The Impact of Technostress on Rumination in the Banking Sector of Pakistan

Muhammad Mudassar shahid
Ph.D. Scholar, Institute of Business Administration, Khawaja Fareed University of Engineering and Information Technology, Rahim Yar Khan
mudassar_shahid68@yahoo.com

Waleed Khalid
Assistant Professor, Institute of Business Administration, Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan
rajawaleedkhalid@yahoo.com

Abstract

Although Pakistan's banking industry is leading the way in digital transformation, a hidden techno-stress is associated with this advancement. Our research, created with your business goals in mind, looks at how work-life conflict, information overload, and other tech-related worries affect the dedication and well-being of employees. We look at how common techno-stress is and how it relates to depressive thoughts. We aim to provide workable solutions that lessen technology-related stress while promoting worker well-being and corporate efficiency. We examine the effects of various types of rumination on productivity using survey data. We suggest strategies that reduce harmful tech stresses and encourage healthy detachment to increase employee happiness and organizational efficiency. Using a strict approach, we examine the intricate links between technostress and associated aspects. This study highlights the need for context-specific solutions for Pakistan's banking industry and provides insightful advice on fostering a positive workplace culture that grows with technology.

Keywords: *Techno-stress Techno-Overload, Techno-Invasion, Techno-Complexity, Techno Uncertainty, and Techno-Insecurity, Rumination*

Introduction

In today's fast-paced, technologically sophisticated world, people are constantly exposed to various technologies in their personal and professional lives. Technology's undeniable benefits and advancements have given rise to a new issue known as "techno stress" (La Torre et al., 2019). According to La Torre et al. (2019), people using technology at work may experience negative psychological and emotional side effects known as "Techno-Stress." Companies are attempting to comprehend and mitigate the impact of this emerging issue on worker productivity and overall staff performance. According to research by Tarafdar et al. (2007), five factors contribute to techno-stress: (1) Techno-Overload, (2) Techno-Invasion, (3) Techno-Complexity, (4) Techno Uncertainty, and (5) Techno-Insecurity. Due to the overwhelming volume of technology-related tasks and information that employees must absorb, individuals may suffer from cognitive overload (Thurik et al., 2024). People who experience information overload and constant demands may find it more challenging to understand and respond appropriately to these stimuli (Chen & Zhang, 2023).Cognitive overload, which may result in rumination, may make it difficult for workers to turn off work-related thoughts and worries, even when not working (Harju et al., 2023).

The pervasive use of technology in the workplace has raised concerns over the detrimental effects of techno-stress on employees. As claimed by Pflügner et al. (2020), workers are constantly exposed to the five factors of techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity that lead to techno-stress (Sharma & Tiwari, 2023). They say these components combine to cause techno-stress, negatively impacting workers' productivity, well-being, and job satisfaction.

Due to significant technological advancements and digital transformations, the banking sector in Pakistan is becoming more and more essential to daily operations. Although the sector has profited immensely from these technological advancements, staff members now confront additional challenges. One of the main issues that bank employees face is techno-stress, described as the negative psychological and emotional responses brought on by utilizing technology at work (Sumarny Manurung). According to (Wang et al., 2023), there are many ways that technology may cause stress, including overload, invasion, complexity, ambiguity, and insecurity. However, there is an extensive research gap in identifying the specific effects of

techno-stress creators on bank workers in Pakistan, despite the growing significance of technology in the banking sector and the potential adverse effects of techno-stress on employee performance and well-being. Most research on technological stress has focused on settings in general workplaces, excluding the unique context and challenges faced by employees in the banking sector (Fares et al., 2023). The present study fills this research vacuum by examining the effects of techno-stress on bank workers in Pakistan. The study attempts explicitly to look into the relationships between the five components of techno-stress of techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity and how these elements affect employees' ruminations, emotional distance, and dedication to their banking jobs.

It is crucial to understand the manifestations of techno-stress, particularly in the banking sector, and the consequences for many reasons. First, the banking business in Pakistan is highly competitive, and its employees' productivity and well-being significantly impact the sector's profitability (Kumar et al., 2023). Technology stress may negatively impact productivity, job satisfaction, and employee engagement. This might have an adverse influence on the workers as well as the companies they work for (Bahamondes-Rosado et al., 2023). Second, considering the banking industry's increasing dependence on technology and digitalization, it is imperative to identify the techno-stressors that most negatively impact Pakistani bank employees. With this information, firms can develop targeted programs and tactics that effectively manage and lessen technology-related stress, promoting worker satisfaction, loyalty, and well-being Murphy (2023).

Literature Review

Techno-stress has gained much attention recently as organizations depend increasingly on technology for operations. The five elements of techno-stress techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity have all been widely discussed in the literature (Cataldo et al., 2023). For example, Kalra et al. (2023) looked at how workers' stress levels and productivity were impacted by technology overload. They found a correlation between increased stress levels and subpar performance, excessive use of technology, and information overload. Analogously, Ma et al. (2021) investigated the impact of technology invasion on work-life balance, highlighting the adverse effects of constant connectivity and the merging of personal and professional life on wellbeing and stress levels.

