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Technostress and Employee Performance in the Public Sector Under Industrial Revolution 4.0

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Abstract

This study investigates the phenomenon of technostress and its implications on public sector employee performance in Malaysia within the context of the Fourth Industrial Revolution (IR4.0). With digitalization reshaping the landscape of public service delivery, employees face new technological challenges that may hinder rather than help their performance. Utilizing a quantitative approach, this research identifies five key dimensions of technostress: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. A survey was conducted among 150 public sector employees across various departments. The findings reveal that all five dimensions are significantly associated with technostress, with techno-overload and techno-complexity being the most influential. Technostress, in turn, has a measurable negative effect on job performance, employee well-being, and workplace satisfaction. The study emphasizes the importance of strategic organizational support systems and digital literacy initiatives to mitigate the adverse effects of technostress in the evolving digital public service environment.

Keywords: *Technostress, Public Sector, Malaysia, Job Performance.*

Introduction

The advent of the Fourth Industrial Revolution (IR 4.0) has transformed the global landscape of work by introducing advanced digital technologies that promote automation, data-driven decision-making, and intelligent systems integration (Schwab, 2017). This digital revolution is not confined to the private sector but has extended to the public domain, as exemplified by the implementation of e-government initiatives designed to enhance efficiency and improve public service delivery through seamless access to information (Al-Khouri, 2012). Such transformations have fundamentally reshaped organizational structures and operational processes, demanding that employees possess not only technical competencies but also the necessary soft skills to adapt effectively to rapidly evolving technological environments (Hecklau et al., 2016; Caputo et al., 2021). Consequently, the emphasis on digital literacy has intensified, positioning technological adaptability as a critical determinant of employability and organizational competitiveness (Bresciani et al., 2021).

Despite these advancements, the accelerated pace of technological adoption has generated challenges for employees, particularly in the form of technostress. Technostress, conceptualized as a form of work-related stress arising from individuals' inability to adapt to new or excessive technological demands, has emerged as a pressing organizational issue in the era of IR 4.0 (Tarafdar et al, 2007; Ayyagari et al, 2011). Organizations frequently introduce novel digital tools and systems to streamline operations and increase productivity, yet such initiatives often entail a cultural shift from manual to ICT-driven work processes (Vodanovich et al, 2010). While these changes yield benefits in terms of efficiency and output, they simultaneously produce unintended negative consequences, particularly for employees who struggle to acquire or master the requisite technological skills (T.S Ragu-Nathan et al.,

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2008). The inability to cope effectively with technological demands can result in heightened anxiety, reduced motivation, and ultimately, diminished work performance (Salanova et al, 2013).

The adverse effects of technostress are well-documented in the literature. Empirical studies highlight that sustained exposure to ICT-intensive environments can lead to increased fatigue, declining well-being, and reduced job performance (Donald et al, 2005). In organizational contexts, these outcomes manifest in employee absenteeism, turnover, and a general decline in organizational performance (Brooks et al, 2018). Tarafdar et al. (2007) further delineated five dimensions of technostress—techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty—which collectively explain the multiple pathways through which technological demands exert pressure on employees. More recent studies expand on these dimensions, emphasizing the role of remote work, mobile technologies, and digital surveillance in intensifying technostress in contemporary workplaces (Nimrod, 2018). Importantly, demographic factors such as generational differences exacerbate these challenges. For instance, baby boomers and Generation X employees, who were not extensively exposed to advanced digital systems during the formative stages of their careers, are more susceptible to technostress compared to younger generations accustomed to pervasive digitalization (Nimrod, 2018).

Against this backdrop, the phenomenon of technostress presents both theoretical and practical implications. From a theoretical standpoint, it underscores the need to understand the paradox of digital transformation, wherein technology simultaneously acts as an enabler of productivity and a source of strain (Tarafdar et al., 2015). Practically, it necessitates strategic interventions by organizations to support employees in navigating digital transitions, whether through targeted training, workload adjustments, or the cultivation of resilient digital cultures (Day et al, 2010). As IR 4.0 continues to accelerate, addressing the duality of technology's impact on employees becomes imperative to ensure sustainable organizational performance and employee well-being.

