“Exploring technostress dynamics in consulting companies in Germany: A mixed-methods approach”

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EXPLORING TECHNOSTRESS DYNAMICS IN CONSULTING COMPANIES IN GERMANY: A MIXED-METHODS APPROACH

Abstract

Technostress (TS) has previously been addressed mainly from a broader organizational perspective, leaving more specific salient settings in the background. This paper bridges this gap by exploring TS dynamics in consulting companies in Germany, a setting that was previously little investigated but is highly TS-prone. This study uses an exploratory mixed-methods approach (MMR) with three components: 1) quantitative validation of the TS test-battery, 2) qualitative exploration of workplace TS through employee experiences, and 3) analysis of the relationship between TS experiences and demographics (age, gender, rank). Quantitative data representativeness is achieved through context-specific test-battery validation and a tailored questionnaire. 702 consulting company employees (based in Germany, aged 18-65) of a renowned management consulting firm participated (m = 417, f = 275). Qualitative data representativeness was ensured through in-depth interviews with 15 employees of different ages, genders, and ranks and company affiliations (Accenture, Boston Consulting Group, Deloitte, Ernst & Young, Roland Berger). Quantitative results indicated that female employees and those above 35 experienced higher levels of Techno-Complexity. Female employees experienced higher TS overall, reflected in their higher Techno-Overload, Techno-Invasion, and Techno-Complexity scores. This applied even to female employees who disagreed with the gender-difference tendency. Additional findings indicated that senior-ranking employees experienced more Techno-Overload and Techno-Invasion. Qualitative results highlighted three themes that further shape the psychological profile of TS in the investigated workplace: a) factors influencing TS, b) TS impact on workplace habits, and c) coping strategies. These findings emphasize that understanding the relationship between creators and demographics is crucial for mitigating consulting workplace TS.

Keywords technostress, ICTs, HRM, workplace, consulting, validation, coping, mitigation, MMR

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INTRODUCTION

Recent rapid technological advancements have significantly increased the use of Information and Communication Technology (ICT) in workplaces. This has led to a rise in workplace technostress (TS), affecting employees more frequently and broadly. The studies show that technostress can lead to negative outcomes, such as decreased job satisfaction, increased job strain, and reduced productivity (Tarafdar et al., 2011; Ragu-Nathan et al., 2008). While there is much research on organizational TS, specific organizational settings, like consulting workplaces, have not been studied much.

This study aims to fill this gap by focusing on how general findings about TS apply to consulting workplaces and how they appear in these environments. Also, there is a need to validate important TS measuring tools, like Tarafdar et al.'s (2007) Technostress Creator Scale, in these specific settings. Previous studies have highlighted the importance of context-specific research in understanding the nuances of

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technostress (Ayyagari et al., 2011; Califf et al., 2020). The lack of such targeted research has been a big issue in organizational TS studies and is becoming more important as technology and the scientific research of TS evolve.

Addressing this gap is crucial to ensure that the study of TS includes research on specific organizational environments like consulting environments.

1. LITERATURE REVIEW

As technology becomes more omnipresent, the increase in workplace demands is becoming more frequent. Consequently, the employees of an organization are expected to navigate these demands while maintaining performance consistency. Similarly, when an organization consistently fails to meet employee expectations regarding work, it can result in significant long-term problems. Most prominent of these issues include the continuous decrease in motivation, increased risk of burnout, and workplace exit due to the accumulation of stress. The most recent large-scale research, such as the Eurofund's (2020) study, reveals these issues to be even more pervasive than before. Due to the severity with which it can impact an organization, technostress (TS) has been identified as a contemporary adjustment disease, triggered by one's inability to cope with the current Information and Communication Technology (ICT) demands, resulting in anxiety and overall distress (Brod, 1984).

The preceding research focuses on one of the most prevalent types of modern workplace stress, i.e., TS, which has mostly contributed to strictly qualitative or quantitative perspectives. In recent years, this has consequently been seen by several researchers as a limiting factor. Particularly as it omits one or more of the TS-relevant dimensions and settings (Califf et al., 2020; Pfaffinger et al., 2022; Stana & Nicolajsen, 2021; Valta et al., 2021), in other words, the relevant body of research studies identifies the main issue to be the omission of the socio-professional interplay involving the individual employee, technology and the given professional environment (Mazmanian et al., 2013; Wajcman, 2020; Wang et al., 2020). Therefore, one of this paper's underlying aims is to shed more light on such mechanisms. More specifically, it seeks to provide useful, practical insights into the matrix of antecedents (creators) and inhibitors (preventers) characterizing technostress (TS) in the consulting environment. This is realized in practice by putting the societal lens of age-gender and the professional-organizational lens of employee rank to quantitative and qualitative tests.