Due to technological advancements and a growing reliance on technology, the banking sector has undergone a radical transformation, resulting in several benefits and enhanced efficiency (Kitsios

& Ioannou, 2024). However, the rising use of technology in the workplace has also brought forth new challenges for bank employees, leading to techno-stress. This section provides a comprehensive overview of the body of research on the topic, covering the five elements of techno-stress, techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity as well as their effects on worker performance and well-being in Pakistan's banking industry (Kitsios & Ioannou, 2024).

Numerous studies have examined how workers in a variety of work environments are affected by technology overload. As Nisafani et al. (2020) indicated perceived stress was positively connected with technology overload and negatively correlated with job satisfaction. Khan (2023) looked at the effects of techno-overload on Pakistani bank employees in the banking sector. He asserted that high techno-overload levels were associated with lower job performance and increased burnout. Numerous studies have shown the detrimental effects of technology overload on employees' performance and well-being in the banking sector (Pflügner et al., 2020).

Technological invasion of workers' personal lives, which makes it harder to distinguish between work and non-work realms, is called "techno-invasion" (La Torre et al., 2019). The impact of technology intrusion on many consequences has been thoroughly examined in scholarly works. For example, Pflügner et al. (2020), investigated the effects of smartphone usage on psychological detachment and job engagement when used during off-peak hours at work. They found that more significant technology intrusion was associated with lower levels of psychological disengagement and job engagement, underscoring the need for firms to draw clear boundaries between work and personal life. Additionally, Saim et al. (2021) looked at technology's role in dispersing negative emotions from the office to the house and also their study, the invasion of technology results in a decrease in well-being and an increase in adverse effects outside the office.

Abd Aziz et al. (2021) investigated the impact of technical complexity in the banking industry on employee reluctance to change. Their findings demonstrated those workers' attitudes towards and intentions to embrace new technologies are negatively impacted by technical complexity. These studies' conclusions emphasize the need for user-friendly interfaces and appropriate training programs in the banking sector by raising the possibility that employees' adoption and satisfaction with technology may be constrained by technical complexity (Saim et al., 2021).

İmamoğlu (2021) examined how technological uncertainties within the banking sector impacted employee job satisfaction and willingness to quit the organization. Their results showed a correlation between a greater likelihood of quitting and worse job satisfaction at increasing levels of technical uncertainty. According to this research, technological uncertainty may harm staff attitudes and behaviors in the banking sector (Weerawarna & Chandrasekara).

Techno-insecurity is the belief that technology will replace humans and that there are hazards to one's job security (Borle et al., 2021). Though it is a relatively new concept in the literature on techno-stress, techno-insecurity has gained attention due to the rapid advancements in automation and technology. Although there is still much to learn about techno-insecurity, preliminary studies have shown that it may affect organizational outcomes and staff well-being. For example, Chiu et al. (2023) examined the relationship between technical insecurity and organizational resistance to digital transformation. They found a link between higher levels of techno-insecurity and a greater aversion to change.

Rumination is the process of thinking about the challenges, requirements, and bad experiences associated with utilizing technology at work regularly and continuously (Watkins & Roberts, 2020). This phrase refers to the impacts of techno-stress. Employee well-being and work performance have been observed to suffer from rumination (Song & Zhao, 2022). Research on the relationship between techno-stress and rumination in Pakistan's banking sector, however, has been limited. Numerous studies have shown a connection between technological stress and rumination. Techno-stress, which encompasses the five elements of techno-overload, techno-invasion, techno-complexity, and techno-insecurity, may cause employees to ruminate more often (Chen et al., 2022; Kim & Lee, 2021). For example, workers experiencing techno-overload may ruminate because they are preoccupied with the copious quantities of information and tasks they need to do (Hallford et al., 2019). Similarly, workers could dwell on technology since it permeates everyday life and because technical systems are complex (Ray et al., 2016). Furthermore, rumination may increase due to uncertainties around technological breakthroughs and concerns that technology may replace occupations (Noetel et al., 2024).

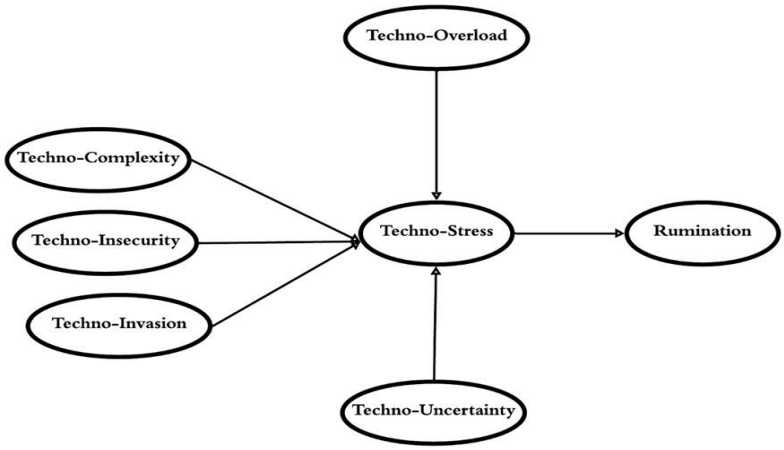
Rumination in Pakistan's financial sector may originate in several places. First, bank employees' rumination has been connected to techno-overload, defined by an overwhelming quantity of knowledge and responsibilities (Fatima et al., 2024). Workers who have to cope with an endless flood of data and demanding duties could start to doubt their ability to manage pressure. Second,