Research Problem

In the era of information technology development, the issue of technostress is no longer a foreign issue among workers both domestically and internationally. This is due to high workloads and excessive use of information technology (ICT) while doing their jobs, which has caused the issue of technostress to emerge (Tarafdar et al., 2015). Referring to previous studies, there are many factors that contribute to being stressed. Among the main factors are technological excess, technological invasion, technological complexity, technological uncertainty and technological insecurity (Saidi et al, 2022). In the context of the education sector, a study by Khlaif et al (2022) also found that all five factors also influence the level of technostress among teachers, however, the technological excess factor shows a more significant relationship.

The first factor that affects technostress is technological complexity. This is because there are still a few workers who cannot adapt to technological changes. Therefore, they are used to the previous way and find it difficult to apply it. This can be proven in a study by Lieli Suharti & Agung Susanto (2020) which states that managers at a Technical Support company experience difficulty in using production equipment for automation technology which causes technostress. The second factor that affects technostress is technological excess. This factor stems from the issue of workers being forced to work faster and do work in quantities greater than their own ability. Based on the study by Alis & Syaliza (2020) it states that the level of employee stress is high because they have to do work in quantities greater than their own ability. Therefore, the factors of technological complexity and technological excess can affect technostress for employees.

Furthermore, technological intrusion factors can also lead to technostress. According to data from the Bureau of Labor Statistics (Ayyagari et al, 2011), it has been reported that the average person works from home for about seven hours a week in addition to the usual office or workplace hours. This is likely to happen when the use of information and communication technology (ICT) has broken the limits of time and space, causing employees to continue to do their jobs at any time. This causes many employees to be under pressure and creates high technological stress. In addition, the factor of technological insecurity can also contribute to technostress. This factor stems from the issue of employees not sharing information about ICT knowledge among colleagues because they fear that the position will be replaced by someone more skilled. This issue can not only affect the balance between work and personal life, but it can also affect employee productivity. Therefore, the level of employee stress due to technological insecurity factors will increase due to lack of knowledge about technology.

Finally, the factor of technological uncertainty involves the issue of continuous changes in the use of computer software, and it can put pressure on employees. This issue has been linked to a research study produced by Lieli Suharti & Agung Susanto (2020). In this study it is stated that a Manager in the Engineering Department is experiencing difficulties in the number of automatic equipment requiring spare parts that are very variable and difficult to obtain in the market. This has been proven that the factor of insecurity also contributes to technostress. According to Tarafdar et al., (2007), technostress indirectly affects the productivity of individuals in organizations. Therefore, several previous studies have found that the negative effects of technostress are absenteeism, reduced productivity levels, reduced organizational commitment, and deterioration in work performance (Frese et al, 1994). Among the signs that a person is experiencing technostress are persistent headaches, eyes feeling tense to the point of affecting sleep, and being unable to concentrate on work, causing work to not be completed on time.

Therefore, this technostress not only has a great impact on individuals but also affects work performance and productivity. Therefore, this has been proven that this technostress issue is increasing due to technological changes. To solve this technostress problem, this study was conducted to examine the factors that influence technostress and its impact on work performance among civil servants. Therefore, the objectives of this study are:

1. To identify the main factors influencing technostress among public servants.
2. To examine the relationship between the main factors influencing technostress and their impact on job performance among public servants.

Literature Review

Conceptualizing Technostress

The term "technostress" has been coined to describe individuals' inability to cope with and adapt to excessive computer technology usage. This phenomenon has been extensively studied by researchers under various terminologies, including technophobia, computer phobia, computer anxiety, and computer stress (Nisafani et al., 2020). Technostress represents a significant concern as it can exert negative effects on human behaviour, cognition, conduct, and psychological well-being, whether directly or indirectly influenced by technological interactions. Technostress refers to the stress experienced by individuals due to their inability to cope with or adapt to the introduction and use of new technologies (Tarafdar et al., 2015). Originally coined by Brod (1984), technostress has evolved to encompass a range of psychological, behavioural, and physiological responses to digital technologies in the workplace.

