and Gainey (1997); Bohlander and Snell (2001); Berube and Swanson (2005); Chiavenato (2009); Smith, Patmos, and Pitts (2015).

At the individual level, motivation also plays a key role. It reflects professional ambition, frustration, perceptions of fairness, job satisfaction, personal goals and expectations, and the perceived value of rewards.

The final critical factor relates to home and family conditions (Baruch & Nicholson, 1997), including economic and familial circumstances. Whether the teleworker lives alone or with family, receives partner support, and shares spaces or responsibilities—all these elements shape job performance. Within these domains, self-efficacy, trust, support, communication, and autonomy serve as important mediating elements across all dimensions (Hackman & Oldham, 1976; Berube Kowalski & Swanson, 2005).

Based on the analysis of these studies—and considering that the present research focuses on the individual as a critical factor in the proposed framework—the study formulates the grand tour question (McCaslin & Scott, 2003): How did the forced implementation of telework impact technostress levels and teleworker performance during the COVID-19 pandemic? The following section outlines the path taken to answer this question.

## Metod

During the COVID-19 pandemic, most organizations shifted abruptly to telework in order to maintain operations. Faced with such an unforeseen decision, managers failed to assess stress levels and job performance, thus missing the opportunity to generate records that could support decision-making in the post-pandemic reality. This article examines how the forced implementation of telework affected levels of technostress and teleworker performance.

The study followed a qualitative, non-experimental, cross-sectional design. Researchers applied a semi-structured interview format to a convenience sample of ten teleworkers. Data collection took place in September and October 2021. The transcription process employed the “Transcribe” tool, while the analysis and coding of qualitative data relied on ATLAS.ti 9 software. To preserve participant confidentiality, direct quotations appear under anonymized codes assigned to each of the ten respondents (Figure 2).

Figure 2. Participant Codes

Code	Sector	Job Type	Number of Quotations
E1T	Automotive	Employee	52
E2G	Metalworking	Manager	69
E3T	Food Industry	Employee	23
E4T	Automotive	Employee	43
E5G	Logistics Services	Manager	58
E6T	Metalworking	Employee	81
E7G	Metalworking	Manager	60
E8G	Metalworking	Manager	70
E9G	Automotive	Manager	45
E10T	Automotive	Employee	43

Source: Prepared by the authors based on data collected through interviews.

## Results

Researchers conducted interviews with ten teleworkers from various productive sectors. In compliance with social distancing protocols during the lockdown, participants authorized the recording of phone interviews via the Recorder application.

To address the grand tour question (McCaslin & Scott, 2003), the analysis first explored manifestations of technostress. Most participants reported experiencing technostress due to the pressure to master digital tools—an outcome consistent with previous findings (Borle et al., 2021; Elizalde, 2021; Salanova et al., 2007, 2014; Tarafdar et al., 2007, 2017).

A lack of preparedness in system usage and activity coordination led to excessive meetings, frequent calls, alternative connectivity attempts, and increased control mechanisms. These conditions triggered technostress, often expressed as anxiety caused by unfamiliarity with ICTs (techno-complexity), frustration masked by compulsive smartphone use (techno-addiction), and persistent work overload involving digital tools (techno-overload) as well as fatigue associated with prolonged digital engagement (techno-fatigue). The latter two emerged as the most frequently cited symptoms (see Figure 3).

Figure 3. Manifestations of Technostress

Techno-Complexity	Techno-Addiction	Techno-Overload	Techno-Fatigue
<p>“Technology keeps failing—people don’t know how to use it. Some try to connect, their Internet goes down, they don’t know the platform, can’t mute the mic... all those little things. That doesn’t help and ends up reducing meeting productivity.” (E10T)</p> <p>“In terms of communication—or rather, the technology side—my Internet connection often failed unexpectedly.” (E1T)</p> <p>“They sent us support materials on how to run meetings more effectively—mainly regarding connectivity. For example, which plant servers to connect to for better performance, or tips like muting your microphone during meetings or avoiding multiple people talking at once. These guidelines emerged gradually through experience.”</p>	<p>“Those truly committed to their jobs will respond from anywhere. But those who get distracted, or love their phones, stay glued to them—whether at work or at home. Speaking from experience, I noticed that with the previous team. People remained chained to their phones, and honestly, you won’t change that.” (E7G)</p> <p>“Staying glued to the phone the whole time, talking just to make myself understood... I absolutely had to make the call.” (E1T)</p> <p>“Another challenge, in some cases, involved explaining when to stop working. For instance, right now, at eight in the evening, some people still handle unfinished tasks—they haven’t even made</p>	<p>“We intruded into a space that didn’t belong to us, and that brought along certain additional responsibilities.” (E8G)</p> <p>“Project follow-ups... virtual meetings became the norm.” (E3T)</p> <p>“At eight in the evening, some people still work on pending tasks. Later, the complaints follow: ‘I log in at all hours of the night... I reconnect at ten.’” (E5G)</p> <p>“Managing time became extremely difficult. One person called while I still talked to another.” (E8G)</p> <p>“Digital tools brought endless conferences about simple issues. They</p>	<p>“I saw colleagues—supervisors or managers—receiving sudden calls for meetings at 8 or 9 p.m., even on Saturdays. In that sense, work hours lost all boundaries. Sometimes, they expected you to be available 24/7. It didn’t happen to me, but I definitely witnessed it.” (E1T)</p> <p>“Another key point involves explaining the importance of respecting a work schedule—meeting responsibilities and managing time, including setting clear stop-work hours.” (E5G)</p> <p>“I had up to eight video calls in one day—that level of intensity gets very stressful.” (E3T)</p> <p>“Each week, we held multiple meetings to discuss the same topic.”</p>