introducing technology into a worker's personal life, or techno-invasion, may make them more prone to rumination (Fatima et al., 2023). Due to the increasing use of digital platforms and mobile devices, bank employees may find establishing boundaries between their personal and professional lives challenging. They could consider work-related matters outside regular business hours because of this.

Understanding the consequences of rumination in Pakistan's banking sector is crucial for organizations looking to reduce the adverse effects on worker well-being and productivity. Organizations may find it helpful to pinpoint the reasons employees ruminate due to technological stresses so they may create targeted interventions and strategies to reduce ruminating and boost worker resilience and output. Further empirical research is needed to fully understand the dynamics of rumination, its relationship to techno-stress, and its impact on employee outcomes such as job satisfaction, stress levels, and performance. Knowing how rumination occurs in the banking industry may assist firms in developing targeted interventions to control and reduce ruminating effectively, hence fostering a more positive work environment for Pakistani bank employees (Anwar et al., 2023).

Figure 01

Research Framework



Research Methods

A sample of bankers, especially those dealing with banking operational activities from the public and private sectors in Southern Punjab, Pakistan, was used to evaluate the study's assumptions.

Because it is noted that techno stress is a prevalent issue at this level, data collection involves directly contacting workers in banking operations. A random sample approach was used to get the data. The questionnaires and variables used in this study are modified from earlier studies. The study questionnaire, however, is divided into two primary portions. Five Likert-type scale questions are included in the second section, while the first section aims to collect demographic information from the respondents. During the research, all necessary measures were followed to ensure ethical data collection, and the study participants were assured that their replies would remain private. Since most respondents were busy at their workplaces, the answers were gathered in person on the organizations' premises using a Google form questionnaire following a thorough explanation of the study and questions. The sampling approach resulted in 600 workers being contacted, of whom 504 returned surveys were usable and 96 questionnaires that respondents still need to fill out. Because of this, only 504 questionnaires were included in the study that followed, yielding a legitimate response rate of 84%.

Findings and Results from Data Analysis

Table 1 gives the demographic data of the respondents in terms of gender, age, qualification, and working experience.

Table 1
Demographic Factors

Respondents' Demographic Information					
Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	154	30.55	30.55	30.55
	Female	350	69.45	69.45	100.0
	Total	504	100.0	100.0	
Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-23 Years	107	21.23	21.23	30.9
	24-30 Years	153	30.35	30.35	68.6
	31-43 Years	123	24.40	24.40	100.0
	44-55 Years	103	20.43	20.43	
	56 and Above	18	03.57	03.57	
	Total	504	100.0	100.0	

Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor	193	38.29	38.29	38.29
	Master	197	39.08	39.08	77.37
	MPhil and above	114	22.63	22.63	100.0
	Total	504	100.0	100.0	
Working Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<5Years	102	20.23	20.23	45.0
	5-10 Years	157	31.15	31.15	63.9
	11-15 Years	127	25.19	25.19	77.0
	16-20 Years	99	19.64	19.64	90.1
	above 20 Years	19	03.76	03.76	100.0
	Total	504	100.0	100.0	

Source: Authors

Assessment of the Measurement Model

A multivariate analysis is carried out to evaluate the measurement model to identify missing values and eliminate any outliers by screening the gathered data. Since there were just a few missing values and their replacement did not influence the whole data, a mean value was utilized as a rough guideline for handling the missing values. The 5-point Likert scale was used to gather the data set for the variables in the current research, and all of the values were within the range even though both univariate and multivariate outliers were included in the set. Following these checks, the modified data is sent for further examination.

Furthermore, the PLS-SEM approach has been used to validate the idea and suggests that the association exists. Nonetheless, the measurement model must be used in the model assessment to verify the reliability and validity of the model. The measurement model's evaluation using PLS-SEM has been adequately assessed by the usage of Smart-PLS 4.0 (Sarstedt et al., 2014). Reliability, discriminant validity, and convergent validity of the measurement of constructs were noted and thoroughly investigated, leading to the conclusion of the measurement model. Before determining if the variables were connected, the researchers examined each variable's measurement quality to ensure no issues. Hair et al. (2014) state that there isn't any further text. Please provide me with the whole text so I can simplify it. We may declare a survey accurate if

each question scores over 0.5. As can be seen from the chart in Phillips et al. (2019), every value for the variables under consideration is greater than the lowest value we were searching for. As Brown (2017) presents the quality of the measurements for all the variables under investigation. Every measurement exceeds our standards of excellence.