Extensive research has examined technostress, particularly within occupational contexts. According to previous research conducted by Alis et al (2020), technostress manifests under two distinct circumstances: first, when individuals initially encounter and attempt to accept information technology, and second, at a more specialized level, when individuals endeavour to develop deeper familiarity with specific information technologies. The conceptualization of technostress extends beyond mere technological incompetence, encompassing the broader psychological and behavioral ramifications of technology-mediated work environments. Research demonstrates that technostress can generate adverse effects on human cognition and behavior patterns resulting from technology utilization in professional settings.

The implementation and utilization of Information and Communication Technology (ICT) in workplace environments are influenced by multiple determinants, including knowledge acquisition, skill development, available resources, and organizational constraints. However, empirical evidence suggests that employee beliefs and attitudes toward technology integration in their daily work routines serve as critical determinants of their capacity to successfully incorporate these technologies into their professional practices (Qiang Tu et al., 2005). This finding underscores the importance of understanding the psychological dimensions of technology adoption, moving beyond purely technical considerations to encompass the human factors that ultimately determine successful technology integration in organizational contexts. The multifaceted nature of technostress necessitates continued investigation into its manifestations, antecedents, and consequences within contemporary work environments. As technological advancement continues to accelerate, understanding the complex relationship between human psychology and technology adoption becomes increasingly critical for organizational effect.

Factors Influencing Technostress

The use of ICT has negative consequences, as it often increases work pressure on employees (Tarafdar et al., 2015) and may lead to poor health, heightened fatigue, and reduced job performance. Previous research has sought to identify the factors that influence technostress and its relationship with job performance. According to the study by Mohd Fahusli et al (2021), five sub-factors contribute to the occurrence of technostress: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty.

Techno-Overload

Techno-overload can be defined as a condition in which employees are compelled to work faster and handle more tasks than they would normally perform due to the use of information technology. The study by Mohd Fahusli et al (2021) found that excessive workload, particularly techno-overload, and the level of technological proficiency are positively related to the degree of technostress among employees working in technology-intensive environments. Furthermore, a study by Alis and Syaliza (2020) analysed the level of technostress based on its sub-factors—techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty—categorizing them into three levels: low, moderate, and high. Their findings revealed that techno-overload scored higher than other sub-factors, indicating that technology often drives employees to work at a faster pace, thereby increasing their workload.

Similarly, Harris et al (2015) concluded that techno-overload is particularly evident among employees in digitalization departments, as the rapid evolution of technology requires additional time outside regular working hours to understand new features, which in turn increases the quantity of tasks to be completed. Harris et al (2015) later noted that older adults face greater difficulties in using technology compared to younger adults, particularly with techno-overload and techno-complexity, both of which demand higher cognitive abilities and physical effort. However, Ragu-Nathan et al. (2008) reported that technostress decreases with age. In contrast, findings from Pallavi and Vrinda (2021) suggested that younger individuals tend to have a more positive perception of technology in enhancing academic productivity. This indicates that younger individuals, including students, generally experience moderate levels of techno-overload. Based on these prior studies, the following hypothesis is proposed:

H1: There is a significant relationship between techno-overload and technostress.

Techno-Invasion

This factor refers to the potential of information technology to intrude into employees' personal lives and lifestyles, to the extent that they feel obliged to remain connected to work even after office hours. This occurs because ICT is easily accessible anytime and anywhere, including outside of normal working hours. According to data from the Bureau of Labor Statistics (Ayyagari et al, 2011), on average, individuals spend approximately seven hours per week working from home in addition to their regular office hours. This demonstrates that employees are often required to perform work beyond official working time, thereby experiencing high levels of stress due to technology use. Furthermore, employees are unable to spend adequate time with their families, even on weekends, disrupting their personal lives and negatively affecting work performance as they cannot fully concentrate on their tasks.

In a study conducted by Nurhafiza Ab Majid and Shahlan Surat (2021), it was reported that an imbalance in daily life contributed to stress among teachers, both in public and private schools, particularly during challenging periods. However, findings from Harris et al (2015) suggested that employees did not necessarily experience techno-invasion or work–life interference. This was attributed to the ability of employees to manage their time effectively, ensuring that work could be completed despite rapid technological advancement. Employees were expected to develop an understanding of technological features and maintain control over technology rather than allowing technology to dominate them. Nevertheless, Pallavi and Vrinda (2021) found otherwise, reporting that techno-invasion was the most significant factor contributing to technostress among students. This may be explained by the ubiquity of technology, which increasingly intrudes upon personal time. Based on these findings, the following hypothesis is proposed:

H2: There is a significant relationship between techno-invasion and technostress.