The current pertinent body of work suggests gender is one of the more significant indicators of TS (Riedl et al., 2013; Tams et al., 2018). Besides, Marchiori et al. (2019) also point to a tendency for female employees to experience TS more frequently compared to their male colleagues. Other studies point to an opposite tendency (Hsiao et al., 2017; Tarafdar et al., 2011). Moreover, this absence of a consensus points to the need for and benefits of additional, more in-depth investigation of the relationship. From a quantitative perspective, the study this paper reports attempts to bridge this gap by testing these gender-related differences. From a qualitative perspective, this gap has been addressed through practice-driven interview questions. These questions were specifically aimed at tapping into the employee experience and perception of their own TS and how much they believe it results from gender differences.

Aside from gender, more recent research also points to age as an equally important indicator of TS in the organizational context. In particular, such research studies point to the tendency for older employees to experience higher levels of TS compared to their younger colleagues (Chen & Muthitacharoen, 2018; Pflügner et al., 2021; Rohwer et al., 2022). González-López et al. (2021), Khedhaouria and Cucchi (2019) also identify a potential cause of this to be the tendency for older employees to be more sensitive to the effects of (workplace) digitalization. Similar to research on the gender-TS relationship, additional research on the relationship between age and TS has suggested other cases. Namely, younger employees under specific organizational circumstances are more sensitive and vulnerable and, thus, experience more significant increases in TS (Hauk et al.,

2019; Hsiao, 2017). The consensus-gap here has also been widened by the emergence of research that suggests age does not play a significant role in TS (Krishnan, 2017). Quantitatively speaking, the study reported here has addressed this gap by examining age-related differences. Qualitatively speaking, the study has contributed to narrowing this gap by probing into the age-TS-related perceptions and experiences of the employees.

Compared to the previous two variables, research focused on the relationship between the employee's organizational rank and TS, suggesting less variability and more of a consensus in the light of the available evidence. A direct relationship has so far been supported by several research studies conducted in recent years (Bakker & Demerouti, 2018; Ogbonnaya et al., 2017). Furthermore, it has been shown that an employee's organizational rank significantly impacts the employee's perception of TS. In particular, the available evidence shows that different organizational ranks (technical staff, blue-collar/white-collar, managers, and supervisors) reflect different perceptions, experiences, and levels of TS in employees (Salanova et al., 2007, 2014). Despite all the evidence, the studies in this domain raise another important question. This question, particularly, concerns how the various organizational ranks can be considered significant predictors of workplace TS indicators. Quantitatively, the study contributes to this discussion by examining rank-related differences. Qualitatively, this aspect is explored in more depth by means of the questions focusing on the employee organizational rank-TS-related perceptions and experiences.

Regardless of their organizational rank, one important characteristic people in dynamic organizations have in common is that they are all confronted daily with workplace stress in several different forms. As Grimm et al.'s (2020) organizational management research points out, this is especially the case with such fast-paced workplaces as the consulting environment. What has, therefore, become one of the must-have assets in these work environments is the ability to navigate them. And do so, particularly with respect to the different types of stress such as social stress (Dormann & Zapf, 2002; Eggli et al., 2022; Giorgi et al., 2019), moral stress (Epstein et al., 2020; Gustavsson et al., 2023), cognitive stress (Bäcklander et al., 2019; Hodgkinson & Healey, 2008) or technostress (Chandra et al., 2019; Leitner & Rašticová, 2023). Due to such prevalence, workplace stress has continuously been at the center of attention of practitioners and researchers for a significant time now. In effect, the consistent increase in both technology-driven demands and expectations naturally leads to increased work-related stress, i.e., in the emergence and rapid proliferation of workplace TS at all organizational ranks. Taking the previously identified research gaps into consideration, this paper aims to explore the specific implications of workplace TS on employees to better understand its impact within a consulting workplace and its demographic factors.