Furthermore, the alpha value determination criteria were devised by Kiep and Spek (2017) and goes as follows: $\alpha > 0.9$ = Excellent, $\alpha < 0.8$ = Good, and $\alpha < 0.7$ = Acceptable. Nonetheless, the results of the present investigation demonstrate that each variable has a Cronbach's alpha value of 0.8, as seen in Table 5. This proves that the research is consistent, thus.

Figure 02
Assessment of Measurement Model

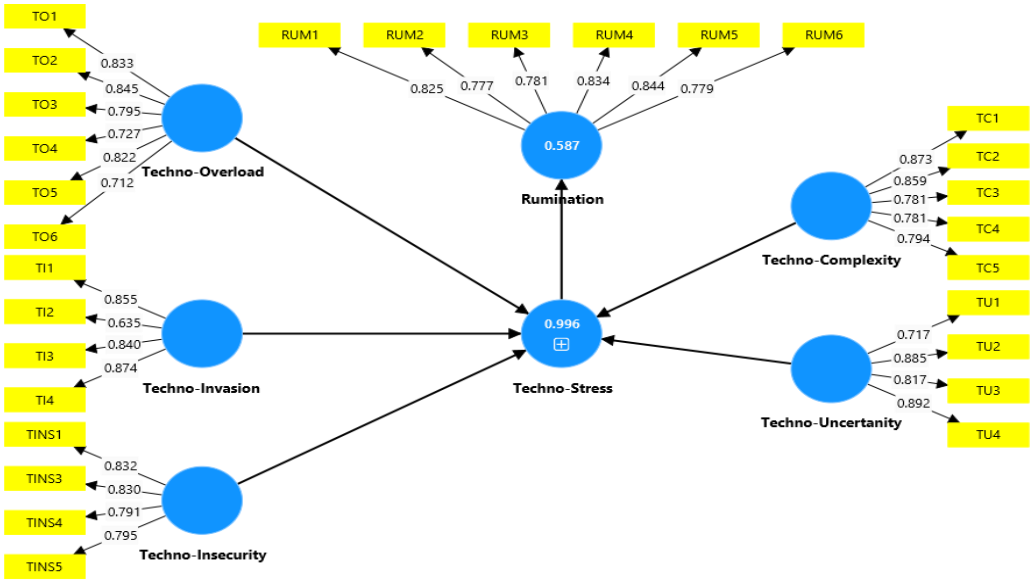


Table 2
Construct Reliability and Validity

Variables	Items	Factors' Loadings	Cronbach's Alpha	Composite Reliability	Average variance extracted (AVE)
Rumination (RUM)	RUM1	0.826	0.893	0.918	0.652
	RUM2	0.774			
	RUM3	0.778			
	RUM4	0.835			
	RUM5	0.845			
	RUM6	0.784			
Techno-	TC1	0.872	0.876	0.910	0.670

complexity (TC)	TC2	0.859			
	TC3	0.780			
	TC4	0.779			
	TC5	0.798			
Techno-Invasion (TI)	TI1	0.850	0.818	0.881	0.652
	TI2	0.643			
	TI3	0.838			
	TI4	0.877			
Techno-Insecurity (TINS)	TINS1	0.826	0.828	0.886	0.660
	TINS3	0.826			
	TINS4	0.799			
	TINS5	0.799			
Techno-Overload (TO)	TO1	0.833	0.879	0.909	0.625
	TO2	0.844			
	TO3	0.797			
	TO4	0.729			
	TO5	0.822			
	TO6	0.710			
Techno-Uncertainty (TU)	TU1	0.711	0.850	0.898	0.690
	TU2	0.887			
	TU3	0.815			
	TU4	0.896			

Source: Authors

The above table shows the values of factor loadings of the variable and also Cronbach's Alpha, composite reliability, and the values of AVE. This shows that all the values are higher than the threshold values.

This article discusses how examining the relationships between various elements (latent variables) may help determine if a model makes sense. By reviewing their association, we achieve this. The book also mentions that we may use the "square root of AVE's" to compare the values of these components. The table indicates that there are fewer linkages between the various topics under study than indicated by the bolded numbers.

Table 3
Discriminant validity (Fornell-Larcker criterion)

	RUM	TC	TINS	TI	TO	TS	TU
Rumination	0.807						
Techno-Complexity	0.653	0.885					
Techno-Insecurity	0.745	0.779	0.858				
Techno-Invasion	0.606	0.555	0.553	0.807			
Techno-Overload	0.635	0.641	0.602	0.750	0.872		

Techno-Stress	0.766	0.819	0.812	0.799	0.791	0.709	
Techno-Uncertainty	0.558	0.406	0.375	0.333	0.426	0.436	0.831

Source: Authors

The above table shows that all the diagonal values presented in the bolded form are higher than the off-diagonal values which meet the criteria of the discriminant validity.