Techno-Complexity

Techno-complexity arises when the introduction of sophisticated and advanced technologies makes employees reluctant to learn or incapable of efficiently using new technologies. This complexity is

associated with complicated computer processes that are difficult to understand, leaving some individuals unable to adapt effectively. For instance, the study by Lieli Suharti and Agung Susanto (2020) revealed that managers in a technical support company faced challenges in using automated production technologies, resulting in technostress. This suggests that even individuals in senior positions, such as managers, may encounter difficulties handling information technologies, thereby experiencing elevated stress levels that ultimately diminish their job performance.

According to Harris et al (2015), the availability of training, technical support, and user involvement in technology-related decision-making can mitigate the negative effects of techno-complexity. Similarly, findings by Lieli Suharti and Agung Susanto (2020) indicated that employees often felt stressed and overwhelmed by the mismatch between their technological abilities and the demands of their work in response to rapid technological advancements. Lieli Suharti and Agung Susanto (2020) also argued that employees who cannot manage their anxiety about new technologies perceive their work as increasingly difficult due to mandatory use of digital tools. Hart and Staveland (1988) defined workload as the relationship between an individual's abilities and the number of required tasks. Based on prior studies, the following hypothesis is formulated:

H3: There is a significant relationship between techno-complexity and technostress

Techno-Insecurity

Techno-insecurity refers to stress experienced by individuals due to a lack of knowledge in addressing problems and adapting to the use of technology. This factor reflects the rapid pace of technological change, which can make employees feel threatened about their job security and fearful of being replaced. Benson and Dundis (2003) argued that employees are more committed to organizations that invest time, resources, and finances in ensuring they are equipped with the necessary technological skills. Conversely, some employees are reluctant to share their knowledge of technology with colleagues, fearing replacement by more technologically adept workers.

Nisafani, A. S. , Kiely, G. & Mahony, C. (2020) found that persistent pressure from organizations and communities to integrate technology into education, coupled with inadequate knowledge and support, induced technostress among teachers. Their study also reported a significant negative relationship between techno-insecurity and aspects such as task significance, task identity, and feedback. Similarly, in Ayyagari et al (2011) found that technostress had a negative impact on job satisfaction, indicating that higher stress from excessive technology use lowered employees' satisfaction. These findings confirm that techno-insecurity influences technostress and affects work performance.

However, Harris et al (2015) provided a contrasting perspective, emphasizing that technological capability is essential in the current era. Employees must proactively acquire knowledge in modern technology and apply it effectively to benefit their work. In this context, employees did not feel threatened by potential job loss or role replacement due to technology, as they recognized the interdependence between software, hardware, and human input in workplace systems. Based on the literature, the following hypothesis is proposed:

H4: There is a significant relationship between techno-insecurity and technostress.

Techno-Uncertainty

Techno-uncertainty arises from continuous changes in technological development, software, and hardware within organizations, which can contribute to employee stress. For example, Lieli Suharti and Agung Susanto (2014) reported that a manager in an engineering department experienced difficulties because the automated equipment required highly variable spare parts that were difficult to source. Additionally, increasing production capacity demanded extra skills and competencies, particularly in process engineering, assembly, and automation. Their findings are consistent with previous studies on technostress.

Da Silva Cezar and Maçada (2021) defined techno-uncertainty as the ambiguity associated with learning and adapting to newly introduced or updated technologies and argued that the introduction of new technologies does not always yield positive outcomes; if not properly managed, it may generate technostress among employees. Similarly, Ayyagari et al (2011) explained that techno-uncertainty arises when employees feel anxious about ICT integration into their work, leading to unclear expectations and role ambiguity. Indicators of techno-uncertainty include frequent ICT updates, continuous changes in functionality, and frequent replacement of ICT systems. Regression analysis in

their study revealed that techno-uncertainty did not directly affect job performance but significantly contributed to technostress. Based on prior research, the following hypothesis is proposed.