dinner yet because they scheduled too many.” (E2G)  
insist on closing their day (E9G)  
properly. Then come the  
complaints: “I connect at  
all hours of the night.”  
(E5G)

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Source: Prepared by the authors based on data collected through interviews.

Despite all the challenges, employees managed to adapt to the new demands, demonstrating their resilience. Tarafdar et al. (2017) and Srivastava et al. (2015) argue that technostress can lead to positive outcomes. In this regard, the testimony of an older participant stands out. He described how he adapted to remote work by learning new software and digitizing processes, abandoning the traditional paper-based method of sharing information.

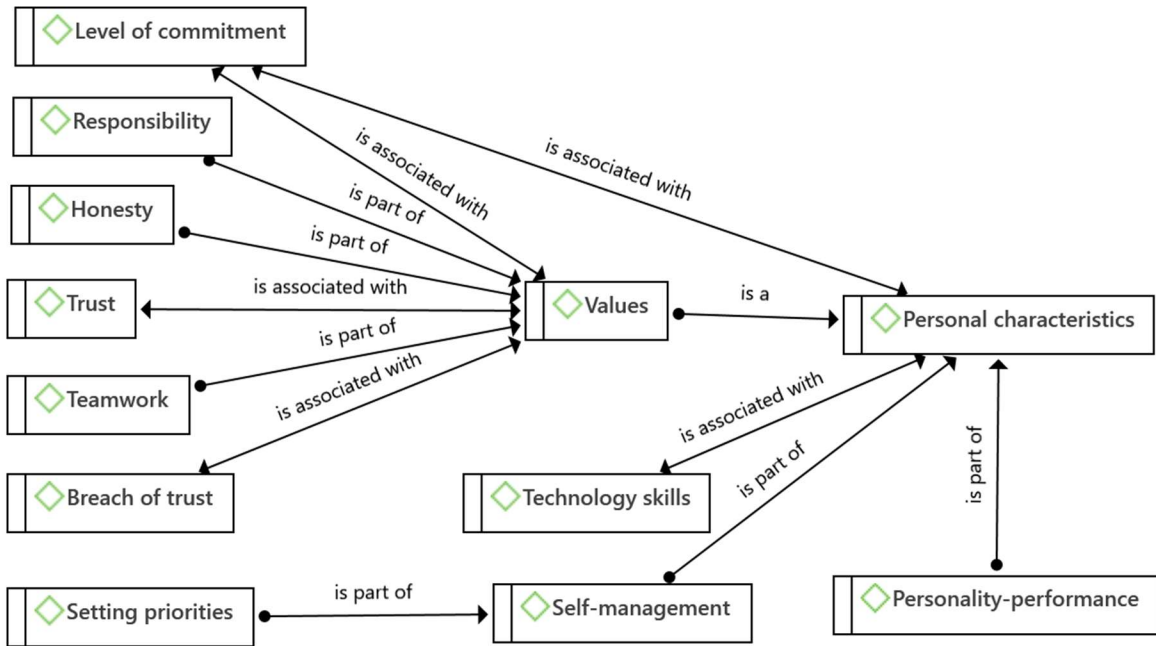
The participant also highlighted innovations in training programs, which transitioned from relying on external providers to being delivered online by internal staff as a form of organizational support. This example illustrates a positive adaptation process that yielded innovative outcomes and cost savings, made possible through coordinated managerial support during the adjustment phase, which helped mitigate the negative effects of technostress.