2. METHODOLOGY

This study employs a mixed-method research design, integrating quantitative and qualitative dimensions. The research was conducted over one year (2021-2022).

To establish a robust methodological foundation, the study began with validating the Technostress Creator Scale, originally developed by Tarafdar et al. (2007). This validation aimed to identify technostress (TS) creator sub-categories relevant to the consulting workplace and its key demographic variables. The adapted test battery was evaluated using a five-point Likert scale, ranging from 1 ("not at all true") to 5 ("very much true"). Reliability was ensured through Cronbach's alpha reliability values. Demographic variables included gender, age, and organizational rank. In contrast, dependent variables comprised questions such as "Do companies need more training to prevent TS?", "Do women experience more TS?", "Do older people experience more TS?", and "Are rules against TS financially demanding?", along with Techno-Overload (TO), Techno-Invasion (TI), and Techno-Complexity (TC). Demographic variables were dummy-coded and entered as categorical TO, TI, and TC predictors.

Quantitative data were obtained through convenience sampling via an online survey generated with Quicksurvey and distributed by email within the target consulting organization in 2021. Ethical and legal compliance was ensured by submitting

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Table 1. Demographic distribution of survey participants (quantitative data)

		Frequency	Percent
Gender	Female	275	39.2
	Male	417	59.4
Age	18-35	401	57.1
	36+	301	42.9
Level at work	Analyst – associate	257	36.6
	Consultant	190	27.1
	Manager + senior manager + leadership	255	36.3
Family status	Participants with children	251	35.8
	Participants without children	451	64.2

the questionnaire to the organization's legal department and employee council for approval before distribution. The target population included employees from the German office of a leading global IT consulting organization (Accenture). Participants were recruited across various organizational ranks, including analyst, associate, consultant, manager, senior manager, and leadership positions to ensure sample representativeness. The final research sample consisted of 707 employees, with five outliers excluded, resulting in 702 participants aged 18 to 65. Detailed workplace demographics are presented in Table 1.

Qualitative data were obtained through voluntary response sampling via semi-structured in-depth interviews. Fifteen employees participated, varying in age (18-65), gender (male-female), organizational rank (entry to executive), and affiliation (five different German consulting firms).

Each interview lasted approximately one hour, yielding nearly 15 hours of material transcribed and systematized using NVivo software. NVivo facilitated efficient text processing and the development of sophisticated coding schemes, enhancing analytical rigor. The qualitative analysis followed Saldana's (2015) open coding framework, comprising three phases: open coding, category formation, and theme identification and formulation. This process involved thorough reading of transcriptions, re-immersion to identify recurring concepts and critical analysis. Thematic analysis was conducted in four steps: (1) code identification, (2) code-category formation and higher-level category development, (3) synthesis review and theme formulation, and (4) theme review in light of research and interview questions. The subsequent sections report the specific results of the TC instrument validation and the mixed-method research findings.

Table 2. Participant demographics for semi-structured interviews (qualitative data)

No.	Company	Gender	Age	Management level
1	Accenture	Female	36	Senior manager
2	Accenture	Male	45	Manager
3	Roland Berger	Male	34	Senior consultant
4	Ernst & Young (EY)	Female	42	Leadership
5	Ernst & Young (EY)	Male	30	Manager
6	Boston Consulting Group (BCG)	Male	39	Leadership
7	Roland Berger	Male	55	Leadership
8	Roland Berger	Female	30	Analyst
9	Boston Consulting Group (BCG)	Male	35	Manager
10	Boston Consulting Group (BCG)	Female	31	Analyst
11	Deloitte	Female	28	Consultant
12	Deloitte	Male	31	Senior consultant
13	Ernst & Young (EY)	Male	57	Senior manager
14	Deloitte	Female	36	Senior manager
15	Accenture	Male	45	Manager

3. RESULTS

The presentation of the results follows the order in which the data had been acquired and analyzed. Namely, the Technostress Creator Scale validation results are presented first, followed by those obtained as a part of the mixed-methods approach (MMR). The factor analyses marked the beginning of the validation process. Mean and standard deviation values for each technostress (TS) sub-scale are outlined in Table 3. The table shows that the mean scores on the sub-dimensions of TS are neither high nor low – TO (3.04), TI (2.35) and TC (2.00).