Table 4

Discriminant validity (Heterotrait-Monotrait ratio (HTMT) – Matrix)

	RUM	TC	TINS	TI	TO	TS	TU
Rumination							
Techno-Complexity	0.735						
Techno-Insecurity	0.865	0.813					
Techno-Invasion	0.699	0.648	0.657				
Techno-Overload	0.711	0.721	0.692	0.878			
Techno-Stress	0.834	0.872	0.869	0.704	0.657		
Techno-Uncertainty	0.627	0.464	0.432	0.428	0.495	0.480	

Source: Authors

The above table shows the values of the HTMT which is a more authentic way to measure the discriminant validity; it is clear from the above table that all the values are below the threshold value which is 0.9 which shows that all the variables' values meet the discriminant validity criteria.

Assessment of the Structural Model

The next step after checking the accuracy of the measurement tool (evaluation of the outer model) is to evaluate the inner model which is the structural model by executing the Bootstrapping through Smart-PLS 4.0. To check the structure of the model, some important tests were executed and certain values were extracted to reach decisions about the accuracy of the model and also the authentication of the proposed hypotheses.

Direct Effects and Hypotheses Testing: to check the hypotheses and direct effects of latent variables with the criterion variables a Bootstrapping is applied to the collected data after completing the reliability and validity tests by executing the PLS-Algorithm and then the relationships are measured to ensure the boding of the independent variables with the dependent variables and following values are taken these values include the beta value for measuring the strength of the relationships, while the t-values and the p-values are taken to reach a certain conclusion that the proposed hypothesis is accepted or rejected. According to Henseler et al. (2009), a certain sample size of 504 cases/observations with 5000 sampling iterations has been

executed to extract the level of significance of constructs, t-values and coefficients of regression and according to Henseler et al. (2009), the t-value greater than 1.64 and p-value less than 0.05 ensure the acceptance of the hypothesis and otherwise guarantee the rejection of the hypotheses proposed with the support of the literature. Figure 03 shows the t-values, figure 04 shows the p-values and Table 05 shows both the t and p-values with beta values for each relationship and at the end r-square values and q-square values are also given.

Figure 03
Assessment of Structural Model (t-values)

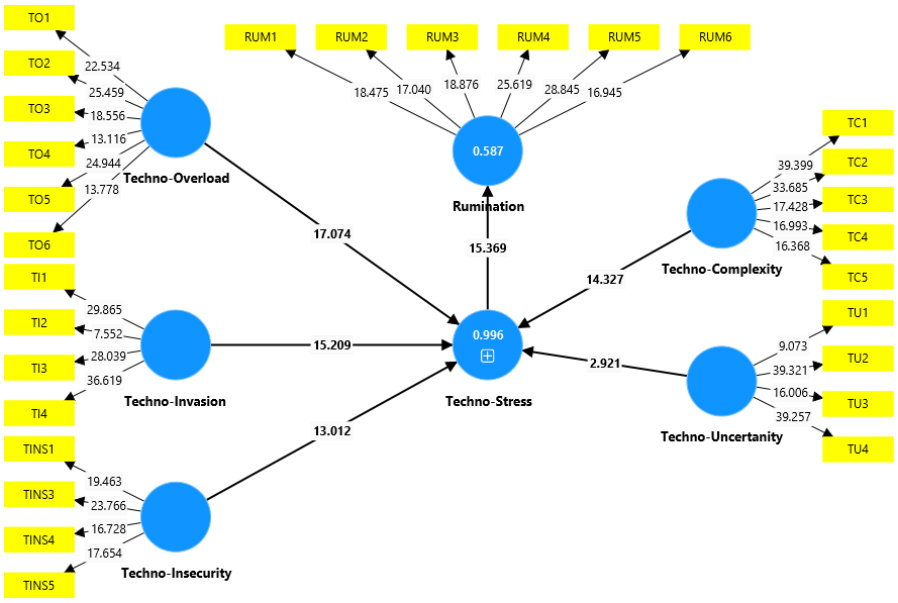


Figure 04
Assessment of Structural Model (p-values)

