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Interrelationship Between Technostress, Work Life Balance, Technology Readiness and Employee Mental Health

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ABSTRACT

The main objective of this research was to explore the relationship among technostress, mental health, and the impact of mental health on work-life balance (WLB). Moreover, it examines the mediating role of mental health and the moderating role of technology readiness. The data was obtained using a cross-sectional questionnaire methodology and a purposive and snowball sampling technique. 270 banking, IT, and telecommunications employees participated in this research. Initial screening resulted in the exclusion of 17 samples in total. In the end, 253 samples were used for data analysis. The hypothesized model was tested employing partial least squares-structural equation modelling (PLS-SEM). The results of this study indicated a significant relationship between technostress, mental health, and work-life balance. Specifically, technostress appeared to be negatively associated with mental health, and mental health was negatively associated with work-life balance. Furthermore, mental health was found to mediate the relationship between technostress and work-life balance. However, technology readiness did not appear to moderate the relationship between technostress and mental health. These findings suggest that organizations may benefit from addressing technostress and exploring ways to manage it, particularly when implementing new technologies. Doing so may contribute to improved employee mental health and a better work-life balance.

Keywords:

Technostress, Mental Health, Work-Life Balance, Technology Readiness, Employee Well Being, Cross-Sectional Methodology, Structural Equation Modelling, Banking, IT, Telecommunications

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CHAPTER 1: INTRODUCTION

1.1 Background of the Study

The presence of WLB has been shown to influence various workplace outcomes. It has been proven to be favorably associated with work satisfaction, employee engagement, and organizational citizenship behavior, while being negatively associated with turnover intentions. The impact of WLB can be characterized as directly improving work related attitudes, which in turn influence job performance and turnover (Haar and Brougham, 2020). Work life balance is considered an important factor, as it has been linked to factors such as employee well-being (Aruldoss et al., 2020). Individual variables such as personal attitudes, behaviors, and wellness were discovered to be the most significant predictors of one's perceived work life balance. Again, proving that WLB has a favorable relationship with employee's happiness and well- being, as well as the amount and quality of personal time (Wong et al., 2021). This can further be attributed to the fact that family satisfaction in a dual earners household positively corresponds with WLB (Schnettler et al., 2020). The presence of WLB is therefore immensely important for the well-being of the employees.

A very contrasting perspective to this is that often inequity in work and life is because of certain policies in place. Organizational policies often contribute to stress and work and life imbalance. WLB policies, according to often does not assist female employees, particularly working moms, putting pressure on them to balance work and family duties. A major concern being the inflexible work schedule and policy, which causes stress and reduces productivity (Nwagbara, 2020). According to Gartner's Global Talent Monitor, employees carry 26 percent of their work to home, which raise a risk of fatigue from overworking, and 40 percent of people use laptops after 10 PM, which decrease what has been considered healthy sleep. On annual basis, the cost of this turnover because of burnout is estimated to be about $7,600 per employee (Forbes, 2020). Therefore, it is vital for organizations to decipher what policies aid WLB and how to turn that into positive outcomes for the organization.

Research indicates that WLB meaningfully influences employee's mental health. Work life balance has been connected to mental health issues and mental health attitudes in a detrimental way. The greatest predictor of mental-health issues was WLB. Various work pattern groups showed different mental health ratings; employees who worked during the day had worse mental health (Kotera et al., 2019). WLB and job satisfaction have a negative connection, with higher the WLB tension, the lesser the job satisfaction level. The link amongst work environment and job satisfaction demonstrates that work environment satisfaction rises in tandem with job contentment, and the influence of work in work relationships on job satisfaction demonstrates that work satisfaction rises as well. So, when the link between work and mental health is examined, it is discovered that when job satisfaction rises, so does mental health (Lee and Cho, 2020). Therefore, much of the current studies focusing on how mental health is detrimentally affected if there is a work-life imbalance.

Over the past few years, the world has seen a surge in the use of Information and Communication technology. This need for a widespread use has been due new discoveries, upgrading existing technology to compete or in most recent times, events like the Covid-19 pandemic pushed, which required remote, real-time communication, has lately given information and communication technology in the workplace an additional push digital working arrangements are a result (Davies, 2021). This is just one of the very few examples of how year by year the reliance on technology has almost become avoidable and rather a need. Bondiani (2020) explained how information and communication technology frequently has positive aspects and makes our work easier, but they can also be strenuous or even detrimental to our health. Technostress has frequently been referred to as the evil side of technology, despite the fact that it, like stress overall, is a procedure that relies on a person's experience and judgment (Tarafdar et al., 2019). The general impact of technology's ubiquity is a spike in workload and disruptions in the flow of work, primarily as a result of increased job pace and the demand to complete tasks on schedule and under duress (Beer et al., 2020). Employees need coping mechanisms for greater workloads, independence, and intricacy in the workplace. Mental, emotional, and self-restraint needs are among the necessary skill demands. Therefore, the employment of new technology does not appear to inevitably lead to chances for role growth and advancement (Kotera et al., 2020). These disruptions are bound to spillover to other aspects of an employee's life beyond work. The negative effects of employing modern technologies are seen in the murkier borders they produce. Their primary threat now stems from their ability to link at anytime, anyplace. Because we operate in a worldwide market, we anticipate quick communication without accounting for time or geographical distance (Graveling, 2020).

New working arrangements, as a result of new technology, have rapidly been dissolving the work-life divisions, making it tougher for employees to shut off from work now that information and communications technology enables them to pick their working hours and settings. Technology use has an impact on workers by influencing three major components of work design, which is job autonomy, job demands and relational aspects (Wang, Liu and Parker, 2023). The usage and availability of technology has increased dramatically in the twenty-first century, resulting in a radical transformation in how we operate.

These constant technological advancements have given rise to Techno Stress, which is the continual technological developments and the requirement to adjust to the external environment's dynamism, which has altered social connections and time perceptions (Christ-Brendemühl and Schaarschmidt, 2020). Techno stress has permeated employees' daily lives due to the fast growth of technology and smart gadgets (Bondanini et al., 2020). This is particularly important to understand because of the impact it has on an employee's life. Both techno-overload and techno-invasion, aspects of techno stress, were shown to be associated with increased intention to quit, role conflict, and family fatigue (Harris et al., 2021). This leads to a probable negative spiral of decreasing work life balance because of excessive work technology use outside of work hours (Tennakoon, 2021). The added pressures of changing technology have the potential to drastically exhaust one's endurance and energy, putting one at greater risk of exhaustion and worsening one's mental health (Johnson et al., 2020). Also, because it forces them to learn more to be considered worthy. In one of the study directed by CIPD (2020), only 5% of respondents believed they needed fewer skills and expertise to do their roles, while 50% thought they needed more of both. Also, it

was revealed that compared to 13% who said their activities had become less complicated, 40% felt their work-related responsibilities had grown more complicated. Contrarily, more than half of firms, around 61%, who used Al and automation discovered that employees needed more training and expertise as a result. Not only is mental health being affected by technology advancements but work-life balance also has an impact.

Moreover, employee attitudes and technology readiness anxiety have a substantial influence on their change preparedness. Employee perceptions, in particular, have a beneficial impact on change readiness, but technology anxiety has a detrimental impact (Suseno et al., 2022). Therefore, highlighting the fact that technological advancements adversely impact WLB by not only blurring the boundaries but also the stress that rises due to the adoption of these technological advancements.

Looking at work life balance through a Pakistani lens, it discovers to have a positive impact on performance of employees among Pakistani academics. The reason for this result could be that young full-time academics, aged 21 to 40, are more likely to be working longer hours in order to achieve their work and future aims, and that dedication leads to better work performance when they perceive higher work family balance (Soomro et al., 2024). Whereas, assessing how this would fare in the banking sector, in Nigeria's Lagos state, WLB in banks has a major impact on employee's performance (Egbuta, Babatunde and Nanle, 2019). Thus, showcasing employees of various sectors in different countries and cultures valuing WLB.

Drawing on the boundary management theory, the hypothetical links between techno stress, mental health, technological readiness, and WLB will be made in the following section.

1.2 Research Gap

- Most recent studies explore technostress as a direct predictor of stress or burnout but rarely examine its indirect pathways to work-life balance (Molino et al., 2024).
- Limited studies investigate mental health as a mediating process explaining how technostress spills into personal life (Hossain et al., 2024).
- Technology readiness has been examined in technology adoption research but not as a moderator of technostress effects in organizational settings (Lin & Hsieh, 2023).
- There is minimal research in the Pakistani context, especially in industries undergoing rapid digitalization.

Recent studies explore technostress as a direct predictor of stress or burnout but rarely examine its indirect pathways to WLB (Molino et al., 2024). Some explored the Issues of ICT (Raišienė and Jonušauskas, 2023), long work hours and stress (Holden and Sunindijo, 2021), techno-invasion and job anxiety during non-work time (Wu, Wang, Mei and Liu, 2023). Whereas, limited studies investigate mental health as a mediating process explaining how technostress spills into personal life (Hossain et al., 2024). This examination of the literature raises a question on whether technostress does have implications on an employee's WLB or are there other factors i.e. mental health and technological readiness contributing to its amplification. Most of these studies focused on organizational outcomes or employee stress reactions without deeply examining the mechanism behind the relationship.

This research may contribute to understanding the role of mental health as a mediator between technostress and WLB. While past work treated mental health as a general outcome, here it is positioned as a process variable that explains how technostress spills over into employee's personal lives.