To ensure structural validity, exploratory factor analysis (EFA) was conducted to determine the factor structure or the fourteen-item TS scale. Kaiser's measure of sample adequacy validated the data for factor analysis (Kaiser's value =.88), meeting the criterion for analysis. Following Buyukozturk (2010), the data met the base criteria for the factor analysis. Barlett test for sphericity was also performed, providing additional proof for the significance of the previously obtained data ($p < .001$). The principal component analyses had, subsequently, been followed by the Varimax component rotation, which has resulted in eigenvalues larger than one and multiple item loadings. Eigenvalues variance fell from 0.28 to 5.25, with TO explaining 8%, TI 16%, and TC 38% of the total variance. All relevant items exhibited adequate loadings with changes taking place within the range of .60 and .89 (Comrey & Lee, 2013). Scree plots and fit indices have also pointed to a three-factor model (Table 4).

The next validation step was a Confirmatory Factor Analysis (CFA) on the three-factor model (14 items) derived from EFA using the maximum likelihood approach on the sample data. The obtained results have shown that the fit values of the model in question are acceptable ($x2/df = 4.77$, GFI = .93, AGFI = .90, CFI = .93, RMSEA = .07, SRMR = .08). The results of the CFA are illustrated in Figure 1.

To determine the internal consistency, Cronbach's alpha was employed to estimate the reliability of the study's main psychometric test. The obtained values were as follows: TO (0.85), TI (0.79), and TC (0.80). These values, in effect, indicate high internal consistency. Additionally, as a measure of the correlation strength, the Pearson correlation coefficient (PCC) in the future:

Table 3. Descriptive statistics of technostress sub-scales

Variables	N	Range	Min.	Max.	Mean	SD	Skewness	Kurtosis	SD
Techno-Overload	702	4.00	1.00	5.00	3.04	1.04	–.20	–.83	.85
Techno-Invasion	702	4.00	1.00	5.00	2.35	1.00	.46	–.58	.79
Techno-Complexity	702	3.40	1.00	4.40	2.00	0.84	.78	–.12	.80

Table 4. Results of exploratory factor analysis for technostress sub-scales

Variables	Items	Factors		
		TO	TI	TC
TO1	I am forced by ICT to do more work than I can handle	.75		
TO2	I am forced by ICT to work much faster	.88		
TO3	I am forced by ICT to work with very tight time schedules	.89		
TO4	I am forced to change my work habits to adapt to new ICT solutions	.60		
TO5	I have a higher workload because of increased ICT complexity	.65		
TI1	I have to sacrifice my vacation and weekend time to keep current on new ICT solutions			.75
TI2	I feel my personal life is being invaded by ICT			.66
TI3	I spend less time with my family due to ICT			.77
TI4	I have to be in touch with my work even during my vacation			.81
TC1	I cannot find enough time to study and upgrade my ICT skills		.62	
TC2	I do not know enough about ICT to handle my job satisfactory		.74	
TC3	I need a long time to understand and use new ICT solutions		.83	
TC4	I find new recruits in this organization know more about ICT than I do		.71	
TC5	I often find it too complex for me to understand and use new ICT solutions		.84	
	Total Variance Explained (%)	8	16	38

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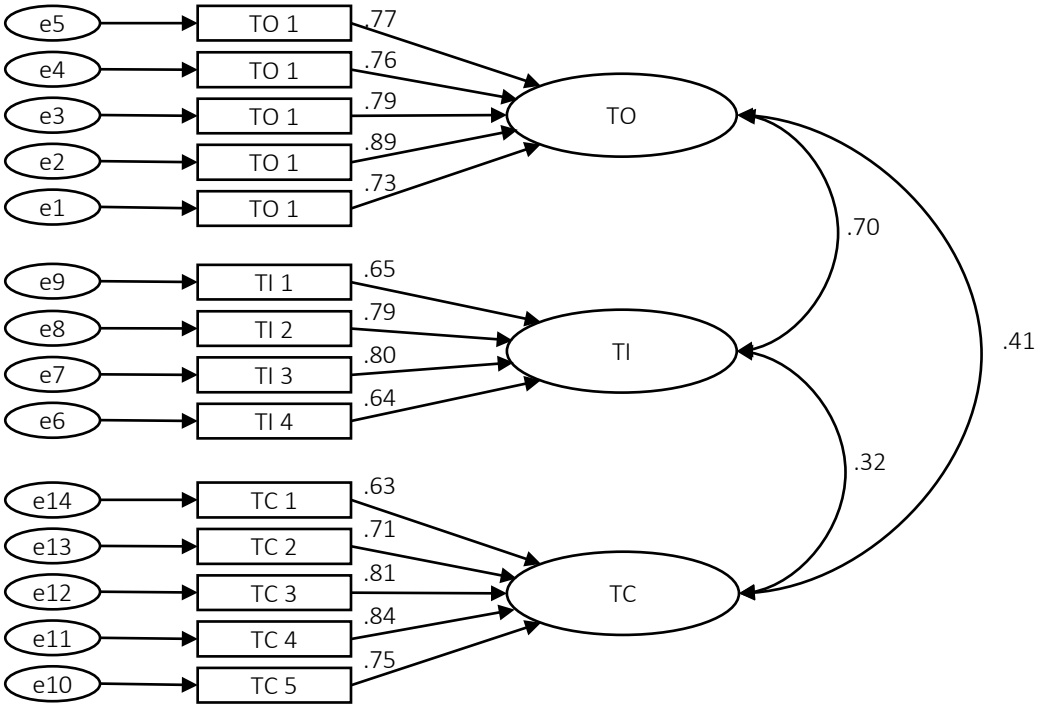