“We now handle everything through the company’s systems—it’s very easy and dynamic. We held a training session where each of us prepared a topic and led the session ourselves. Everything runs virtually now. Teleworking pushed me toward digital tools, because before, I used to submit a lot of information on paper—many memos I had to review. Now everything is digital. I had to update my skills. Previously, we distributed a DVD to our network of dealers with information to help diagnose failures. Now, because of computers, I had to reformat all that data... using a platform called Wii Transfer.” (E4I)

Regarding performance, several authors underscore the difficulty of measuring it in a telework environment (Coenen & Kok, 2014; Groen et al., 2018; Kazekami, 2020; Nakrošienė et al., 2019). Goal-oriented operations complicate the assessment of individual job performance, which explains why perception remains the most widely used method—typically supported by self-reported indicators, as noted by Silva & Li Bonilla (2018).

On this basis, participants emphasized their personal competencies, especially values such as commitment, responsibility, honesty, trust, and teamwork. When combined with technological proficiency and self-management, these attributes contribute to enhanced performance (see Figure 4).

Figure 4. Individual Factors Influencing Teleworker Performance.



Source: Prepared by the authors based on ATLAS.ti mapping.

Achieving, learning, and mastering new technologies reduced bureaucratic procedures within the organization, thereby increasing overall efficiency. As a result, general perceptions of individual performance improved, reflected in the organization’s broader outcomes.

Figure 5 presents the participants’ responses regarding how the implementation of telework contributed to positive results in job performance.

Figure 5. Effects of Telework Implementation on Job Performance

Efficiency	Cost Savings	Flexibility	Self-Management
“There’s a platform where I can track when you start using it and when you finish. It doesn’t necessarily measure how many emails you send or receive, or how many calls or WhatsApp messages you handle—	“We no longer had to print so many documents—everything went digital, saving paperwork and bureaucracy. We used a shared spreadsheet accessible to dozens of people, all working on the same file.” (E9G)	“I think it’s clear we can work from home and still deliver strong results. We all worked remotely and met expectations. In my case, I start at 8 a.m. and finish at 5:30 p.m.” (E6T)	“At the office, some tasks used to take me longer. But at home—with my daughter and other responsibilities—I managed my time better. I actually felt more efficient completing all my activities.” (E1T)

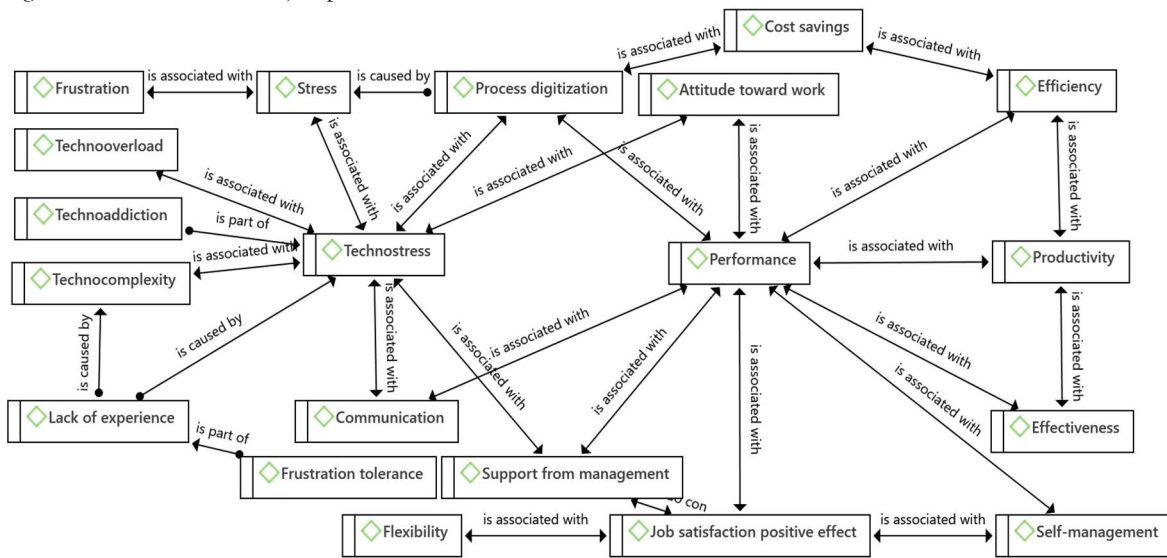
Efficiency	Cost Savings	Flexibility	Self-Management
it focuses on punctuality.” (E5G)			
“Everything has become more digitized. We can edit and collaborate—everyone works on the same file instead of passing it around. Even colleagues in the U.S. accessed and projected the same content.” (E9G)	“I think the company now realizes it pays for a building that goes unused. It had, say, seven floors; now it might reduce to just two or three. That means cutting costs—clearly we don’t need people in the office full-time. So we’ll continue with this working model.” (E4T)	“I worked while caring for my young daughter. Because my tasks are mostly administrative, I managed everything from home just as easily as in the plant.” (E1T)	“As I said, we can manage work based on objectives or projects. At home, I can plan weekly or monthly and report my progress. It’s just a matter of staying focused—I truly believe you can meet goals from home just like from the office.” (E6T)
“We have the tools to bridge any perceived gap in telework and meet departmental goals.” (E6T)	“Skipping the commute became a real advantage—saved time and money, especially on fuel.” (E8G)	“We’ve held meetings with the plant... even organized virtual expos with our distributor network. No issues arose. Now we’re preparing for a course with Germany—and they face the same situation.” (E4T)	“Generally speaking, my team delivered as expected. I assigned tasks and they got completed on time and correctly.” (E7G)
“They sent us tips on how to run meetings, improve connectivity, access the plant server—ways to work more efficiently.” (E1T)	“I think efficiency increased. It pushed us to work with more initiative, and we saved significant time.” (E9G)		“I ended up working much longer hours... but even so, all of us at home delivered what the company expected.” (E6T)