H5: There is a significant relationship between techno-uncertainty and technostress.

The Impact of Technostress on Job Performance

Technostress exerts significant influence on human behavior, individual well-being, and employee performance within organizations. It can generate both positive and negative outcomes; however, much of the prior literature has emphasized its negative effects. For instance, Lieli Suharti and Agung Susanto (2020) found that technostress affects work performance in terms of employee behavior within organizations and their relationship with the organization. Similarly, Ayyagari et al (2011) confirmed that technostress negatively affects psychological well-being, showing that higher levels of technostress correspond with lower levels of psychological well-being among employees.

Research by Nisak & Wulansari (2020) also indicated that technostress has adverse effects on both job satisfaction and performance. This demonstrates that excessive stress from technology use reduces overall job satisfaction and work performance. Moreover, technostress often cannot be avoided, as excessive workload increases reliance on technology, which in turn elevates stress levels. Supporting this, Lieli Suharti and Agung Susanto (2020) found that technostress contributes to physical and emotional exhaustion among employees, impairing their performance. Their study further suggested that technology can lead to harmful psychological strain and declining organizational outcomes.

Additionally, Nurhafiza Ab Majid and Shahlan Surat (2021) highlighted that teachers who perceive ICT integration in teaching and learning as difficult and burdensome often experience negative physiological responses, such as physical tension, ICT-related anxiety, technostress, and fatigue. These conditions lead to psychological distress and persistent emotional fluctuations. By contrast, Ayyagari et al (2011) reported a more positive outcome, noting that the adoption of technology has facilitated positive changes aligned with the demands of the Fourth Industrial Revolution. Drawing from prior studies, the following hypothesis is proposed:

H6: There is a significant relationship between technostress and job performance.

Results and Discussion

A total of 150 civil servants from various occupational sectors participated in the online survey. Table 1 presents the demographic characteristics of the sample. The gender distribution was balanced, comprising 74 male and 76 female respondents, indicating no significant gender disparity within the dataset. In terms of age composition, the majority of participants were young adults, with 62 respondents (41.3%) aged between 20 and 30 years. This was followed by individuals aged 31–40 years (51 respondents, 34%), while respondents aged 41 years and above accounted for the remaining 37 cases (24.7%). The income distribution shows that the sample was predominantly composed of low- to middle-income earners. A total of 80 respondents (53.3%) reported a monthly income between RM1,500 and RM4,800, while 48 respondents (32%) earned RM1,500 or below. Only 22 respondents (14.7%) fell within the higher income bracket of RM4,800 and above. This distribution suggests that the majority of participants occupy positions commonly associated with modest remuneration levels in the public sector. Occupationally, respondents were drawn from fourteen distinct job sectors, reflecting a diverse yet unevenly distributed occupational profile. The education and commerce sectors recorded the largest representation, with 23 respondents each. This was followed by the medical (19 respondents), industrial (18 respondents), finance (17 respondents), and tourism (14 respondents) sectors. Other sectors such as construction, logging, transportation, fisheries, agriculture, mining, forestry, and livestock were represented by smaller counts, illustrating a broad but asymmetrical sectoral spread. With regard to employment hierarchy, the sample comprised primarily lower-level employees (64 respondents, 42.7%). Middle-level employees constituted 57 respondents (38%), while only 29 respondents (19.3%) occupied upper-level positions. This distribution indicates that operational and mid-level civil servants formed the core of the respondent group, aligning with the demographic composition typically observed in studies involving public sector personnel.