Figure 1. Factor structure of technostress scale (TO, TI, TC)

PCC is characterized as either small (r = 0.10), medium (r =.30) or large (r =.50) (Cohen, 1988). In this respect, the PCC has shown statistically significant correlations between TO, TI, and TC and their items, with the following small (r =.08), medium (r =.31), and large (r =.61) effects. As the data indicates, overall, the TS items and the sub-dimensions show adequate correlation.

The instrument validation phase was concluded with the criterion-related validity analysis. More specifically, it was concluded by analyzing the relationship between age and gender variables and the TS sub-categories of TO, TI, and TC. This step involved the author performing the independent t-test. The results obtained via the t-test have revealed statistically significant differences concerning the TC effect. Namely, significant differences in TC have been found between the group of participants older than 35 (M = 1.86, SD = .77) and the group of 35-year-olds and younger (M = 2.18, SD = .89) (t(3) = 2.252, p < .03). Significant differ-

Table 5. Correlation matrix of technostress items

	TO1	TO2	TO3	TO4	TO5	TI1	TI2	TI3	TI4	TC1	TC2	TC3	TC4	TC5
TO1	1													
TO2	.610*	1												
TO3	.612*	.681*	1											
TO4	.396*	.398*	.443*	1										
TO5	.556*	.501*	.542*	.559*	1									
TI1	.397*	.318*	,338*	.328*	.391*	1								
TI2	.469*	.374*	.439*	.422*	.467*	.480*	1							
TI3	.421*	.352*	.384*	.369*	.462*	.503*	.660*	1						
TI4	.307*	.254*	.278*	.220*	.297*	.452*	.371*	.433*	1					
TC1	.326*	.321*	.273*	.279*	.336*	.285*	.259*	.264*	.117*	1				
TC2	.286*	.246*	.231*	.195*	.301*	.254*	.179*	.199*	.090*	.525*	1			
TC3	.229*	.226*	.182*	.150*	.266*	.246*	.184*	.186*	.088*	.484*	.582*	1		
TC4	.135*	.147*	.077**	.133*	.165*	.162*	.109*	.077***	.056***	.333*	.347*	.389*	1	
TC5	.212*	.191*	.167*	.137*	.248*	.198*	.121*	.131*	.091**	.411*	.469*	.641*	.514*	1

Note: * indicates p < .05.

ences with respect to TC have also been found between the female participants (M = 2.09, SD = .87) and male participants (M = 1.94, SD = .80) (t(3) = -5.024, p < .001). However, the t-test results have not revealed any statistically significant difference concerning TO and TI between younger and older or female and male employees.