Source: Own elaboration based on the collected interviews.

Figure 6 summarizes the codes linked to technostress and job performance. Based on the presented findings, the forced implementation of telework showed evidence of both negative and positive effects on technostress levels. Negatively, workers experienced techno-complexity and techno-addiction, but mainly techno-overload and techno-fatigue. However, it also brought positive effects, as it pushed some employees to learn new ways of communication, streamlining their processes.

Regarding teleworkers’ performance, evidence revealed that the forced shift to telework, in certain cases, strengthened work values, since employees appreciated job continuity under the given circumstances. In other cases, the extraordinary working conditions triggered negative effects, mostly due to the workload increase caused by the abrupt transition.

Figure 6. Technostress and job performance



Source: Prepared by the authors based on ATLAS.ti mapping.

### General Recommendations for Preventing Technostress in ICT Users and Enhancing Performance

According to Quiroz González (n.d.), recommendations may fall into three categories: coping with environmental stressors, emotional stressors, and proactive strategies. The first category involves managing the work environment and minimizing stress-inducing stimuli. In Mexico, based on NOM-037-STPS-2023 (Appendix Three), work area considerations include: a) physical agents—such as space, lighting, ventilation, temperature, and noise; b) mechanical agents; c) chemical agents; d) ergonomic risk factors; and e) psychosocial risk factors (Secretaría del Trabajo y Previsión Social [STPS], 2003, p. 24).

Figure 7 summarizes the key elements to consider within the work environment. For further detail, Appendix Three of the official standard outlines specific recommendations, including guidelines for selecting appropriate desks and chairs.

Figure 7. Key Elements to Monitor in the Work Area

Agent	Aspects
Physical	<ul style="list-style-type: none"> <li>• Minimum space of 2 square meters with a ceiling height of at least 2.5 meters.</li> <li>• Natural or artificial lighting that does not strain the eyes.</li> <li>• Windows for ventilation or air conditioning.</li> </ul>