In addition, the study tests technology readiness as a moderator, a variable rarely used in this context. By examining whether employee's comfort and adopting towards technology could defense the negative impact of technostress, this study explores a new angle not addressed in prior literature. Together, these contributions highlight the study's originality and deepen the understanding of technostress beyond its direct outcomes.

Furthermore, the need to more actively control the margin between work and non-work responsibilities has grown as the permeability between them has increased. Therefore, boundary management theory will be used to outline the ways for managing the essential boundaries between the various life domains, either through integration segmentation. This will add to the boundary management literature by further deepening these concepts with regards to mental health.

1.3 Problem Statement

The boundary between work and non-work domains has become increasingly blurred due to the widespread use of information technology. The needlessly extended work hours of the employees have harmed both their relationships with their families and their general health and wellbeing. Technology gadgets have the capability to enhance WLB, but if they are not properly controlled, they could lead to work life conflict (Park et al., 2023). Thus, the problem of techno stress and its adverse effects on mental health and WLB should be addressed because uncontrolled spillover from digital demands can result in several negative outcomes, including:

- Chronic mental fatigue and anxiety
- Emotional exhaustion
- Difficulty disengaging from work
- Reduced family and personal time
- Increased work-life conflict

Some recent studies indicate that technostress may negatively impact employee well-being. However, many organizations continue to underestimate the psychological burden associated with continuous digital demands (Q. Wang & N. Yao, 2025). Although mental health concerns are rising, employees frequently perceive workplace support for mental health as inadequate.

However, existing literature does not fully explain how technostress deteriorates work-life balance, nor does it explore the role of technology readiness in shaping employee responses. This creates a critical knowledge gap in understanding the psychological mechanism linking digital strain to work-life outcomes.

My research addresses this gap by investigating mental health as the mediating pathway and technology readiness as a moderating factor.

1.4 Scope of the study

This research focuses on the impact of technostress on the work–life balance of employees in the IT, banking, and telecommunications sectors in Rawalpindi and Islamabad. The data will be through questionnaires and will only focus on full time employees.

1.5 Research Objectives

i. To explore the relationship between technostress and work–life balance among employees in the banking, telecommunications, and IT sectors in Pakistan.
ii. To what extent does mental health mediate the association between technostress and work-life balance among employees in the Pakistani banking, telecommunications and IT sector.
iii. To investigate the potential moderating role of technology readiness in the relationship between technostress and mental health among employees in these sectors.

1.6 Research Questions

i. How is technostress related to work–life balance among employees in the banking, telecommunications, and IT sectors in Pakistan?
ii. How does mental health mediate the relationship between technostress and work-life balance among employees in the Pakistani banking, telecommunications and IT sector?
iii. How does technological readiness moderate the relationship between technostress and mental health among employees in the Pakistani banking, telecommunications and IT sector?

1.7 Operational Definition

1.7.1 Technostress

"Technostress is defined by Tarafdar et al. (2023) as a process involving a technological environment that may be perceived as demanding or stressful, leading individuals to implement changes and use coping mechanisms, which result in physical, psychological, and behavioral responses."

1.7.2 Mental Health

Mental-health definition by the WIIO (2022) as "a state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their communities.” Kendrick and Pilling (2022) define those common mental disorders as "Depression, panic disorder, social anxiety disorder, generalized anxiety disorder, obsessive-compulsive disorder, phobias, and post-traumatic stress disorder".

1.7.3 Work-Life Balance

WLB defined as "a healthy work-life balance may be characterized as a well- functioning at work and at home, with a little role conflict," (Clark, 2023).

1.7.4 Technology Readiness

"A person's general predisposition to accept technological solutions and services can be determined by a person's level of technology readiness, which is a collection of thoughts and feelings towards technology" (Parasuraman & Colby, 2015; validated in 2023 updates). The technology readiness index is a scale developed by Parasuraman (2000).

1.8 Practical Significance

By focusing on employees' experiences, additional theories about this topic in modern employment may be developed, as well as future policy aims regarding the triggers for their mental health conditions due to the techno stressors around will gauge how individuals eventually handle their work life balance. This research could help organizations develop policies addressing technostress, mental health, and work–life balance, tailored to the specific needs of employees. This will further assist organization in providing guidance and resources to employees who need assistance mentally and physically when implementing and integrating new technologies in the company, which are adapted to the employees' personalities and unique demands from an organizational standpoint.

1.9 Industry of Thesis

The banking sector would be suitable to assess the techno stress effect since there is rapid digitalization within this sector recently. Digital forms of contact and communication that have been adopted. Geo-fencing is now being used to track sales team activity. A digital approach for workers to engage with HR is through mobile app and software with a 24/7 hotline which enables employees to WFH and guarantees that resources are available when they are needed (KPMG, 2024, p. 20). IT solutions may be used to automate self-assessments, provide bank-wide dashboards and real-time compliance calendars that assess the organization's overall management and compliance (KPMG, 2024, p. 30). The last five years, particularly the year 2020, have brought a level of change never previously seen. Financial institutions are being forced to embrace client-centered innovations. The new technology is disrupting the financial services industry using data analytics automation and cloud (KPMG, 2024, p. 33). The present government's Digital Pakistan Policy has specifically stressed the necessity to establish a structure to permit e-banking operations services while adopting new softwares and structures (KPMG, 2024, p.33). This context makes the banking sector a useful setting for studying how techno stress can impact the work life balance of employees amidst the rapid technological advancements.

Moreover, in the area of telecommunications, which has grown to be a vital factor in the development of Pakistan's economy and technology, the country has also made significant advancements. The government has granted the telecom industry industrial classification for the years 2021 and 2022, which will help to further promote its expansion. The significance of the industry was evident during the Covid-19 crisis. Because of their technological development and reach, they were better able to help the national healthcare system, state and local governments. One of the numerous examples of how telecommunications is becoming more and more essential in the daily actions of the typical user is the rising trend of video conferencing, e-learning, and

telemedicine and online commerce. Lately, the country's 5G service will be launched by December 2022, according to the Federal Minister for Information Technology and Telecommunication, who also alluded to working with industry leaders. With such huge initiatives in the works, cutting-edge technology like block chain, artificial intelligence, machine learning, and the like would soon become commonplace in the Pakistani economy. With the aid of agile digital solutions, Pakistani telecommunication organizations are also preparing to upgrade and optimize their business processes in order to provide customers with a positive user experience (Dawn, 2021). Thus, making the Telecommunications sector ideal for assessing how techno stress can impact the WLB of employees amidst the rapid technological advancements.

Lastly, Pakistan has seen a huge growth in its IT sector over the past few years. The emergence of technology parks and special zones is one testament to it. The government has made an investment of $1 billion based off of how fast the sector is growing and to improve it further (Forbes, 2022). The tech industry is Pakistan's 3rd largest source of digital labour and the sector has seen a growth of 47% in tech exports (STZA, 2022). Blockchain, Big Data Al, AR/VR, IoT, Cloud Computing. Quantum Computing and 5G have been deemed as some of the upcoming technological advances in the Pakistani IT sector (PSEB, 2020). Thus, making the IT sector ideal for assessing how techno stress can impact the WLB of employees amidst the rapid technical advancements.

CHAPTER 2: LITRETAURE REVIEW

2.1 Introduction

This chapter presents the literature review, organized into four main sections. The articles reviewed in this chapter provide insight into the ways technostress influences work–life balance. This boundary management theory helped in defining how blurring of the divisions between work and life due to technology paves way for techno stress. The evaluation of literature also looked at how these various techno stressors, mental health issues and technology readiness dimensions were studied in the past and how they differ from this study.

2.2 Conceptualization

2.2.1 Mental Health (DV)

William Sweetser was the first to create the term mental hygiene in the mid 19th century, and it can be considered as a forerunner to today's efforts to encouraging mental-health (Mandell, 1995). Erikson (1959) and Frankl (1963) described mental health as a feeling of security in one's own skin, which is often drawn from an inner quest for meaning as well as a sense of wholeness and self-cohesion. Additionally, mental health has also been described as the ability to perform effectively and successfully, relate to people in a mutually rewarding manner, and feel at ease when alone, generally through the cultivation of a rich and meaningful emotional experience (Gilmore, 1973). Davison and Neale (1990) have emphasized on mental health being a goal, such as self-actualization, that only a small percentage of people actually accomplish in their life. The WHO (2022) described “psychological well-being, perceived self-efficacy, independence, ability, intergenerational reliance, and self-actualization of one's cognitive and affective potential as just a few of the factors that go into mental health.” Furthermore, it has been defined as individual's capacity to experience life and strike the right balance between daily activities and attempts to acquire psychological resilience (Lopez et al., 2021). More recently, it has been described as a construct that covers emotional, cognitive, and social well-being. It has an impact on the brain's function, cognition, and action. It also determines the way in which an individual manages stress, communicating socially, and decision-making (CDC, 2022).

Critical Insight: In spite of the fact that not all employees are exposed to the digital challenges, most are exposed to losing mental resources, hence, the importance of saying that technostress is only dangerous in the circumstances that it is not addressed. These results indicate that interpersonal differences and organizational support mechanisms should be considered in alleviating the negative impact of continuous demands on digital.