In response to the need for more integrated approaches, the current study combines quantitative and qualitative dimensions to develop a comprehensive understanding of TS in the consulting organizational environment.The observation and systematic literature review have pointed to the thematic analysis as the most critically effec-

Table 6. Axial coding results – grouping of codes into categories

Sub-themes	Aligned codes
Organizational responsibility strategies to reduce TS	Anti-stress management Creating awareness for TS Flexible working hours Improvement of culture Mental health trainings Mind, body, soul Personal development of employees Radio silence policy Trainings for tools Workload control
Personal coping strategies to reduce TS	Separation of private and work phone By defining professional boundaries Consciously avoiding stress Confidence due to experience Turn off push notifications Deleting social media Regimented schedule Self-organization Turnoff phone during lunchtime, vacations Take conscious breaks
Challenging factors of technology adoption	Constant communication limits personal space Diminishes physical contact during Covid Extremely reliant on technology Loneliness through technology Loosing valuable information in virtual communication Male voice dominates virtual meeting, gender-bias Massive increase of workload by home office situation and technologies Threat for youngsters' mental health Time consuming Valuable but addictive
Facilitating factors of technology adoption	Accelerated progress Ease of collaboration Ease of knowledge accessibility Helps to organize tasks Orientation Payment options Simplifies organization environment Staying in touch with people all over the world Time-saving use of technology
Negative impact of TS on workplace habits	Absence of privacy Cyber security issues Discomfort Employee turnover Females are more receptive for stress prevention Less tech-savvy women Loss of workplace focus Overburdened workload
TS triggers	Availability at any and all hours Electronic leash Extra-learning fatigue Flood of information Incomplete tasks Lack of human contact Life as a competition through social media Stress through app pluralism

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tive method regarding the target organizational setting. In this regard, the thematic analysis offers benefits such as an in-depth understanding of data and allows the ongoing dialogue initiated through the interviews to continue until the experiences are distilled into more straightforward pertinent themes. In other words, the approach helps identify precisely the themes most relevant to the stakeholders in the target context by highlighting pressure points while maintaining a close connection to the data.

The open coding phase involved the generation of codes from 15 interview transcripts. The main goal of the open-coding phase was to distill the respondents' experiential narratives into more focused topical signposts. In other words, the open coding has allowed the researcher to transform the semi-structured data into more structured and straightforward points representative of the obtained TS narratives. This has led to the identification of the 52 open codes. The results of the open coding phase have, subsequently, been revised through the lens of axial coding in search of the more prominent sub-themes. The latter were then generated based on the relationships between the codes and translated into six prominent categories (Table 6).

The last phase involved revisiting and re-evaluating the data through the lens of the six subthemes. This has led to the identification of three major themes reflecting the TS experience's most salient aspects in the target consulting environment. Table 7 presents the themes in question and their meaning in the specific context and aligned categories.

Alongside the qualitative, another important point of departure for the current critical exploration was a more in-depth examination of the quantitative relationships. The first of these links concerns the one between the gender variable and the three focal TS indicators. These indicators were identified earlier as TO, TI, and TC. Concerning this specific research gap, the current paper contributes quantitative evidence supporting the assumption that female employees exhibit higher TC scores compared to their male colleagues (see Table 8).

Another finding of the quantitative study that points in this direction concerns the reports of both females and males on the issue of who experiences more TS. More specifically, 70 female and 50 male participants have stated that women experience more technostress (Table 9). These and the results illustrated in Table 8 provide sufficient evidence to accept the hypothesis that gender influences TS.

The independent t-test results reveal that women who believed women suffer more TS reported higher levels of TO, TI, and TC than men with the same belief. On the other hand, 204 female respondents and 350 male respondents reported they did not think that women experience more TS. Despite the results of the independent t-test

Table 7. Major themes characteristic of the consulting domain

Themes	Theme meaning	Aligned categories
Theme 1: Coping strategies to reduce TS	Methods of alleviating the effects of technological stress	Organizational responsibility: strategies to reduce TS Personal responsibility: coping strategies to reduce TS
Theme 2: Factors influencing TS	Advantages and disadvantages of technology	Challenging factors of technology adoption Facilitating factors of technology adoption
Theme 3: Effect of TS on workplace habits	Technostress induced by the work environment	Negative impact of TS on workplace habits TS triggers

Table 8. ANOVA test of TO, TI, and TC with respect to gender

Groups	TO		TI		TC		Post hoc results
	M (SD)	F	M (SD)	F	M (SD)	F	
Female	3.10(1.06)	1.62	2.33(1.01)	0.25	2.09(.87)	5.07*	TC: Female >Male
Male	3.00(1.02)		2.36(.97))		1.94(.80)		

Note: * indicates $p < .05$.