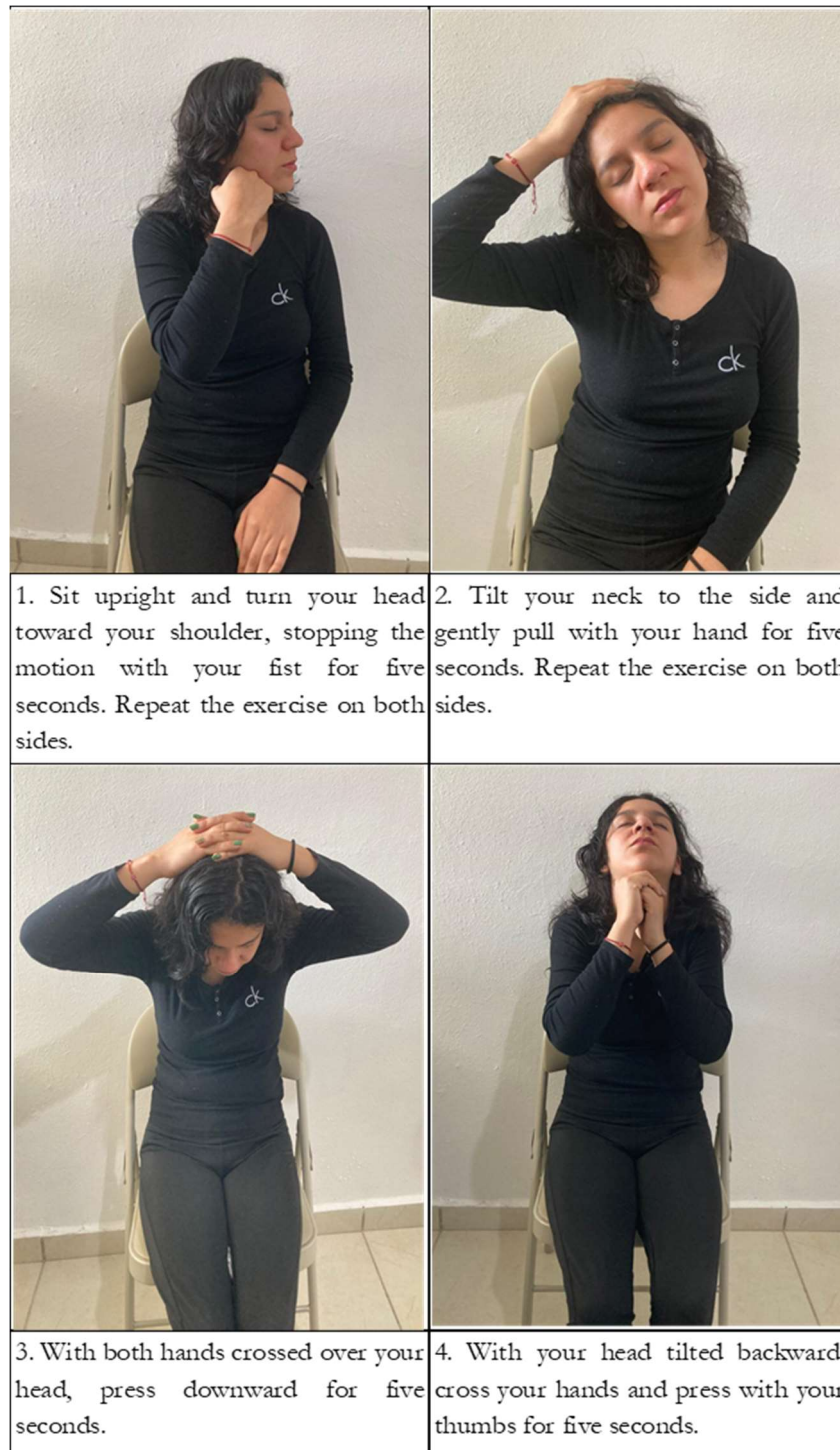
	<ul style="list-style-type: none"> <li>• Comfortable temperature—neither too cold nor too hot—or, if needed, access to air conditioning.</li> <li>• Avoid auditory distractions such as loud TV, radio, or music.</li> </ul>
Mechanical	<ul style="list-style-type: none"> <li>• Separate the work area from the rest of the home using walls, doors, windows, partitions, or similar elements.</li> <li>• Floors free of obstructions that could cause falls.</li> <li>• First aid kit located near the workstation.</li> <li>• Avoid furniture with sharp edges or corners.</li> <li>• Keep an emergency contact list nearby.</li> <li>• Power outlets located within one meter, in good condition, for equipment use.</li> <li>• Availability of a fire extinguisher.</li> </ul>
Chemical	<ul style="list-style-type: none"> <li>• Avoid areas with chemical odors such as solvents, paints, cigarette smoke, sawdust, or concentrated cooking smells.</li> </ul>
Ergonomic	<ul style="list-style-type: none"> <li>• Desk and chair height ranging between 72 and 76 cm.</li> </ul>
Psychosocial	<ul style="list-style-type: none"> <li>• Avoid situations that may cause family conflicts at home or feelings of isolation while working.</li> </ul>

Source: NOM-037-STPS-2023. Appendix 3

In the second category—emotional coping—some recommendations include managing negative or intrusive thoughts, practicing conscious breathing, engaging in mindfulness-based meditation (a practice of self-awareness through focused attention), and applying progressive muscle relaxation techniques.