2.2.2 Technostress (IV)

Early theories of stress considered it either a reaction or a trigger (McGrath, 1976). The occurrence of external stressors is a process that causes stress in which the person perceives a need or stressor that considerably depletes his or her capabilities, which triggers their coping mechanisms that results in psychological, psychosocial, and physiologic results that the person experiences (Galluch et al., 2023). Learning technostress can be theoretically addressed with knowing how the stress

process works. Thus, over the course of numerous studies, the phenomenon of technostress, which discusses the frame of reference in which the stress process is initiated due to the use of technology has been conceptualized in this characterization as a process. Technostress is understood as a response to technological environments perceived as demanding or burdensome by employees and necessitate a change, which then forces one to look for coping strategies and this eventually leads to outcomes that impacts them psychologically Barber & Santuzzi, 2024).

Technostress is defined by Brod (1984) as a condition arising from difficulty adapting to new technologies. In technostress studies, the disposition of stress is presumed to be negative, following Brod. Whereas, it has also been defined as "our reaction to technology and how we are changing due to its influence"(Weil and Rosen, 1997 as cited in Mahboob, 2022). It is also described as any negative impact on attitudes, perceptions, behaviors, or physical health caused by technology, whether explicitly or implicitly (Tarafdar et al., 2019). Consequently, techno stress is characterized as "a negative psychological state associated with the use of "threat" of new technologies," which leads to "worry, mental fatigue, skepticism, and a sense of ineffectiveness" (Salanova et al., 2007 as cited in Brivio et al., 2018). Technostress is a modern form of adjustment, which Ragu-Nathan et al. (2022) believe is caused by struggling to manage new information and computer systems, which impacts mental health in a variety of ways, including a reluctance to acknowledge computer technology or greatly rely on computer technology. The increased use of technology has led to what Fuglseth and Sorebo (2024) describe as “negative psychophysical effects of ICT at work," which was being termed as a behavioural hazard.

Many elements, according to Tarafdar et al. (2019), have been shown to contribute to techno stress, which includes the likes of techno-uncertainty, techno-complexity, techno-insecurity, techno-invasion and techno-overload. For example, techno-insecurity is the belief that information and communication technologies, as well as the persistent need to stay current, pose a risk to an employee's job (Tarafdar et al., 2019). Moreover, employees receive information from several channels at the same time, resulting in techno-overload. This knowledge can be tough to handle because it's not always evident how to focus or make the greatest use of it (Tarafdar et al., 2019). Techno-uncertainty has led to perceptual instability, because of the dynamism of work and associated systems, and continued adoption of new ICTs (Tarafdar et al., 2019). It is described as an unbroken connectivity that cross-geography and time to guarantee that employees will be on call whenever they are needy to address their work commitments (Tarafdar et al., 2019; Ragu-Nathan et al., 2022; Gaudioso et al., 2021). Finally, there is the unpleasant reality that trendy ICTs are not unidimensional and that they require much effort to be understood is referred to as techno-complexity. (Tarafdar et al., 2019).

On the other hand, an individual might experience stress in a positive manner following their use of information systems. Both strain and stress have a bad ring to them. The existing collection of research, which concentrates on the stresses produced by information and communication systems that are considered distressing and have detrimental effects, emphasizes this (Tarafdar et al., 2022). Despite the fact that there is a plethora of research on the advantages of information and communication systems, there aren't many studies looking at the advantages of technostress. In one article, the advantages of technostress were referred to as techno eustress (Tarafdar et al.,

2022). Eustress happens when external circumstances are seen favourably and produce favourable results (O'Sullivan, 2021). Therefore, eustress is a healthy form of stress that people might feel. Good stress is how custress has been framed. According to the law of Yerkes-Dodson, increasing stress is advantageous to productivity until some optimal level is obtained (Le Fevre et al., 2023). According to research (O'Sullivan, 2021; González-Morales & Neves, 2024), people who encounter a certain amount of stress are more efficient than they would be if the stress were removed from their surroundings. This is in line with Selye's theory that eustress happens when challenges are viewed as difficult and inspire drive and a desire for success in a person (Selye, 1978). Depending on whether information and communication technology traits are viewed as a problem or threatening stimulus, the way that an individual experiences technostress varies. Different strategies for assessing and dealing with each type of stress event exist. By taking into account the positive characteristics and results of technostress, a different theoretical perspective on the subject is introduced in the form of techno eustress (Tarafdar et al., 2022). Recent research demonstrates that when workers use information and communication systems under energizing or positive pressures, the results can include greater productivity and effectiveness, which increases in performance (Wajeman & Rose, 2021).

Critical Insight: The inconsistency of the positive challenge stress and the negative overload stress points to the nature of individual differences, it is essential to know the individual differences. It illuminates the differences in how some employees perform well in technological tri-reminded settings and others do not, as well as the excellence of investigating moderating influences (such as technology readiness) in technostress and work-life result research.

2.2.3 Work-Life Balance

The notion of work-life balance has been conceptualized in different ways over the years. Kirchmeyer (2000) described it as when an individual's time, effort, and dedication are evenly dispersed across life domains, they attain balance. Whereas, the two basic views in the existing research, role conflict and role enrichment, were initially used to conceptualize work-life balance. work-life balance was typically defined in these ways as the lack of work family conflict along with strong levels of work family enrichment (Higgin and Duxbury, 2001; O'Driscoll et al., 2006). It has also been defined as "the extent to which an individual is engaged in an equally satisfied with his or her work role and family role" (Greenhaus et al., 2003). Moreover, individuals' opinions of whether demands are met, which are conveyed and consented upon by their work-home role counterparts have led Grzywacz and Carlson (2007) to theorise work-life balance as an "accomplishment of role-related expectations that are negotiated and shared between an individual and his/her role-related partners in the work and family domains". Timms et al. (2015) depicted work-life balance as supplementary rather than compatibility of subdomains, implying that having several positions can improve a person's general impression of well-being. Casper et al. (2018) indicated that this idea should be more correctly described as a "work-non-work" balance in a recent modification. Employees' evaluations of how personally beneficial the blend of work and non-work duties was for them were emphasized.

An individual's inclination either towards their work domain or life domain depends upon certain factors. Prakash (2018) found that balancing pressures from work and home life was somewhat

influenced by gender, relationship status, and having kids. If they preferred personal care, women with children felt more emotionally worn out and unable to focus on their personal lives. Men who were single and chose recreational activities as well as those who were involved in group activities had the same sentiment about missing leisure activities because of employment. This can be as a consequence of the failure to commit adequate time and effort to their extracurricular activities because they must prioritize employment. Employees with more personal preferences were substantially more pleased with the work-life stability programs of their organization than were those for whom family was not a significant non-work element of life. Moreover, Binder and Coad (2020) discovered that satisfaction with work-life balance was much less for workers with kids who prioritized friendships or personal care.

An individual's inclination towards their work can be explained by a concept called “work related extended availability (WREA).” Work related extended availability alludes to an employee's accessibility for tasks outside the scope of their normal work responsibilities. It is more particularly referred to as when employees take job calls, review or maybe respond to emails, or text messages during their free time. The broad adoption of contemporary technology for information and communication is a crucial enabler for 'work related extended availability' since it makes it easier for people to communicate about their jobs across different spheres of life (Park et al., 2023). Workers can frequently check their business emails from any location at any time in addition to being reachable by phone around the clock. Chats, emails, or quick messaging from the workplace during downtime are likely to cause a psychological shift from the present role (Clark, 2023).

Critical Insight: Even though technology may provide flexibility in allowing employees to work any time or anywhere, the adverse side of being connected all the time seems to be more damaging than these advantages. The lack of barriers between work and personal life due to constant digital needs consequently causes disengagement that is difficult to achieve and that puts one at high risk of stress and fatigue. This implies that although technology can help in promoting work life balance, in a real life scenario, the encroachment of work into the personal sphere largely takes holds and thus the importance of looking at the organizations practices in addition to personal boundary management strategy to ensure work does not happen to affect our life.

2.2.4 Technological Readiness

The concept of technology readiness was first conceptualized by Parasuraman (2000) as "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work". It was described by Meuter et al. (2003) as a "relatively broad construct focusing on such issues as innovativeness and the tendency to be a technology pioneer". Whereas, Westjohn et al. (2009) labelled technology readiness as a trait, which is situational in nature, that outlines long-term tendencies to act in certain areas i.e. technology-related behaviours.

Individuals generate good or unpleasant attitudes about technical products during the adoption stage of new technologies, based on their favourable or negative opinions about the product. These emotions are dissected into four sub-dimensions namely, innovativeness, optimism, insecurity and discomfort. Innovativeness is a propensity to be a technological trailblazer and idea leader (Parasuraman, 2000; Parasuraman and Colby, 2023). Optimism is having a good outlook toward technology and the assumption that it gives individuals more autonomy, mobility, and

effectiveness in their daily lives (Parasuraman, 2000; Parasuraman and Colby, 2023). Discomfort is a sense of being overwhelmed by technology and a presumed loss of control over it (Parasuraman, 2000; Parasuraman and Colby, 2023). Insecurity is mistrust of technology, based on doubts about its functioning effectively and fears about its inherent danger (Parasuraman, 2000; Parasuraman and Colby, 2023). Research indicates that readiness of technology cushions adverse psychological effects in cases where digital demands are placed on employees (Lin and Hsieh, 2023; Chang et al., 2024).