Table 9. Independent t-test scores comparing perceptions of higher technostress in women (TO, TI, TC scores): comparing women who think that women experience higher technostress than men and men who think that women experience higher technostress than men in terms of their TO, TI, and TC scores

Indicator	Gender	N	Mean	SE	t	df	p
Overload	Female	70	3.29	.124	.87	125	.384
	Male	50	3.13	.136			
Invasion	Female	70	2.42	.127	.51	125	.610
	Male	50	2.33	.132			
Complexity	Female	70	2.34	.104	1.84	125	.068
	Male	50	2.06	.114			

not being statistically significant in this case, they nevertheless point to an interesting tendency that warrants further investigation (Table 10).

An additional important focus of this paper is the relationship between age and the pertinent TS indicators. As for gender, available research appears to lack a consensus. The current paper contributes to the former most research, as the results indicate that the age of the employees significantly affects at least one TS indicator, TC in this case. In particular, the respondents above the age of 35 exhibited significantly higher TC scores, indicating that the age range of 18-35 predicts TC negatively (Table 10). In effect, this further provides sufficient evidence to accept the hypothesis that age affects TS.

The final focal point of this paper concerns the critical exploration of the relationship between TC, TO, TI, and organizational rank. When data was split by gender and subjected to the stepwise regression analysis, the results revealed that the ranks of manager, senior manager, and leadership in the female group (predicting 2% of TO), as well as the ranks of analyst and associate in the male group (predicting 1% of TO), significantly affect TO (Table 12). Besides, the data has also revealed that the ranks of analyst and associate in the female group (predicting 1.5% of TI) and the ranks of manager, senior manager, as well as leadership in the male group (predicting 1.4% of TI), significantly affect TI (Table 13). Lastly, the results have also revealed that being between 18 and 35 years old in the case of female employees (predicting 9% of TC) and being between 18 and 35 years old and at the rank of consultant in the case of male employees (predicting 3% of TC) significantly affects TC (Table 14). The results obtained here, thus, provide sufficient evidence to also accept the hypothesis that organizational rank affects TS.

Table 10. Independent t-test scores comparing perceptions of higher technostress in women (TO, TI, TC scores): comparing women who do not think that women experience higher technostress than men and men who do not think that women experience higher technostress than men in terms of their TO, TI and TC scores

Indicator	Gender	N	Mean	SE	t	df	p
Overload	Female	204	3.04	.074	.79	552	.432
	Male	350	2.97	.054			
Invasion	Female	204	2.29	.070	–.91	552	.362
	Male	350	2.37	.052			
Complexity	Female	204	2.00	.060	1.13	552	.258
	Male	350	1.92	.043			

Table 11. ANOVA test results of technostress indicators (TO, TI, TC) with respect to age

		TO		TI		TC		Post-hoc results
Age	18-35	2.99(1.02)	2.41	2.32(.98)	1.15	1.86(.77)	25.24***	**TC:** 36+ > 18-35
	36+	3.11(1.06)		2.40(1.01)		2.18(.89)		

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Table 12. Stepwise regression analyses predicting TO split by gender

Category	Predictors	B	t	Sig.	R	R^2	F	Sig.
Female	Managers Senior managers Leadership	.143	2.38	.018	.14	.02	5.68	0.02
Male	Analyst – associate	–.109	–2.24	.026	.11	.01	5.17	0.03

Table 13. Stepwise regression analyses predicting TI split by gender

Category	Predictors	B	t	Sig.	R	R^2	F	Sig.
Female	Analyst – associate	–.123	–2.05	.042	.123	.015	4.18	0.04
Male	Managers Senior managers Leadership	.119	2.44	.015	.119	.014	5.93	0.02

Table 14. Stepwise regression analyses predicting TC split by gender

Category	Models	Predictors	B	t	Sig.	R	R^2	F	Sig.
Female	1	18-35 years old	–.301	–5.22	.000	.30	.09	27.29	.00
Male	1	18-35 years old	–.135	–2.77	.006	.14	.02	7.66	.06
	2	18-35 years old	–.148	–3.03	.003	.17	.03	5.13	.02
		Consultant	.110	2.27	.024				

4. DISCUSSION

The main motivation for this paper was to contribute to the state-of-the-art technostress (TS) literature and research within the consulting domain. This objective has translated into three specific contributions. First, the paper introduced a mixed-method research framework that can be readily applied to investigate TS dynamics in consulting environments. Second, it provided a practice-informed blueprint for systematically assessing the quantitative and qualitative specifics of the relationship between TS indicators (Techno-Overload (TO), Techno-Invasion (TI), and Techno-Complexity (TC)) and key organizational demographic variables (gender, age, and organizational rank). Third, the paper focused on the previously under-researched German consulting culture in TS and mixed-methods approach (MMR).