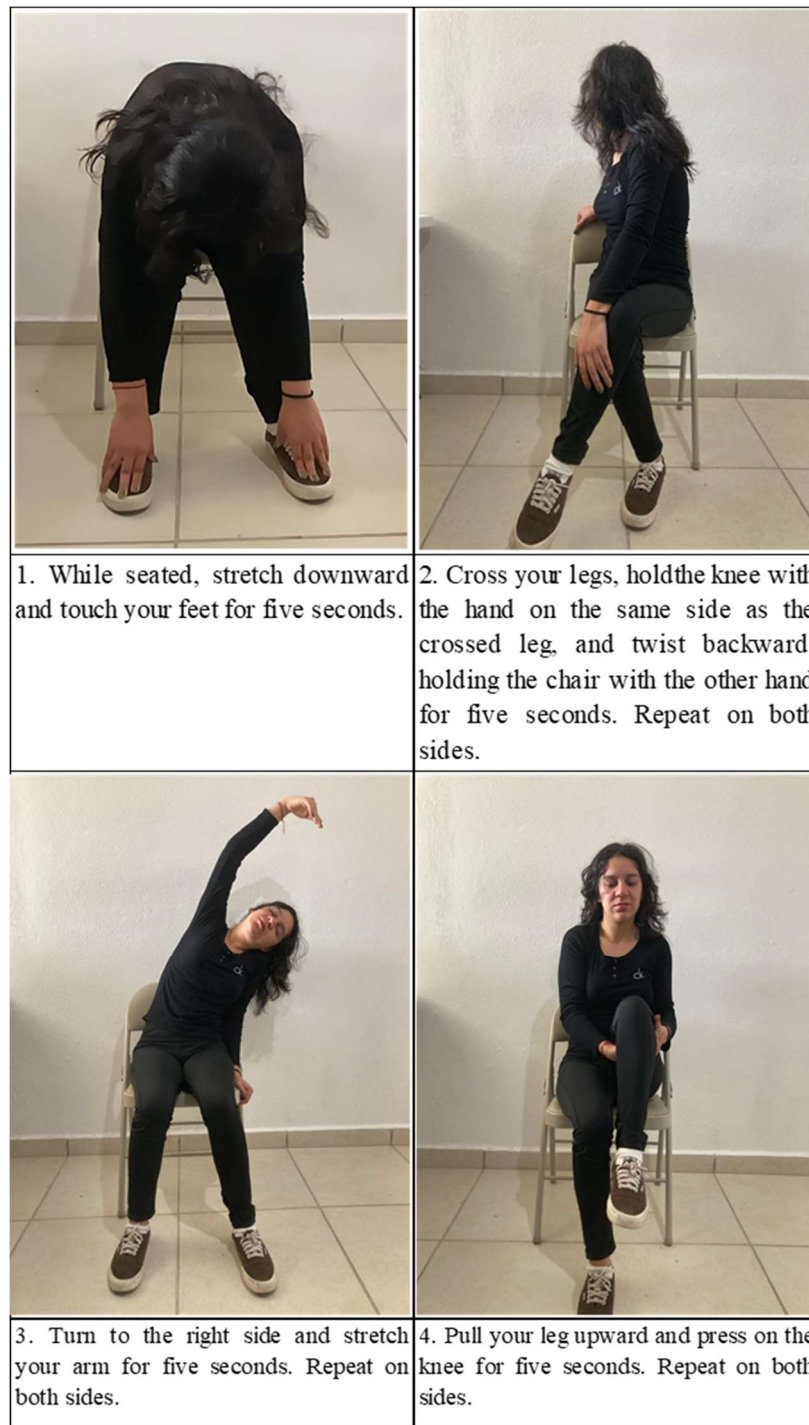
Protecting the spine and joints constitutes a fundamental activity in workplace settings. Appendix Four of NOM-037-STPS-2023 offers specific recommendations for pre-telework activities. To complement this proposal, three visual aids follow: the first includes exercises for neck relaxation (Figure 8); the second focuses on waist and back exercises (Figure 9); and the third (Figure 10) presents wrist relaxation exercises. These routines have been recommended by physical therapist Lic. Viridiana Mendoza Alcántara (professional license number 10357070).

Figure 8. Visual Aid: Neck Relaxation Exercises



Source: Prepared by the authors

Figure 9. Visual aid: exercises for the waist and back



Source: Own elaboration.

Figure 10. Wrist exercises

		
<p>1.- Stand facing the desk, place your hands on it with fingers spread. Inhale and exhale, then lean forward, bending your elbows, and hold for five seconds before relaxing.</p>	<p>2. Tuck your thumbs in and press downward to stretch the muscle for five seconds.</p>	<p>3. With your palm against the wall, inhale and exhale. Bring your ear toward the opposite shoulder, placing all your weight on the palm for five seconds. Repeat with the other hand.</p>
		
<p>4. Place the back of your hand on the desk, with both thumbs facing each other. Inhale and exhale while bringing the elbows inward or toward the center.</p>	<p>5. Stand with your back to the desk, place your hands on it with fingers spread, inhale, and lean forward while bringing the elbows in for five seconds, then relax.</p>	<p>6. Place the back of your hand against the wall, inhale and exhale, and bring your ear toward the opposite shoulder for five seconds. Repeat with the other hand.</p>

Source: Prepared by the authors.

According to Quiroz González (n.d.), proactive coping strategies become essential for fostering resilience when facing current, potential, or future stressors. These authors recommend fostering social support, generating new meanings, embracing positive beliefs, and maintaining overall well-being. At the organizational level, technostress mitigation mechanisms include educational and technical support, as well as promoting innovation (Quiroz González, n.d.).

In this regard, Appendices 1 and 2 present a flowchart that organizations can use as a guide for implementing new ICT tools or telework systems, while taking into account applicable national regulations (Mexico) and available instruments for assessing technostress and individual performance in virtual environments (Antonio-Javier et al., 2023; Antonio-Javier, 2025).