Critical Insight: There is limited research in technology readiness situations in conditions of organizational stress. More precisely, little research has focused on its mediating effect between technostress and its mental health outcomes. It is necessary to address this gap because the cultural and organizational differences can precondition the perception of digital stressors and their reactions by employees. The role of technology readiness as a moderator could also offer the most important information about the existence of individual pre disposition to technology as a weakener of the negative influence of technostress on human health and well-being, which will be used to develop effective strategies to improve the health and work-life culture of employees.

2.3 Boundary Management Theory

Ashforth et al. (2000) developed the boundary management theory explaining how individuals construct and maintain borders between living domains such as work and home. Appropriate boundary management methods can aid in the attainment of the desired balance. Boundary management, according to Clark (2021) is a philosophy in which workers cope with the borders between their professional and personal lives by separating and merging distinct living areas. It is a collection of rationale and strategies that people use to cope with the boundaries that exist in many aspects of their lives. Geographic, temporal, relational, and mental boundaries all exist (Malaterre and Rothbard, 2020). Clark (2021) explains how the domains are basically "worlds that people have associated with different rules, thought patterns and behaviour". The theory concentrates on the transition process, formulating hypotheses on the psychological transfer amongst roles. The assumption is that role transitions are a boundary crossing action, whereby one departs and embraces roles by overcoming boundaries. The major factors influence how a person performs, maintains, and negotiates their place within a socially constructed mechanism: (a) the social rules, actions, and conditions imposed on the person playing the role, (b) the person playing the role, and (c) the workplace rules or technology that promote boundary crossing (Golden, 2023).

For a variety of reasons, the act of establishing mental boundaries is critical. To begin with, disconnection from our environment is necessary for the development of individual identity and personality on a basic level (Zerubavel, 2023). Boundaries help to organize and streamline such structures. Domains such as "work" and "home" are instances of areas determined by boundaries (Nippert-Eng, 2021). An Individuals' level of integration vs. segmentation between the work and non-work spheres may vary depending on their desires. Even though it is crucial to remember that there are limits in the general framework of each individual's circumstances, which are moulded by work, family, gender, status, race, life course, society and so on (Noon & Blyton, 2022). Nippert-Eng 2021, explains when domains are divided when their boundaries are precise and clear.

The domains, on the other hand, are integrated when the borders are weak; in such circumstances, the areas intersect and overlap. Researchers have maintained that role boundary integration and segmentation are on a spectrum, with strong integrators and strong segmentors anchoring the opposite ends of the spectrum and majority of the people lying in the middle. (Ashforth et al., 2020; Rothbardet al., 2023) Two of the major factors that can impact a person's choice to segment or integrate domains are their gender and family situation (Kossek, Noe & DeMarr, 2021).

Segmentors see work and family as two separate aspects of their lives, and they may want to utilize separate email accounts, as well as have transition routines to indicate leaving one domain and entering the other, for e.g. changing clothes (Kreiner etal., 2022). Integrators, on the other hand, are more likely to blend work and family roles, such as exhibiting family photos at work, working after hours at home, and mingling with co-workers beyond work (Nippert-Eng, 2021). Furthermore, boundary management is bilateral, just like work-life conflict or work-life enhancement, with some people dividing or merging in one way but not the other, such as work to non-work (Kossek, Ruderman, Braddy, &Hannum, 2022; Hecht & Allen, 2019)

The work-non-work boundary management fit concept helps to capture workers' psychological experiences of alignment between their own boundary management choices and the boundary management support provided by their workplace. This concept advances the contribution of work-family balance toward enhancing workers' well-being, in terms of diminishing stress, and corporate success (Bogaerts et al., 2021). Work-to-family enrichment is indicated by boundary management. Work-to-family enrichment is positively connected to an employee's inclination to incorporate mentally or behaviourally work into the family sphere (Daniel and Sonnentag, 2023). It is widely acknowledged that technology is changing the essence of the work-family interaction, especially in terms of blurring the lines between work and family functions (Barnett & Hyde, 2001; Diaz et al., 2022). Considering employees can receive job-related messages anytime and anywhere owing to uninterrupted internet connection and the widespread use of mobile devices, the traditional work day has been stretched (Macik-Frey et al., 2024). Thus, by maintaining rigorous control over work and home areas and establishing additional boundaries surrounding the utilization of information technology, a person's psychological work-life incursion may be maintained (Jex and Park, 2021). In studies as disparate as virtual teams in major businesses and intra-family interaction patterns among college students and deployed military members, we find similar characteristics. We argue that boundary management is best viewed as a multidimensional concept including time, location, and relationships, and that adapting to a more densely linked world necessitates a significant amount of work to manage a set of boundaries (Ollier-Malaterre et al., 2023). In summary, boundary management considers the notion that the blurring of divisions due to technology might have adverse ramifications for employees' work-life. Recent empirical validation (Dai & Qin, 2024; Golden, 2023) confirms that weakened boundaries due to constant connectivity lead to emotional exhaustion and conflict between work and personal roles.

Theoretical Link: Technostress → Mental Health Decline → Work-Life Conflict.

2.4 Critical Summary and Gap Identification

Following are the highlights:

- Technostress consistently predicts mental strain, but few studies test how this translates into work-life outcomes.
- Mental health is recognized as affected by digital overload, but its mediating role remains underexplored.
- Technology readiness has been studied in adoption contexts but rarely in stress well-being models.

2.5 Hypothesis Development

2.5.1 Techno Stress and Mental Health

The term 'Technostress' was used to describe psychological reactions to unpleasant computer encounters. Parasuraman & Colby (2023) updated the original TRI to TRI 2.0, defining technology readiness as a person's *"*propensity to embrace and use new technologies for accomplishing goals in home life and at work*."* Various constructs have been dubbed as techno stress creators. Techno-overload refers to the feeling that they are working more and faster, techno-invasion refers to the feeling that one's private life is being sacrificed, techno complexity refers to the perception that the technological environment is very complicated, techno-uncertainty refers to the perception that technology is continuously changing, and techno-insecurity refers to the stress of losing their jobs to someone that is better equipped technologically (Tarafdar, Tu and Ragu-Nathan, 2020; Marchiori et al., 2023). Digital technology usage is linked to particular psychosocial pressures e.g., increased work burden, complexities, tensions between work and other life domains and psychobiological mental distress (Dragano and Lunau, 2020). In a scientific experiment Riedl et al. (2022) discovered that following a computer system failure, people's cortisol levels and skin conductance rose. This lends credence to the theory that techno stress triggers stress responses.

Anxiety alerts people to the existence of a perceived danger and motivates them to take measures that lessen their susceptibility to it. Dispositional anxiety can have a big impact on the mental processes that happen when people interact with technology. Due to workers' perceptions of a lack of cooperation and workplace stress because of the excess and frequent usage of new Information and communication technologies, which can end up putting an organization and its personnel at risk, resulting in techno stress. This developing danger appears to have significantly impacted workers' mental health (Bondanini et al., 2020). It has been seen that when contrasting needs are created by Information and communication technologies, such as having traditional job expectations vs. new learning demands, which often leads to a conflict and becomes the eventual cause of stress (Ayyagari et al., 2021).

As precursors to job overload, technology elements such as practicality such as usability, intricacy, and durability, dynamic features such as rate of development, and invasive features like presenteeism were postulated. The findings show that continuous connectivity offered by information and communication technologies raises load by increasing work cycle pace and performance expectations which eventually raises stress (Ayyagari et al., 2021). Fischer et al.

(2019) explained that because information communication technologies are complicated, require rapid and strenuous learning, are effortful, constantly evolving, push one to multitask, are rife with technical difficulties and defects, and often lead to exorbitant control, which is why they develop into a cause of stress. Individual variances such as social anxiety, consumerism and external locus of control are directly correlated to techno stress linked to increased smartphone utilization (Lee et al., 2024). The fact that anxiety encourages negative assessments of future developments is another reason to believe that anxiety is linked to perceived techno stress. Anxious people usually expect significant degrees of stress in reaction to an incident that undermines their prosperity or one that demands adaptation (Shepperd et al., 2023). Therefore, it is hypothesized that:

HI: Technostress is negatively associated with mental health.

2.5.2 Mental Health and Work-Life Balance

Mental health is defined by the WHO (2022) as “Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community.” Kendrick and Pilling (2022) define those common mental disorders as "depression, panic disorder, social anxiety disorder, generalized anxiety disorder, obsessive-compulsive disorder, phobias, and post-traumatic stress disorder". Whereas, work-life balance can be defined as "a healthy work-life balance may be characterized as a well-functioning at work and at home, with a little role conflict," (Clark, 2021). Workers who acquire feelings of mental availability, which leads to good energy at work, are more likely to achieve work-life balance (Russo, Shteigman and Carmeli, 2023). A company whose culture supports work-life balance, their workers will be more engaged in their jobs, resulting in long-term growth (Rao, 2024).

There is a detrimental effect of emotional labour on work-life balance, which in consequence has a negative impact on job satisfaction and engagement (Hofmann and Stokburger, 2020). Work-life balance was shown to be linked positively to job and life happiness. Whereas, depression and anxiety were found to be adversely associated with work life balance (Haar, Russo and Ollier-Malaterre, 2024). The dissolving of work-life and family-life borders had a substantial effect on anxiety. Because people's assets such as energy and time are finite, more tensions between work and family domains put them under more stress (Ayyagari et al., 2021). Hammer et al. (2022) explained how work life balance could be the solution to improved career and life contentment as well as fewer mental health difficulties. Where Lunau et al. (2024) found that poor work life balance is linked to low self-reported health and mental health. A potential issue with technology being found everywhere, especially at home, is that the cross over generated by physically working at home might lead to mental health issues, such as overwork. For instance, after the computer has been turned off, you may still be pondering about your job (Grant et al., 2023).