Table 1 Demography Respondents

Demography		**Number**	**Percentage %**
Gender	Male	74	49.3
	Female	76	50.7

Age	20-30 year	62	41.3
	31-40 year	51	34.0
	41 and above	37	24.7
Wage	<RM 1500	48	32.0
	RM 1500-RM 4800	80	53.3
	>RM 4800	22	14.7
Job Sector	Education	23	15.3
	Medical	19	12.7
	Industrial	18	12.0
	Tourism	14	9.3
	Logging	4	2.7
	Fishing	8	5.3
	Agriculture	7	4.7
	Trade	23	15.3
	Forestry	2	1.3
	Livestock	2	1.3
	Transportation	4	2.7
	Finance	17	11.3
	Construction	6	4.0
	Mining	3	2.0
Job Level	Top	29	19.3
	Middle	57	38.0
	Lower	64	42.7

Table 2 provides a descriptive overview of the five technostress factors, arranged according to their mean scores. The findings reveal that **technology overload** is the most prominent source of technostress among respondents (M = 3.638), suggesting that employees frequently feel burdened by the volume or pace of technological demands in their work environment. This implies that the rapid increase in digital tasks, information flow, and multitasking requirements is a significant contributor to stress in the workplace. The second highest mean is associated with **technology invasion** (M = 3.467), indicating that respondents commonly experience blurred boundaries between work and personal life due to constant technological connectivity. Similarly, **technology complexity** (M = 3.453) ranks third, implying that challenges related to learning, adapting, or using complex digital systems remain a substantial stressor. Meanwhile, **technology insecurity** (M = 3.100) reflects moderate concern among respondents regarding job security due to technological changes or automation. The lowest-ranked factor is **technology uncertainty** (M = 2.992), which suggests that while uncertainty about future technological changes exists, it is comparatively less influential than other stress factors. Although the mean values differ across the variables, the overall spread is relatively narrow, as indicated by the standard deviations and variances. This pattern suggests that all five factors are perceived as relevant sources of technostress, with no single factor overwhelmingly dominating the respondents' experiences. Nonetheless, the higher means for overload, invasion, and complexity highlight areas where organisations may prioritise interventions such as workload management, clearer digital boundaries, and targeted training to reduce complexity.

Table 2. A Descriptive Overview of the Five Technostress Factors

Variable	N	Mean	Standard Deviation	Variance
Technology Overload	150	3.638	0.8210	0.674
Technology Invasion	150	3.467	0.8393	0.704
Technology Complexity	150	3.453	0.7370	0.543
Technology Insecurity	150	3.100	0.8988	0.808
Technology Uncertainty	150	2.992	0.9858	0.972

Table 3 reports the Pearson correlation coefficients assessing the relationships between five technostress dimensions and job performance. All correlations are positive and statistically significant at the 0.01 level, indicating that higher levels of technostress are associated with greater changes in job performance. Among the technostress factors, **technology invasion** exhibits the strongest correlation with job performance ($r = .512$, $p < .01$). This suggests that the blurring of work–life boundaries and constant connectivity may substantially influence how employees perform their tasks. The second strongest association is observed for **technology insecurity** ($r = .478$, $p < .01$), implying that concerns about job loss due to technological advancements and automation have a meaningful impact on performance outcomes. **Technology complexity** ($r = .468$, $p < .01$) also demonstrates a moderate positive correlation with job performance. This indicates that difficulties in understanding or operating complex technologies may affect employees' effectiveness and productivity. Similarly, **technology overload** ($r = .351$, $p < .01$) shows a smaller but still significant relationship with performance, suggesting that excessive technological demands and information load can influence performance levels.

Among the five factors, **technology uncertainty** has the weakest correlation with job performance ($r = .301$, $p < .01$). Although the relationship is statistically significant, the lower coefficient indicates that uncertainty regarding future technological changes is a relatively less dominant predictor compared to other stressors. Overall, the pattern of results highlights that while all technostress factors are relevant, **invasion, insecurity, and complexity** exert the strongest influence on job performance. This suggests that organisations should prioritise managing digital boundaries, addressing job security concerns, and simplifying technological systems to mitigate the negative effects of technostress and enhance employee performance.