### **Limitations and Future Research**

The primary limitation of qualitative studies lies in their restricted generalizability. However, such studies prove valuable for exploratory purposes, offering a broad overview of the variables under examination and providing insights that often remain inaccessible through quantitative approaches.

Future research may examine the variables discussed—technostress and performance—among teleworkers across various sectors, investigating the nature of their interrelation. Comparative analysis among sectors could reveal significant differences. Expanding studies in Mexico remains crucial to better understand the technostress affecting teleworkers, along with its positive and negative implications for mental health and job performance.

New research avenues emerge for conducting in-depth analyses on factors influencing telework implementation that this study did not cover, such as organizational structures, job characteristics, home and family dynamics, and external conditions.

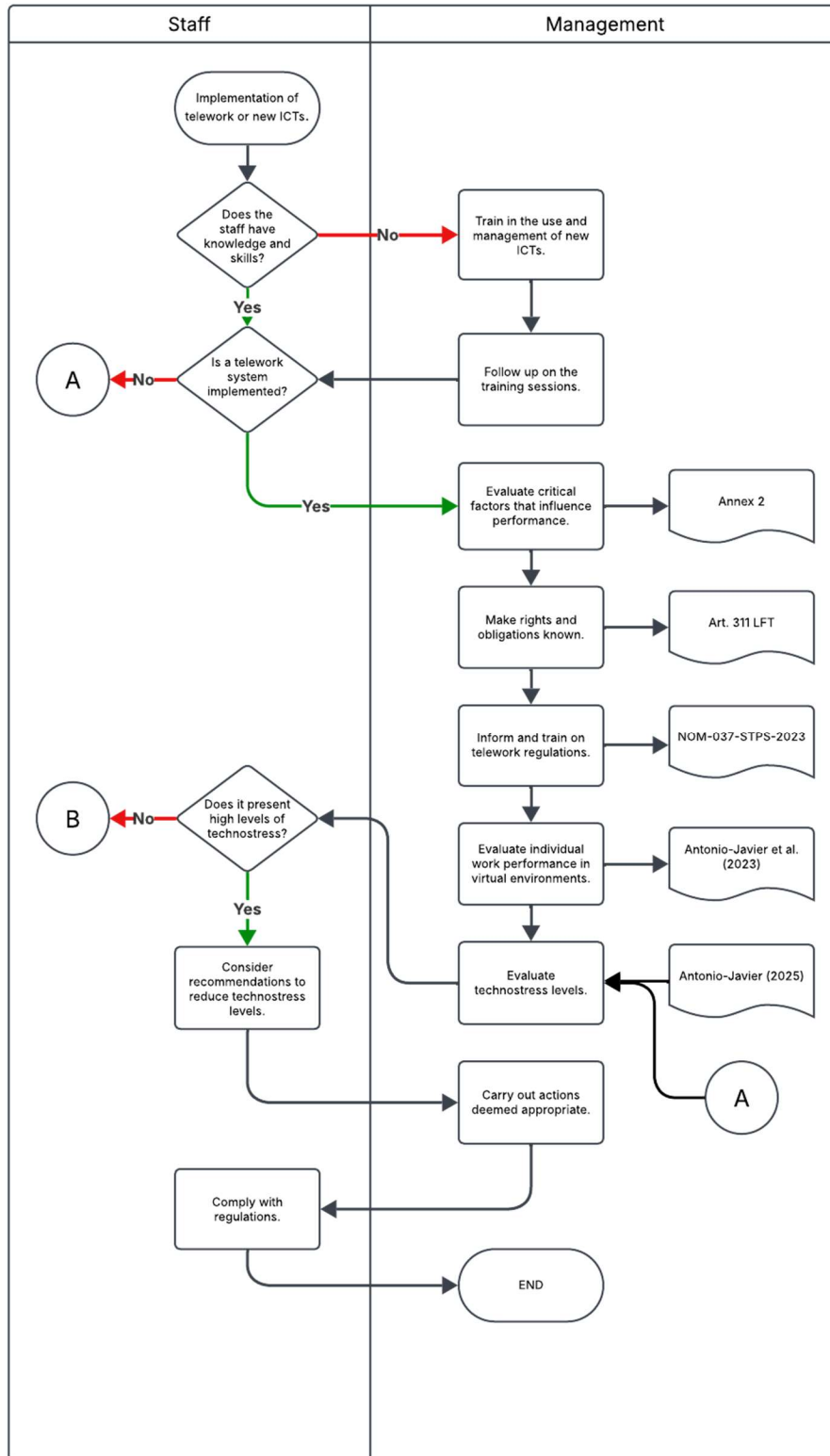
### **Conclusions**

Technostress research bridges the fields of organizational psychology and information systems by originally focusing on information system users (Tarafdard et al., 2017). Today, the topic has gained relevance not only among information systems scholars but also within organizations that operate through flexible or remote work arrangements (Shirish, 2021).