The non-work domain, which is family life, has been adversely affected due to the idea of "always being on" due to technology. Employees who were merely a phone call or message away from their boss, for them uncertainty and family time added to the stress. To find out if employees had any additional household obligations and how their workload altered in terms of household work amount throughout COVID-19, researchers investigated how family life affected their capacity to execute work duties. Women between the ages of 18 and 44, as well as those with small children

in the home, were more likely to struggle with family life (Lonska et al., 2021). Work-life balance deteriorating had serious ramifications for healthcare providers' lives and relationships. During the covid-19 pandemic, a range of influences such as unusual working time, long shifts, role conflict, excessive workload arising from the work situation all had critical effects on health professionals. (Althobaiti et al., 2020). As a result of all of these issues, health workers suffer from anxiety, experience exhaustion, fear, isolation, fatigue, sleep difficulties, and psychological issues (Bao et al., 2020; Cullen et al., 2020).

Therefore, it is hypothesized that:

H2: Low mental health is negatively associated with work-life balance.

2.5.3 Mediating effect of Mental Health

If technostress has an impact on mental health and mental health in turn affects work-life balance, it goes on to show that mental health might mediate the relationship between technostress and work-life balance. Organizational commitment, work happiness, and work outcomes (e.g., turnover, absenteeism) are all impacted by technostress. Employees with fatigue, burnout, skepticism and anxiety on the other hand, have low self-efficacy about information and communication technology (Salanova et al., 2014; Tarafdar et al., 2022). Burnout is significant in this topic because information technology utilization has the potential to cause increased stress overload. Maslach et al. classified burnout into three categories: emotional exhaustion, detachment and finally impaired work effectiveness. By favourable or unfavourable assessments, technostress producers are likely to affect employment outcomes and therefore lead to burnout (Berg-Beckhoff et al., 2023).

Zacher et al. (2022) found that employees who offer in-home care for a senior relative, where mental health was used as mediator, showed that interventions aimed at improving employee's satisfaction with eldercare activities may shield workers from the detrimental impacts of high eldercare demands on mental health and, as a result, on job performance. Work-to-family and family-to-work conflict perspectives were both shown to be negatively connected to Chinese women's mental health. Psychological distress and perceived stress were found to be adversely linked with mental health. Work-family problems appeared to have an impact on their mental health (Zhou, Da, Guo and Zhang, 2023). Therefore, it is hypothesized that:

H3: Mental health will mediate the relationship between technostress and work-life balance.

2.5.4 Technology Readiness as a Moderator

Technology readiness is the predisposition of a person towards adoption and use of new technologies both personally and in the workplace. It is a holistic state of mind that consists of beliefs and attitudes towards technology to establish how much one is willing to explore technological solutions and services (Parasuraman and Colby, 2023). Conceived by Parasuraman and Colby (2023) to be an improved version of the used scale (TRI 2.0) is the Technology Readiness Index 2.0 2.0, which is an improved interpretation of technology readiness in present digital settings. The revised TRI 2.0 has 16 items that reflect four dimensions, namely Optimism, which implies a positive view concerning technology as a means of control, flexibility, and efficiency; Innovativeness, denoting the tendency to be an early adopter or opinion leader in

technology usage; Discomfort, denoting being overwhelmed or lack of control in using technology; and Insecurity, denoting skepticism or mistrust in technology being reliable and specific to functioning (Parasuraman and Colby, 2023; Liljander et al., 2020).

TRI 2.0 assumes that optimism and innovativeness are enablers that support technology acceptance and discomfort and insecurity are their inhibitors (Lin et al., 2023). This revised model simplified and reduced the scale of the initial one (36 to 16 items) and was tested in various settings, such as mobile applications, artificial intelligence, and digital banking, and was found to be highly psychometrically reliable (Parasuraman and Colby, 2023; Roy et al., 2020). In such a way, technology readiness can be helpful in the context of approximation of individual attitudes to technology in order to comprehend the effects of attitudes on adaptation, satisfaction, and performance in technology-based settings.

The impact of technology readiness on technology adoption in the e-HRM area revealed that the optimism and innovativeness aspects of technology readiness positively and significantly impacted perceived utility and perceived ease of use, while the discomfort and insecurity dimensions did not (Erdoğmuş and Esen, 2021). Employees in the self-service industry demonstrate anxiety and technophobia when it comes to technology. When they use technology, they feel uneasy and irritated. When confronted with Technology, those who lack attributes like technology readiness will experience unpleasant sentiments like anxiety and technophobia. When some individuals' capabilities are inadequate, growing demands drive a wedge between capability and expectations, resulting in higher technostress (Parasuraman, 2000 as cited in Ibrahim and Yusoff, 2023). Primarily in the sphere of e-services, technological readiness has been discovered to be a fairly good predictor of technical attitudes, intents and behaviours (Chang and Chen, 2021).

Technology readiness, in particular, has a moderating influence on the link between the quality of information systems and organizational performance. Technology readiness has the potential to improve the beneficial impact of information system quality on organizational performance. (Kuo, 2023). Moreover, a study on experts in Human Resource Management Information Systems revealed that components of technostress were connected to three major characteristics of the user, namely attitude, technological readiness, and willingness for change (Ibrahim and Yusoff, 2023).

Therefore, it is hypothesized that:

H4: Technological readiness will moderate the relationship between techno stress and mental health.

2.6 Past Studies

Ozgur (2020) examined the connection between teacher’s degrees of techno stress and gender, age, school support, and TPACK (Technological Pedagogical Content Knowledge) characteristics. This research, which was conducted using the SEM method, is to determine the causal relationship between variables such as individual characteristics such as age and gender, along with their TPACK level, and school support including manager, parent, community support and colleague, and technical support that are believed to influence the teacher's techno stress levels, as well as the

effects of these variables on techno stress. The data was collected from 349 service high school teachers in Turkey. SPSS 23 for used for descriptive statistics and AMOS 18 tested the model. In this research, the relationships between the degrees of technostress among teachers and the factors of gender, age, school support, and TPACK were examined. The study's findings showed a strong and unfavourable correlation between teachers' degrees of technostress, school support, and TPACK. On the contrary hand, another research conclusion showed that there is a positive and substantial association between teachers' technostress levels and the age variable. This means that, as instructors' ages who utilize technology in the classroom get older, their levels of technological stress also get older. However, the current study uses an employee's mental health as a mediator along how their technological readiness impacts their relationship with techno stress.

Hwang et al. (2018) sought to incorporate the notion of techno stress and role stress in order to comprehend the situations and perspectives of employees in an organization in regards to information security. Moreover, it focused on assessing how employees' perspectives correspond to techno stress creators and how the subsequent role stress impacts their conformance intent via organizational commitment; and lastly, investigating a moderating variable assessing the conformance intent through organizational commitment. Suggesting regulatory focus such as promotion and prevention, as a moderator. This study's findings can be summed up as follows. First, information security compliance was adversely affected by security-related technostress producers due to commitment to the organization. Second, it was discovered that security-related technological stress generators were linked to some other form of stress, role stress pertaining to one's work, and that the elevated amount of security-related role stress caused by security-related technological stress generators even farther delivered as a predictor to reduce commitment to the organization. Lastly, how workers responded to security-related technostress generators was highly influenced by their concentration on promotion. Employees who had a significant promotion emphasis had less role stress than employees with a weak promotion mindset, despite the fact that security-related technostress generators generally raised security-related role stress. Whereas, the focus of this current study is on using technological readiness as a moderator to study the relationship between techno stress, mental health and work life balance.

Tarafdar et al. (2019) studies the impact of stress caused by information and computer technology (ICT) that is, technostress, on role stress and productivity are investigated in this research using ideas from sociotechnical theory and role theory. Tarafdar et al. (2019) begins by describing how Information systems might cause stress in people and identifying characteristics that cause techno stress. Structural equation modelling was used. Data was collected from 223 organizations. The finding reveals that the various aspects of technostress that have been found here contribute to the knowledge already known about the stress that people experience in businesses. The research furthers the idea that failure to control the impacts of ICT-induced stress can counteract anticipated advances in productivity by demonstrating how technostress negatively affects output. Thirdly, the literature examining the connection between technology and organizational roles and structure gains a new theoretical link with the substantiation of the significant link between technostress and role stress. Whereas, the current study uses the notion of boundary management theory to assess how techno stress impacts the work life balance of an individual.