Table 3 Correlation Analysis for Technostress Factors Affecting Job Performance

		Technology Overload	**Technology Invasion**	**Technology Complexity**	**Technology Insecurity**	**Technology Uncertainty**	**Job Performance**
Technology Overload	Pearson Correlation	1	.602**	.551**	.334**	.161**	.351**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	150	150	150	150	150	150
Technology Invasion	Pearson Correlation	.602**	1	.697**	.452**	.331**	.512**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	150	150	150	150	150	150
Technology Complexity	Pearson Correlation	.551**	.697**	1	.523**	.492**	.468**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	150	150	150	150	150	150
Technology Insecurity	Pearson Correlation	.334**	.452**	.523**	1	.683**	.478**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	150	150	150	150	150	150
Technology Uncertainty	Pearson Correlation	.161**	.331**	.492**	.683**	1	.301**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	150	150	150	150	150	150

Job Performance	Pearson Correlation	.351**	.512**	.468**	.478**	.301**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	150	150	150	150	150	150

Discussion and Conclusion

The findings of this study indicate that all five technostress factors - technology overload, invasion, complexity, insecurity, and uncertainty - are significantly interrelated, with positive Pearson correlation values across variables. This demonstrates that technostress emerges not from a single issue but from a cluster of interconnected technological demands that intensify one another. Among these factors, complexity, insecurity, and invasion show the strongest correlations, suggesting that difficulties in using technology, fear of job displacement, and constant digital intrusion are the primary pressures contributing to technostress among public sector employees. Technology overload is also a notable contributor and records the highest mean value, reinforcing its role as a frequently experienced stressor due to heavy technological workload and rapid task demands. Conversely, technology uncertainty, although still significant, appears to exert a comparatively weaker influence.

These findings align closely with previous research. Studies such as Lieli Suharti & Agung Susanto (2014) similarly identified overload, invasion, and complexity as dominant contributors to technostress, demonstrating consistency between the present study and established literature. Likewise, Benson and Dundis (2003) highlighted how insufficient technological skills and organisational support heighten employee stress—corresponding with this study's findings on technology insecurity.

Furthermore, the results reveal a **moderate positive relationship between technostress and job performance** ($r = 0.551$, $p < 0.01$). This indicates that higher levels of technostress are associated with reduced job performance among public sector employees. This outcome is strongly supported by Lieli Suharti and Agung Susanto (2020) who found that technostress significantly impairs employees' ability to perform effectively. According to her findings, employees experiencing technostress struggle to apply technology efficiently, leading to incomplete tasks, lower productivity, and deteriorating health. This aligns with the present study, which similarly demonstrates that rising technostress contributes to a decline in employees' work performance. Overall, the comparison with earlier studies shows a clear pattern: **technostress is widely recognised as a significant determinant of employee performance**, and its symptoms - overload, invasion, complexity, insecurity, and uncertainty - are consistently found across different organisational contexts. The present research not only confirms but also strengthens this body of evidence by demonstrating that these factors are not isolated; instead, they operate collectively to influence technostress levels and, subsequently, employee performance within the public sector.

The findings of this study offer significant implications for organizational management and public sector administrators, particularly in understanding the antecedents of technostress and its subsequent impact on job performance. The evidence highlights that technostress is not merely an emerging workplace concern but a critical issue that can impair employees' psychological well-being and functional capacity if left unaddressed. Recognizing the presence of technostress within the organization is therefore essential, as its long-term effects may hinder employees' ability to perform effectively and sustainably. From a managerial perspective, the results underscore the importance of developing targeted interventions aimed at mitigating technostress factors. Organizations should proactively design and implement strategies—such as technology-use policies, continuous technical support, stress-coping resources, and user-friendly system upgrades-to ensure that employees are equipped to manage technological demands. Such initiatives are vital in enabling employees to maintain optimal performance levels despite increasing digitalization in the public sector.

Furthermore, the study provides valuable insight for organizations to reassess the relevance and effectiveness of their existing training and development programs. The evidence suggests that conventional training may not adequately address the evolving technological competencies required in the modern workplace. Consequently, systematic reviews of training modules-particularly those involving digital skills, adaptive capabilities, and technology-related stress management-are necessary to ensure alignment with current organizational needs. Given that the factors contributing to technostress were found to negatively influence the job performance of public servants, the long-term implications may include reduced productivity and the potential loss of high-performing employees. This

reinforces the need for agencies to incorporate the study's insights into their strategic human resource development plans. Enhancing both internal and external staff development programs with components that address technostress can contribute to building a more resilient, competent, and future-ready workforce. Overall, this study contributes to the growing body of literature on technostress by demonstrating its tangible effects on job performance and by offering practical directions for organizational policy and capacity-building initiatives within the public sector.

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