Scholars such as Kossek et al. (2015) warn about potential pitfalls that arise from inadequate planning and management of flexible work systems, including the erosion of organizational culture. This study provides evidence that, despite the challenges inherent in telework migration, successful implementation—accompanied by managerial support and trust—can significantly mitigate technostress and its impact on mental health. Moreover, organizations can leverage the positive aspects of technostress to improve individual and organizational performance, while fostering process innovation.

At the same time, a forced implementation of telework may trigger episodes of technostress that hinder individual performance. This research offers a set of practical recommendations to help mitigate technostress and improve its management. It is worth noting that the survey used in this article also served as the basis for Antonio-Javier & Nava-Rogel (2024).

**Appendix 1. Flowchart for Implementing New ICT Tools or a Telework System.**



Source: Adapted from Antonio-Javier (2025).

## Appendix 2. Critical Factors Influencing Performance

ELEMENTS	CHECKLIST				ACTION PLAN				
	No.	DESCRIPTION	STATUS		ACTIVITY	RESPONSIBLE	DATE	PROGRESS	
<b>Organization: Strategy and Culture</b>	1	The company wants to implement telework as an organizational strategy.	N/A	YES	NO				A P V H
	2	The company's culture facilitates the implementation of telework.	N/A	YES	NO				A P V H
	3	The organization has the financial conditions for implementing telework.	N/A	YES	NO				A P V H
	4	The organization provides the necessary computer equipment and furniture for telework.	N/A	YES	NO				A P V H
	5	The unions agree with the implementation of telework.	N/A	YES	NO				A P V H
	6	Managers agree with and support the implementation of telework.	N/A	YES	NO				A P V H
	7	The organization is aware of the applicable laws and regulations.	N/A	YES	NO				A P V H
	8	The company has established internal rules and policies based on applicable regulations.	N/A	YES	NO				A P V H
<b>Work: Technology and Nature</b>	9	The job design allows for telework.	N/A	YES	NO				A P V H
	10	The job does not require face-to-face contact.	N/A	YES	NO				A P V H
	11	The job is designed to meet measurable, achievable, and deliverable objectives.	N/A	YES	NO				A P V H
	12	The job requires minimal supervision.	N/A	YES	NO				A P V H
	13	The job demands technical, analytical, and interpersonal skills.	N/A	YES	NO				A P V H
	14	The job is assigned a portable device and the necessary resources for telework.	N/A	YES	NO				A P V H
<b>Individual: Capacity, Personality, and Motivation</b>	15	The employee agrees with telework.	N/A	YES	NO				A P V H
	16	The employee is motivated by telework.	N/A	YES	NO				A P V H
	17	The employee has the necessary skills: technical, analytical, interpersonal, communication, and problem-solving.	N/A	YES	NO				A P V H
	18	The employee has no physical limitations preventing telework.	N/A	YES	NO				A P V H
<b>Home and Family: Economic and Family Conditions</b>	19	The employee shares the home with other family members (if applicable).	N/A	YES	NO				A P V H
	20	The family agrees with telework.	N/A	YES	NO				A P V H
	21	The employee has a designated workspace.	N/A	YES	NO				A P V H
	22	The space meets the minimum requirements to perform tasks.	N/A	YES	NO				A P V H
	23	The space is free from visual and auditory distractions or contaminants.	N/A	YES	NO				A P V H
	24	The space meets the minimum safety requirements.	N/A	YES	NO				A P V H
<b>Trust, Support, Communication, and Autonomy</b>	25	There is a culture of trust among organization members.	N/A	YES	NO				A P V H
	26	There is a culture of support among organization members.	N/A	YES	NO				A P V H
	27	Communication channels are well-defined and applicable throughout the organization.	N/A	YES	NO				A P V H
	28	The employee has autonomy to make decisions about their activities and how to perform their work.	N/A	YES	NO				A P V H
<b>External Factors</b>	29	Telework is implemented due to force majeure.	N/A	YES	NO				A P V H
	30	The implementation of telework meets the needs of internal and external clients.	N/A	YES	NO				A P V H
	31	The region where telework will be implemented has the necessary technological infrastructure.	N/A	YES	NO				A P V H
<b>TOTAL: 31</b>									

Record:

	DATE C. = Commitment Date
	P= Plan
	H=Do
	V= Verify
	A=Act

Objective: Analyze whether the minimum requirements for implementing telework in the organization are met, considering the critical factors that affect performance. Ideally, all descriptions should be answered with "YES," except for the following questions: "The employee shares the house with other family

Source: Antonio-Javier (2025).

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