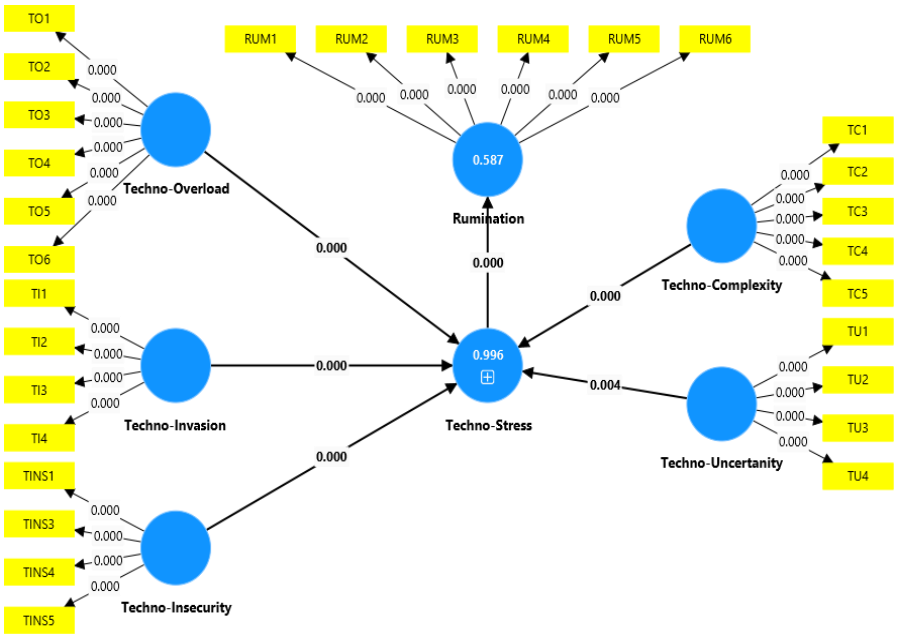


Table 5 shows the values of the direct relationships through structural model results by executing the primary data collected via Google Forms from the banking staff directly involved with the operational activities of the banking sector. Table 5 shows the first relationship between techno stress and rumination with a beta value of 0.766, a t-value of 15.369 and a p-value of 0.00, the second relationship between techno-complexity and rumination with a beta value of 0.264, a t-value of 11.617 and a p-value of 0.000, the third relationship is between techno-insecurity and rumination with the beta value of 0.215 and a t-value of 9.979 and a p-value of 0.000, the fourth relationship is between techno-invasion and rumination with a beta value of 0.160, a t-value of 11.752, and a p-value of 0.000, the fifth relationship is between techno-overload and rumination with a beta value of 0.020 and a t-value of 12.914, with a p-value of 0.000 and the sixth relationship is between techno-uncertainty and rumination with a beta value of 0.016 and a t-value of 2.789 and a p-value of 0.000.

Table 5
Summary of Hypotheses Testing (Direct Effects)

Sr. No	Hypotheses	Beta	SD	T statistics	P values	Decision	Effect Size	Q^2	R^2
1	TS -> RUM	0.766	0.050	15.369	0.000	Supported		0.995	0.996
2	TC -> RUM	0.264	0.023	11.617	0.000	Supported		0.576	0.587
3	TINS -> RUM	0.215	0.022	9.979	0.000	Supported			
4	TI -> RUM	0.160	0.014	11.752	0.000	Supported			
5	TO -> RUM	0.256	0.020	12.914	0.000	Supported			

6	TU -> RUM	0.016	0.006	2.789	0.005	Supported

The above table shows the direct relationships of latent constructs with the dependent variables and it is clear that all 6 relationships are supported according to the t-values and the p-values taken from the results of the structural model for direct effects.

Predictive Relevance of the Model

Furthermore, the current research used the blindfolding process included in Smart PLS 4.0 to evaluate the predictive significance of the model. A blinded test of the model's prediction capacity was thus considered. Hair et al. (2014) state that the denotation Q^2 also denotes predictive significance. The model's results and parameter estimations are evaluated by blindfolding to calculate the Q^2 value. The variable-score findings from the blindfolding output have been processed to identify cross-validated redundancy. This cross-validated redundancy analyzes the model's ability to forecast the dependent variable's relevance and describes the model's overall quality. Thus, Table 6 thoroughly represents the variable's cross-validated redundancy. Furthermore, Table 06 shows that the model's predictive relevance is validated in the second column, Q^2, with values of 0.995 for techno-stress (TS) and 0.576 for rumination (RUM).

Table 6
Predictive Relevance of the Model

Dependent Variables	Q^2predict	RMSE	MAE
Rumination	0.576	0.663	0.497
Techno-Stress	0.995	0.070	0.050

Conclusion and Implications

Techno-stress, the phenomenon whereby workers' adverse cognitive, emotional, and behavioral reactions to technology adoption are triggered, is a challenge facing Pakistan's banking industry. The stress of using new technology is a significant problem when the sector experiences a fast-technological revolution. Our study shows that techno-stress negatively affects employee happiness, productivity, and general well-being. Pakistani banks can create more effective ways to mitigate the harmful impacts of techno-stress by realizing its complex character. An atmosphere at work that is more encouraging and effective will result from this. Our investigation of this digital problem emphasizes the need for a well-rounded strategy. Financial

institutions need to adopt new technologies while still protecting their staff's mental well-being and job satisfaction.