These research findings significantly contribute to the existing literature by offering novel insights into TS in an under-studied organizational environment. The findings address a crucial research gap concerning the direct relationship between TS and specific organizational demographics. By comparing the results with previous research, this study has identified inconsistencies and patterns, shedding light on the organizational nature of the interplay between TS indicators and demographic variables.

Furthermore, this study suggests future research avenues in organizational TS research. These include a better understanding of the mechanisms underpinning demographic differences in TS experiences and extensive critical explorations of the impact of TS on organizational culture dynamics, especially concerning job satisfaction, employee turnover, and associated organizational costs.

The extensive literature review has shown that previous research studies and approaches indicate inconsistencies and a lack of consensus regarding findings. A more detailed analysis suggests that gender significantly influences TS perception and levels. Califf and Brooks (2020), Korzynski et al. (2016), Marchiori et al. (2019) indicate that female employees experience higher levels of Techno-Complexity than their male counterparts. More recent studies have found women to be more commonly prone to experiencing not only TC but also Techno-Overload and Techno-Invasion compared to men (La Torre et al., 2020). The current research supports these findings, revealing that female employees report higher TO, TI, and TC levels. This trend is observed even among female employees who do not believe women suffer more from TS, suggesting an underlying bias within the consulting domain. Factors contributing to this dis-

parity include perceived gender bias in virtual meetings, where male voices tend to dominate, and communication tools that may favor male voices over female voices.

Similarly, the review of existing research indicates a lack of consensus on the link between age and TS. Seminal research suggests older adults are more prone to interruptions and their adverse effects (Hasher & Zacks, 1988). Recent studies indicate that older employees experience higher TC due to age-specific cognitive changes (Tams et al., 2018; Özgür, 2020). However, some studies have found younger people to experience higher TS levels (Hsiao, 2017; Tarafdar et al., 2018), while others report no significant relationship between TS and age (Krishnan, 2017). The current research supports the view that older employees are more susceptible to TS, particularly in maintaining focus and managing interruptions, which can exacerbate TS. Older employees often report difficulty fully focusing on tasks, leading to incomplete activities and increased technostress due to frequent interruptions.

Lastly, the research focusing on the relationship between TS and organizational rank indicates that higher-ranking employees, particularly management employees, are more burdened by TI and TO. Pflügner et al. (2021), Ragu-Nathan et al. (2008), Davis (2002), Gaudioso et al. (2017) suggest that managers and leaders experience higher TO due to the need to process more data and higher TI from being constantly connected. The current research corroborates these findings, showing that managers, senior managers, and leaders are particularly prone to TO and TI. Additionally, employees aged 18-35 at the consultant rank are found to be especially susceptible to TC. Higher-ranking employees often express that technological improvements can ease everyday tasks, and shifting from power and control to personal responsibility can significantly reduce pressure and technostress.

CONCLUSION

The present work discusses technostress (TS) in the consulting workplace, identifying Techno-Overload (TO), Techno-Invasion (TI), and Techno-Complexity (TC) as key factors impacting employees. Empirical validation confirms these sub-dimensions as primary drivers of TS, offering deeper insights into its workforce impact. A significant contribution of this paper is the identification and quantification of the relationships between socio-organizational variables (gender, age, and rank) and TS components (TO, TI, and TC), providing valuable direction for researchers and practitioners.

Qualitative analysis revealed three main themes: factors influencing TS, the effect of TS on workplace habits, and coping strategies to reduce TS. These themes highlight critical aspects of TS as experienced by employees, enhancing the current understanding of TS in consulting environments.

The findings emphasize the need for tailored interventions to mitigate TS, considering the unique dynamics of gender, age, and rank within the consulting environment. These insights aim to help organizations better support their employees and improve overall workplace well-being.

AUTHOR CONTRIBUTIONS

Conceptualization: Ilona Leitner, Martina Rašticová.
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Formal analysis: Ilona Leitner.
Investigation: Ilona Leitner.
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