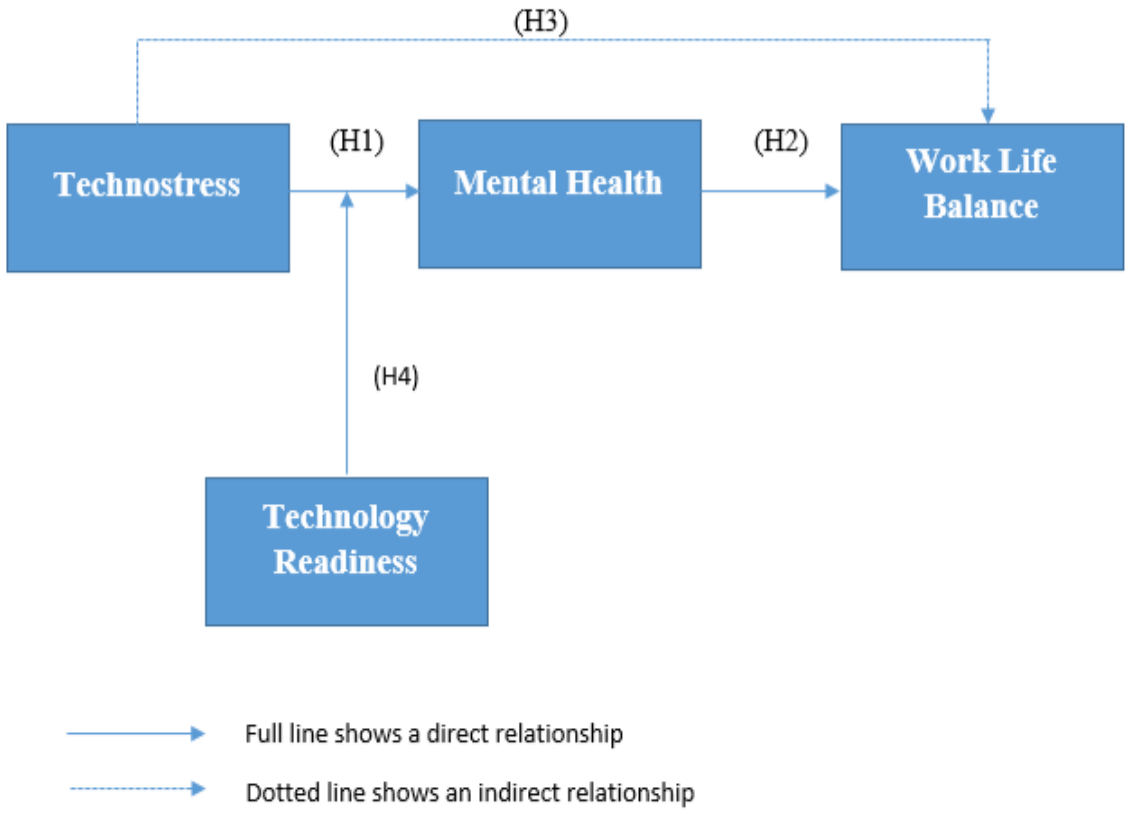
Nimrod (2017) focus is to discuss the conceptual underpinning and creation of a self-enumerated instrument to evaluate techno stress in elderly adults, as well as to investigate the magnitude and effects of this potential risk element connected with technology use in later life. For usage with older persons, a new test was developed that identifies important stress-inducing factors previously found in studies. A 14-item scale consisting of techno-overload, techno-invasion, techno-complexity, privacy, and inclusion are among the five techno stressors included in the scale, which is built on components uncovered in earlier studies. The results of this study, which is the first to examine technostress exclusively among elder ICT users, show that it is not just a problem for the workforce and younger consumers. Additionally, regardless of their demographical traits, it shows a substantial correlation between technostress and subjective wellbeing among older ICT users. Therefore, this difficulty of adjustment should be viewed as a risk to wellbeing at all stages of life, including older age. Whereas, the current study only focuses on 3 techno stressors which are techno-complexity, techno-overload and techno-uncertainty. Also, the focus of the current study is not only on older workers but younger workers too. Tarafdar et al. (2010) identifies mechanisms that can mitigate the negative consequences of techno stress on end users' perceptions of the devices they use and their ability to use them to enhance their work results. The model that examines the effects of elements that cause techno stress on a person's contentment with, and task performance using technology. The model also looks at how user participation in Information technology advancement and innovation might be used to reduce techno stress-causing elements and their consequences. The findings suggest that technology. induced stress reduces productivity and inventiveness in jobs requiring the use of ICT, both directly and indirectly, resulting in lowering user acceptance with the systems they operate. Secondly, user engagement procedures lessen technological stress-inducing elements and counteract their impact on user satisfaction by boosting the other. Thirdly, organizational innovation techniques that facilitate user involvement and support innovation implicitly boost employee efficiency and creativity in ICT-mediated activities through their favourable impact on end-user satisfaction. Whereas, the current study focuses on how techno stress impacts an employee's mental health and work life balance.Ma et al. (2020) examined how technostress affects work-life balance and how job self-efficacy can mitigate this harm through the numbing effect of emotional exhaustion. The study carried out two surveys. Study 1 gathered information through a paper and pencil survey in China from 316 employees working in the IT sector. The second study confirmed and improved Study 1 by obtaining longitudinal data from 646 southern Chinese respondents by conducting an online survey. The study used confirmatory factor analysis through M plus 7.0. The findings indicated that technostress had a negative impact on work-life, employment self-efficacy protected workers against this adverse effect by lowering their emotional balance exhaustion. This research broadens knowledge of how techno-stressors affect people's non-work spheres and offered some light on how to handle technostresses. However, the current study uses an employee's mental health as a mediator along how their technological readiness impacts their relationship with techno stress Wang et al. (2008) study the impact of various organizational environment settings, centralization and decentralization, on employee's techno stress levels. Also, it investigates the effect of an innovative organizational context on techno stress. Lastly, it focuses on all five dimensions of techno stress, namely techno invasion, techno overload, techno-complexity, techno-uncertainty and techno insecurity. However, the current study only focuses on 3 dimensions of technostress

which are techno-complexity, techno-overload and techno-uncertainty. Güğerçin (2019) links how work stress prompted because of technology to non-business pursuits during work, using the neutralization theory as a foundation. As a result, the goal of this research is to see how work stress prompted because of technology i.e. techno-stress affects non-business internet habits during work hours i.e. minor cyber slacking. Whereas, the current study focuses on using boundary management theory as a means to assess the relationship between technostress and work life balance. Salanova et al. (2013) oversees the framework and indicators of two psychological experiences of techno stress affiliated through the use of information and communication technologies, namely, techno strain, where individual's express anxiety, tiredness, cynicism, and feelings of inefficacy in relation to technology use. The other psychological experience being techno addiction where excess and obsessive usage of technology makes users feel miserable. Whereas, the focus of this study is how the current mental health or psychological state of individuals mediate the relationship between technostress and work-life balance.

2.7 Theoretical Framework

The framework presented below showcases how techno stress impacts the work-life balance of employees while mental health mediates this relationship. Technology readiness acts as a moderator

Figure 1: Conceptual Framework



CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology, addressing the key questions identified in the literature review. The chapter begins with a detailed explanation of the research design. After the section on the research design, the methods for selecting samples, sampling techniques, data collection and analysis, target population, questionnaire administration are described.

3.2 Research Design

3.2.1 Research philosophy

This research adopts a positivist philosophy, with an objectivist ontology based on existing literature. A deductive approach will be used to derive the results. A positivist viewpoint is well-suited for quantitative research. Measurements of the objective truth that exist in the real world serves as the foundation for the information attained. This philosophy is well-suited for studies aiming to generalize findings and test theories through hypotheses (Taherdoost, 2022).

3.2.2 Quantitative Research

Quantitative methods will be employed to test the hypotheses in this study. This study will concentrate on how the findings might be generalized to a larger audience. Since then, the validity and existence of this research have been carefully established. Quantitative approaches rely on larger sample sizes and standardized measurements to ensure validity and reliability (Hair, Page, & Brunsveld, 2019). Such methods allow researchers to test hypotheses deductively—starting from theoretical propositions and empirically confirming or rejecting them based on collected evidence (Saunders, Lewis, & Thornhill, 2019).

3.2.3 Survey Research

A closed-ended survey was employed to collect data for this research. This study employed a quantitative, non-experimental approach. A survey is a non-experimental, descriptive research method that works well for obtaining respondents' opinions (Ponto, 2021). Furthermore, surveys enable the collection of data that can be easily coded, quantified, and statistically analyzed to test the study's hypotheses (Taherdoost, 2022). Also, due to the scope and duration of the study, observations and in-person interviews could not have elicited the same level of candour as the anonymous survey. Additionally, the survey instrument was designed to minimize bias and subjectivity, unlike observational or interview-based methods, ensuring the data could be effectively analyzed statistically.

3.3 Population and Sampling

3.3.1 Target Population

The population refers to the group of individuals to which the researcher intends to generalize the research findings (Frankel et al., 2022). The target population consists of employees from the banking, telecommunications, and IT sectors in Pakistan, with a focus on major cities, specifically

Islamabad and Rawalpindi. According to 2025 population estimates, Islamabad has a population of approximately 1.3 million (World Population Review, 2025), while Rawalpindi's population is around 2.5 million (World Population Review, 2025). The study focuses on both male and female employees, across a range of ages, marital statuses, and job roles (clerical, non-managerial, and managerial), with work experience ranging from 1 to 16 years. Participants are from both the private and public sectors and include full-time, part-time, and temporary employees.

3.3.2 Unit of Analysis

The unit of analysis in this study is the individual. Kumar (2021) explained that each time, the individual, mostly likely an employee, is serving as the analytical unit is being discussed and explained. When the employee is the unit of analysis, it can aid in shedding light on issues in business including human resource management. The attitudes, actions, views, and judgments of employees are examined. The unit of analysis in each instance will be an individual if the researcher is willing to investigate buyer behaviour or views toward online shopping. Whereas, in this research, the employees' attitude towards technology was being assessed and how it in return impacted their own mental health and work life balance.