A significant body of theoretical and practical consequences comes from the research on techno-stress in Pakistan's banking industry. Theoretically, it highlights the importance of including cultural context into current frameworks, demonstrating how societal norms and values shape the experience and management of techno-stress in Pakistani banks. This culturally sensitive approach enhances theoretical models by offering a more comprehensive understanding of the cognitive, emotional, and behavioral aspects of techno-stress. It promotes an interdisciplinary approach incorporating knowledge from information systems, organizational behavior, and psychology. In terms of application, the research identifies several feasible methods for reducing technological stress. Banks must spend money on thorough staff training that improves coping strategies and technical proficiency. They should also ensure that technological instruments are easy to use and have strong IT support. It's also critical to support an environment at work where open communication, employee well-being, and work-life balance are valued. Furthermore, consistent evaluations of workers' stress levels might assist in creating customized solutions. Banks better handle techno-stress difficulties and cultivate a more robust and adaptable staff by addressing these theoretical and practical factors.

Research Limitations and Future Directions

The present research investigates the effects of techno-stress elements, ranging from rumination to professional dedication and emotional detachment, on Pakistan's banking industry personnel. The researchers' primary goal is always to cover every facet of the subject being studied to cover the whole study's scope. Time and financial limits mean every survey has limitations despite their best efforts. The present research mainly focused on the banking industry in Punjab, Pakistan's southern region. Its reach might be expanded to include Pakistan and other nations to generalize the findings. The study may be extended to incorporate variables outside of those in this analysis for future research, and it can be applied to other public sector organizations, such as those in health, education, and other domains.

References

Abd Aziz, N. N., Kader, M. A. R. A., & Ab Halim, R. (2021). The impact of Technostress on student satisfaction and performance expectancy. *Asian Journal of University Education*, *17*(4), 538-552.

Anwar, S., Qambrani, I., Shah, N. A., & Mukarram, S. (2023). Transformational leadership and employees' performance: the mediating role of employees' commitment in private banking sectors in Pakistan. *Liberal Arts and Social Sciences International Journal (LASSIJ)*, *7*(1), 120-136.

Bahamondes-Rosado, M. E., Cerdá-Suárez, L. M., Dodero Ortiz de Zevallos, G. F., & Espinosa-Cristia, J. F. (2023). Technostress at work during the COVID-19 lockdown phase (2020–2021): a systematic review of the literature. *Frontiers in Psychology*, *14*, 1173425.

Borle, P., Reichel, K., Niebuhr, F., & Voelter-Mahlknecht, S. (2021). How are techno-stressors associated with mental health and work outcomes? A systematic review of occupational exposure to information and communication technologies within the technostress model. *International Journal of Environmental Research and Public Health*, *18*(16), 8673.

Brown, A. C. (2017). Kidney toxicity related to herbs and dietary supplements: Online table of case reports. Part 3 of 5 series. *Food and Chemical Toxicology*, *107*, 502-519.

Cataldo, A., Bravo-Adasme, N., Araya, P., & Ormeño, V. (2023). Why university students are technostressed with remote classes: Study-Family conflict, satisfaction with university life, and academic performance. *Telematics and informatics*, *80*, 101982.

Chen, X., & Zhang, H. (2023). A Review of Research on Female Knowledge Workers' Stress in Digital Contexts. *Journal of Human Resource and Sustainability Studies*, *11*(3), 712-720.

Chen, Y., Wang, X., Benitez, J., Luo, X., & Li, D. (2022). Does techno-invasion lead to employees' deviant behaviors? *Journal of Management Information Systems*, *39*(2), 454-482.

Chiu, C.-M., Tan, C. M., Hsu, J. S.-C., & Cheng, H.-L. (2023). Employee deviance: the impacts of techno-insecurity and moral disengagement. *Information Technology & People*, *36*(1), 140-164.

Fares, O. H., Butt, I., & Lee, S. H. M. (2023). Utilization of artificial intelligence in the banking sector: a systematic literature review. *Journal of Financial Services Marketing*, *28*(4), 835-852.

Fatima, A., Khan, T. A., Abdellatif, T. M., Zulfiqar, S., Asif, M., Safi, W., . . . Al-Kassem, A. H. (2023). Impact and Research Challenges of Penetrating Testing and Vulnerability Assessment on Network Threat. 2023 International Conference on Business Analytics for Technology and Security (ICBATS),

Fatima, T., Imran, M. K., Sarwar, A., Shabeer, S., & Rizwan, M. (2024). Why I am trapped in the spiral of abuse? A nexus of low core self-evaluations and job dependency. *Kybernetes*.

Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. *Brazilian Journal of Marketing*, *13*(2).

Hallford, D., Mellor, D., Bafit, L., Devenish, B., Bogeski, T., Austin, D., & Kaplan, R. (2019). The effect of increasing state anxiety on autobiographical memory specificity and future thinking. *Journal of Behavior Therapy and Experimental Psychiatry*, *65*, 101488.

Harju, L. K., Seppälä, P., & Hakanen, J. J. (2023). Bored and exhausted? Profiles of boredom and exhaustion at work and the role of job stressors. *Journal of Vocational Behavior*, *144*, 103898.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In *New challenges to international marketing* (Vol. 20, pp. 277-319). Emerald Group Publishing Limited.

İmamoğlu, S. (2021). *The Impact of Technostress and Technology Acceptance on Performance of Bank Employee* Marmara Universitesi (Turkey)].

Kalra, A., Chaker, N. N., Singh, R., Itani, O. S., & Agnihotri, R. (2023). A desire for success: Exploring the roles of personal and job resources in determining the outcomes of salesperson social media use. *Industrial Marketing Management*, *113*, 202-214.

Khan, A. N. (2023). A diary study of social media and performance in service sector: transformational leadership as cross-level moderator. *Current Psychology*, *42*(12), 10077-10091.

Kiep, M., & Spek, A. A. (2017). Executive functioning in men and women with an autism spectrum disorder. *Autism Research*, *10*(5), 940-948.

Kim, D. G., & Lee, C. W. (2021). Exploring the roles of self-efficacy and technical support in the relationship between techno-stress and counter-productivity. *Sustainability*, *13*(8), 4349.

Kitsios, F., & Ioannou, K. (2024). Digital Strategy and Change in Public Services and Enterprises: The Case of IRIDA Document Management Information System. *Journal of the Knowledge Economy*, 1-16.

Kumar, A., Shankar, A., Shaik, A. S., Jain, G., & Malibari, A. (2023). Risking it all in the metaverse ecosystem: forecasting resistance towards the enterprise metaverse. *Information Technology & People*.

La Torre, G., Esposito, A., Sciarra, I., & Chiappetta, M. (2019). Definition, symptoms and risk of techno-stress: a systematic review. *International archives of occupational and environmental health*, *92*, 13-35.

Ma, J., Ollier-Malaterre, A., & Lu, C.-q. (2021). The impact of techno-stressors on work–life balance: The moderation of job self-efficacy and the mediation of emotional exhaustion. *Computers in human behavior*, *122*, 106811.

Murphy, E. R. (2023). Hope and well-being. *Current Opinion in Psychology*, *50*, 101558.

Nisafani, A. S., Kiely, G., & Mahony, C. (2020). Workers' technostress: A review of its causes, strains, inhibitors, and impacts. *Journal of Decision Systems*, *29*(sup1), 243-258.

Noetel, M., Sanders, T., Gallardo-Gómez, D., Taylor, P., del Pozo Cruz, B., Van Den Hoek, D., . . . Moresi, M. (2024). Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials. *bmj*, *384*.

Pflügner, K., Reis, L., Maier, C., & Weitzel, T. (2020). Communication measures to reduce techno-invasion and techno-overload: a qualitative study uncovering positive and adverse effects. Proceedings of the 2020 on computers and people research conference,

Phillips, R., Belliveau, N. M., Chure, G., Garcia, H. G., Razo-Mejia, M., & Scholes, C. (2019). Figure 1 theory meets figure 2 experiments in the study of gene expression. *Annual review of biophysics*, *48*, 121-163.

Ray, S. S., Chen, S.-S., Li, C.-W., Nguyen, N. C., & Nguyen, H. T. (2016). A comprehensive review: Electrospinning technique for fabrication and surface modification of membranes for water treatment application. *RSC advances*, *6*(88), 85495-85514.

Saim, M. A. S., Rashid, W. E. W., & Noorsuriani, S. (2021). The relationship between technostress creator and work-life balance at selected private sector in Selangor. *International Journal of Academic Research in Business and Social Sciences*, *11*(6), 1636-1650.

Sarstedt, M., Ringle, C. M., Smith, D., Reams, R., & Hair Jr, J. F. (2014). Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. *Journal of family business strategy*, *5*(1), 105-115.

Sharma, I., & Tiwari, V. (2023). Modeling the impact of techno-stress and burnout on employees' work-life balance and turnover intention: A job demands-resources theory perspective. *Global Business and Organizational Excellence*, *43*(1), 121-134.

Song, Y., & Zhao, Z. (2022). Social undermining and interpersonal rumination among employees: The mediating role of being the subject of envy and the moderating role of social support. *International Journal of Environmental Research and Public Health*, *19*(14), 8419.

Sumarny Manurung, M. C. Technostress creators and inhibitors on employee job satisfaction: A digital transformation perspective of an Indonesian shipping company.

Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, *24*(1), 301-328.

Thurik, R., Benzari, A., Fisch, C., Mukerjee, J., & Torrès, O. (2024). Techno-overload and well-being of French small business owners: identifying the flipside of digital technologies. *Entrepreneurship & regional development*, *36*(1-2), 136-161.

Wang, H., Ding, H., & Kong, X. (2023). Understanding technostress and employee well-being in digital work: the roles of work exhaustion and workplace knowledge diversity. *International Journal of Manpower*, *44*(2), 334-353.

Watkins, E. R., & Roberts, H. (2020). Reflecting on rumination: Consequences, causes, mechanisms and treatment of rumination. *Behaviour research and therapy*, *127*, 103573.

Weerawarna, P., & Chandrasekara, P. International Journal of Advanced Multidisciplinary Research and Studies.