3.3.3 Sampling technique

Purposive Sampling

On the organizational level, purposive sampling was first adopted as it entails selecting and choosing people or groups who are knowledgeable and experienced about the topic of interest (Creswell, 2018). So, for this research, purposive sampling allowed for the selection of respondents who were well-versed in the technology-intensive environments of the banking, IT, and telecommunications sectors. This approach was essential for selecting participants who could provide valuable insights into technostress and its effects on work-life balance and mental health. Additionally, the snowball technique was used to reach participants through referrals from initial respondents, ensuring access to a broader network of professionals within these sectors. Although non-probability sampling is more susceptible to sampling bias, it was appropriate because the population of employees experiencing technostress in Pakistan’s high-tech sectors is not fully listed or accessible. Random sampling was therefore impractical. To minimize bias, participants were selected from various organizations within each sector, with referral chains used to ensure diversity across job levels and departments. Similar approaches are widely accepted in organizational research where the sampling frame is undefined (Etikan, 2021; Hair et al., 2019).

Convenience sample

On the individual level, both snowball and convenience sampling were used to reach out to the relevant participants for this study. A convenience sample includes a set of people who are easily accessible for the study is known as a convenience sample (Frankel et al., 2022, p. 99). It is where the respondents of the target population are added for the study's objectives if they fit specific practical requirements, such as convenient access, geographic closeness, accessibility at a specific time, or a desire to take part (Etikan, 2021).

The study includes samples from three sectors: banking, IT, and telecommunications. These sectors were specifically chosen due to their heavy reliance on technology, which makes them

ideal for examining the impact of technostress on employee's mental health and WLB. While the sub-samples from banking, IT, and telecom sectors were not large enough for comparative multi-group analysis, they were sufficient for exploratory PLS-SEM analysis, which emphasizes explained variance rather than distributional assumptions. The inclusion of multiple sectors was intended to enhance **contextual richness** rather than generalizability, and the combined sample (n = 253) exceeds the minimum sample requirement (10 times the maximum number of structural paths) recommended by Hair et al. (2022). Future studies could benefit from larger, more diverse samples to enhance the generalizability of the findings.

3.3.4 Sample size

A total sample size of **300 respondents** was targeted for this study, with equal number of data gathered from both working men and working women. This number was chosen to ensure sufficient statistical power for the analysis using **SmartPLS 3.0**. Hair, Hult, Ringle, and Sarstedt (2022) have provided that structural equation modeling (SEM) based on the partial least squares (PLS) method is reliable with medium to large sample sizes (preferably over 250) when the constructs within the model and the indicators are many. In the same way, Memon et al. (2020) highlighted that a sample size of 200 to 300 would be correct to repeat the results of PLS-SEM with valid and consistent results.

3.4 Data Collection

3.4.1 Questionnaire Design

Technostress (Independent Variable)

The use of a 10-item scale will measure technostress (Tarafdar et al., 2019). It assesses the two factors of technostress-techno stress overload and techno complexity. Statements are scored on a five-point Likert scale, where 1 means strongly disagree; 5 strongly agree. The scale has been confirmed in most recent researchers investigating stress caused by technology in employment (Ragu-Nathan et al., 2022; Molino et al., 2020).

Mental Health (Dependent Variable)

A 12-item scale of the General Health Questionnaire (GHQ-12), which determines the severity of mental condition with a 5-point Likert-type scale (Goldberg and Williams, 1988), and tested in occupational areas (Richardson et al., 2022). The GHQ-12 remains as one of the trustworthy and most popular tools to determine psychological well-being in research in the workplace.

Work Life balance (Mediator)

In total, Brough et al. (2014) scale was used to measure work life balance as it contains four items. This scale is endorsed by recent literature because it is simple and reliable in the field of organization research (Haar et al., 2019).

Technology Readiness (Moderator).

The thoughts regarding technology preparedness were measured on the basis of Technology Readiness Index (TRI 2.0) developed by Parasuraman and Colby (2015). The new version has four

dimensions and these are optimism, innovativeness, discomfort and insecurity which are used to measure the tendency of an individual to be flexible and adopt and embrace new technologies. Two dimensions were applied in this research: optimism (5 items; Alpha= 0.78) and innovativeness (5 items; Alpha= 0.82). The subjects scored each statement based on a five-point Likert scale of 1 = strongly disagree to 5 = strongly agree. The TRI 2.0 has proven that it is robust and cross-culturally applicable through recent research (Lin and Hsieh, 2022).

3.4.2 Instrument Validation

The validity and reliability of the questionnaire were ensured by confirming that each construct had a Cronbach's alpha value exceeding 0.70, which indicates acceptable internal consistency (Hair et al., 2021; Taber, 2018). A Cronbach's alpha coefficient of 0.70 or higher is generally regarded as reliable for research purposes.

3.4.3 Instrument Language

The questionnaire is in English as that is the language spoken and used in all the organizations in Pakistan and it is widely understood by the working individuals.

3.4.4 Pretesting/ Pilot study

The pretesting was conducted in two phases. The individuals who were selected for pretesting each received two tests: a pre-test administered prior to treatment of the questionnaire and a post-test administered following the feedback received in phase 1. The individuals read the questions thoroughly before responding to a few questions about it. There are 40 items in total. Post feedback, there were changes made by rephrasing items to make them easier for the reader to comprehend and the questionnaire was tested again.

3.4.5 Time Horizon

The study is cross sectional in nature. Cross-sectional studies are particularly useful for identifying associations and generating hypotheses that can be explored in future studies (Flagg & Kucera, 2020; Capili, 2022). Although this design limits the ability to establish causal relationships. Cross-sectional data provides a snapshot at a single point in time, which makes it difficult to determine the directionality of the relationships between technostress, mental health, work-life balance, and technology readiness. Therefore, while the analysis suggests significant associations between these variables, it should be emphasized that these findings reflect correlations rather than cause-and-effect relationships. Future research could adopt longitudinal designs to better assess the temporal dynamics and causal pathways between these variables (Capili, 2022; American College of Chest Physicians, 2020).

CHAPTER 4: DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter provides an overview of the targeted population, details of the final sample used for the study, and the demographic characteristics collected. It also presents the validity and reliability of the models and discusses the results of hypothesis testing.

4.2 Initial Screening

The initial screening was based on how many respondents in the sample meet the criteria. The sample excluded were based on that some were not full-time workers or had not filled the questionnaire properly.

4.3 Demographic Information

4.3.1 Gender

The final sample comprised n-169 (66.8%) male participants and n-84 (33.2%) female participants. The lower female representation in the sample can be accounted for low participation of women in the workforce compared to men. The labour force participation for men in Pakistan was around 69.8%, while female participation was only 24.4%, according to the 2024–25 labour-force estimates. This can help in shedding some light as to why there has been an unequal representation of gender in the sample.

4.3.2 Age

The minimum age of the participants was 20 and the maximum age was 59. The mean age was

29.72%.

4.3.3 Marital Status of participants

The number of single individuals within the sample was n=148 (58.5%) and the number of married individuals was n=103 (40.7%). There was n=2 (0.8%) individuals who chose the "Others" category signifying that they might be separated or divorced.

4.3.4 Education level of participants

Out of the total sample of n=253, there were n=148 (58.5%) individuals who had a Bachelor's degree, n=94 (37.2%) had a Master's degree, n=2 (0.8%) had a PhD and n=9 (3.6%) individuals had completed their Chartered Accountancy. This shows that all the study participants were well-educated and had 16 years and above education.

4.3.5 Work Experience of participants

The participants' work experience ranged from 1 to 16 years and above. By further breaking it down, around n=158 (62.5%) had an experience of 1-5 years, n=51 (20.2%) had an experience of 6-10 years, n=30 (11.9%) had an experience of 11-15 years and n=14 (5.5%) had an experience of 16 years and above.

4.3.6 Work type

All the n=253 participants were full-time workers.

Table 1: Demographic Information

		Frequency	%
Gender of Participant	Male	169	66.8%
	Female	84	33.2%
	Other	0	0.0%
Marital status of Participant	Single	148	58.5%
	Married	103	40.7%
	Other	2	0.8%
Education Level of Participant	Matric	0	0.0%
	Intermediate	0	0.0%
	Bachelors	148	58.5%
	Masters	94	37.2%
	PhD	2	0.8%
	Chartered Accountancy	9	3.6%
Work Experience of Participant	0-5 years	158	62.5%
	6-10 years	51	20.2%
	11-15 years	30	11.9%
	16 years and above	14	5.5%
Work Type	Full time	253	100.0%
	Part time	0	0.0%
	Temporary	0	0.0%

4.4 Multicollinearity

Before conducting structural model analysis, it is essential to evaluate the Variance Inflation Factor (VIF) to assess multicollinearity alongside reliability and validity. A VIF value greater than 10.0 typically indicates multicollinearity (Burns & Burns, 2008), while a cut-off value of 5.0 has also been suggested (Hair et al., 2014). In this study, the VIF values for all constructs were below 5.0, suggesting no significant multicollinearity issues.

Table 2: Variance Inflation Factor

Construct	VIF
Mental Health (MH)	1.72
Techno Complexity (TC)	2.10
Techno Overload (TO)	1.88
Technology Readiness (TR)	1.75
Work-Life Balance (WLB)	1.65

4.5 Common Method Bias

One of the issues of the research is Common Method Bias, in its turn, a survey in its nature (Podsakof et al., 2003; Schwarz et al., 2017). Because the data were not collected in the multiple source, Common Method Bias represents the level of covariance in the items tested (Podsakof et al., 2003; Hair et al., 2014). The common method bias issue was overcome using both the procedural and statistical procedures. They attempted to ensure the anonymity and privacy of the respondents, pre-tested the items to be used to exclude the use of ambiguous and difficult questions, and provided them with clear guidelines in a bid to complete the questionnaire (Podsakof et al., 2003; Reio, 2010; Schwarz et al., 2017). It was also determined that there was the presence of the Common Method Bias; this was as a result of the single factor test that was proposed by Harman (1967). The principal component analysis was incorporated in the exploratory factor analysis that used the varimax rotation in order to include all the 40 items. The ensuing exploratory factor analysis has established three items, with the first item making 23 percent contribution towards the variance, with the cut-offs being 40 percent (Babin et al., 2016). The Common Method Bias therefore could not play any meaningful functions on the present study.

4.6 Structural Equation Modelling

Partial least squares structural equation modelling (PLS-SEM) was employed in order to test the research hypotheses. The reason why the PLS-SEM approach to the analysis is widely attributed to its reliability (Penga and Lai, 2012). Two-stage analysis process type of a process was assumed to be used in its development as suggested by Andersen and Gerbing (1988). This is quantified concerning the model of measurement that entails internal consistency reliability, convergent and discriminant validity on the first step and structural model on the second step that entails the testing of the hypotheses.

4.7 Measurement Model

The measurement model was also tested to determine the degree of validity, convergent validity and internal consistency reliability of the constructs that were utilized in this research. The degree of interrelation between the constructs and the items is measured with the help of internal consistency reliability (Hair et al., 2014; Ramayah et al., 2016). The organizational consistency was measured through the composite reliability (Hair et al., 2017).

The outer loadings in table 3 represent the strength of the relationship between each observed variable (indicator) and its respective latent construct. In the context of convergent validity, these loadings indicate how well the indicators represent the underlying constructs they are intended to measure.

According to Hair et al. (2017), the standard threshold for an acceptable outer loading is 0.708, which implies that the indicator explains at least 50% of the variance of the construct it is associated with. However, for exploratory research or when the model is complex, loadings as low

as 0.6 may also be considered acceptable, as long as the item adds meaningful contribution to the construct.

Table 3: Outer Loading

Construct	Item	Outer Loading	Acceptable? (Yes/No)
Mental Health (MH)	MH1	0.367	No
	MH2	0.492	No
	MH3	0.605	Yes
	MH4	0.544	Yes
	MH5	0.608	Yes
	MH6	0.398	No
	MH7	0.427	No
	MH8	0.754	Yes
	MH9	0.763	Yes
	MH10	0.809	Yes
	MH11	0.825	Yes
	MH12	0.796	Yes
Techno Complexity (TC)	TC1	0.855	Yes
	TC2	0.841	Yes
	TC3	0.71	Yes
	TC4	0.723	Yes
	TC5	0.865	Yes
Techno Overload (TO)	TO1	0.682	Yes
	TO2	0.86	Yes
	TO3	0.883	Yes
	TO4	0.778	Yes
	TO5	0.775	Yes
Technology Readiness (TR)	TRI1	0.619	Yes
	TRI2	0.809	Yes
	TRI3	0.905	Yes
	TRI4	0.853	Yes
	TRI5	0.794	Yes
Work-Life Balance (WLB)	WLB1	0.848	Yes
	WLB2	Yes	Yes
	WLB3	0.818	Yes
	WLB4	0.871	Yes

4.8 Convergent Validity

The other measure is the Convergent Validity measure, which is the effect that measures the common level of a measurement with other measurement scales of the similar construct (Hair et al., 2017, p. 112). Convergent Validity is tested by looking at the item loading on the outer side and the mean variance (AVE) is computed. According to standard guidelines, outer loadings should be at least 0.708, and an acceptable AVE score is 0.5. (Avkiran, 2017). Also, items having an appropriate outer loading of 0.6 may also be permitted (Chin et al., 1997). Moreover, it was suggested that in case other indicators with higher loadings can explain at least 50% of the variance, it is advised to keep indicators with lower factor loadings (Hair et al., 2017). The results were as follows Mental health (0.519), Techno Complexity (0.643), Techno Overload (0.638), TR1 (0.643), TRO (0.661) and Work-life balance (0.654). A few of the constructs were removed which were MH1, MH2, MH6 and MH7. After they were removed, the remaining constructs gained the desirable AVE. The results are shown in Table 4.

4.9 Internal Consistency Reliability

A measurement model is deemed adequate if its composite reliability is greater than the threshold value of 0.7 for each construct (Nunnally, 1978; Nunnally and Bernstein, 1994; Richter et al., 2016). The findings showed that all of the components' composite reliability exceeded the cut-off value (0.7) demonstrating the measurements' great internal consistency. They were mental health (0.894), techno-complexity (0.899), techno-overload (0.897), TR1 (0.899), TRO (0.886) and work- life balance (0.882). The results are shown in Table 4.

Table 4: Convergent Validity & Internal Consistency Reliability

Constructs	Items	Loadings	AVE	CR
MH	MH3	0.605	0.519	0.894
	MH4	0.544		
	MH5	0.608		
	MH8	0.754		
	MH9	0.763		
	MH10	0.809		
	MH11	0.825		
	MH12	0.796		
Techno Complexity	TC1	0.855	0.643	0.899
	TC2	0.841		
	TC3	0.71		

	TC4	0.723		
	TC5	0.865		
Techno Overload	TO1	0.682	0.638	0.897
	TO2	0.86		
	TO3	0.883		
	TO4	0.778		
	TO5	0.775		
TRI	TRI1	0.619	0.643	0.899
	TRI2	0.809		
	TRI3	0.905		
	TRI4	0.853		
	TRI5	0.794		
TRO	TRO1	0.818	0.661	0.886
	TRO2	0.794		
	TRO3	0.77		
	TRO4	0.868		
WLB	WLB1	0.848	0.654	0.882
	WLB2	0.684		
	WLB3	0.818		
	WLB4	0.871		

4.10 Discriminant Validity

Discriminant Validity measures how different a construct is from all other of the model's constructs (Hair et al., 2017). Discriminant Validity was verified using the Heterotrait-Monotrait Ratio (Henseler et al., 2015).

HTMT Benchmarks:

HTMT value ≤ 0.85: Indicates acceptable discriminant validity, meaning the constructs are sufficiently distinct from each other.

HTMT value > 0.90: Indicates a lack of discriminant validity, meaning the constructs are too similar to each other and might not be distinct enough to be considered separate.

Table 5: Discriminant Validity (HTMT Criterion)

Construct	MH	TRI	TRO	TSC	TSO	WLB
Mental Health (MH)	—	0.220	0.323	0.505	0.390	0.533
TRI (Innovativeness)		—	0.639	0.384	0.106	0.273
TRO (Optimism)			—	0.299	0.152	0.316
Techno-Complexity (TSC)				—	0.670	0.199
Techno-Overload (TSO)					—	0.174
Work–Life Balance (WLB)						—

Note: TR: Technology Readiness, WLB: Work-Life Balance

All the HTMT values in the table are below 0.85, indicating that each construct is sufficiently distinct from the others

4.11 Structural Model

Hypothesis testing (Direct effect)

To test the significance of the path coefficients in the structural model, bootstrapping was performed with 5,000 bootstrap samples**.** The n=5,000 indicates that the analysis was robust and reliable, and this value was used to compute the standard errors, t-values, and p-values for each path coefficient.

Table 6 depicts the outcomes of the structural model examination. The findings show that Technostress (H1: β = -0.337, p < 0.001, LL: -0.444, UL: -0.191) has a significant negative association with Mental Health, as was hypothesized. Also, mental health (H2: β =0.485, p<0.000, LL: 0.388, UL: 0.55) is negatively related to Work-life balance, as was hypothesized. Moreover, the results for the PLS path coefficients showed that Technology Readiness (H4: β =-0.106, p>0.192, LL: -0.196, UL: 0.22) did not moderate and had no significant effect on the relationship of technostress and work-life balance. The results are shown in Table 6.

Table 6: Hypothesis Testing Direct

Path	β	STDEV	T	P	95% CI LL	95% CI UL	Decision
Technostress → MH	−0.337	0.103	3.288	**0.001**	−0.444	−0.191	Supported
Mental Health → WLB	0.485	0.047	10.326	**<0.001**	0.388	0.550	Supported
TS × TR → MH	−0.106	0.122	0.872	>**0.05**	−0.196	0.220	Not supported

Note: TS: Technostress, MH: Mental Health, WLB: Work-life Balance, TR: Technology Readiness

Hypothesis testing (indirect effect)

The mediating effect of Mental health between technostress and work-life balance was examined. The indirect effect method of Preacher and Hayes (2004, 2008) was utilized. The results for indirect effect indicated that Mental health (H3: β =-0.164, p<0.0000, LL: -0.226, UL: -0.083) mediated the relationship between technostress and work-life balance. The results are shown in Table 7.

Table 7: Mediation Analysis

Indirect Path	β	STDEV	T	P	95% CI LL	95% CI UL	Decision
TS → MH → WLB	−0.164	0.054	3.043	**<0.001**	−0.226	−0.083	Supported

Note: TS: Technostress, MH: Mental Health, WLB: Work-life Balance, TR: Technology Readiness

R-Square

According to Hair et al. (2017), researchers should also report the coefficient of determination (R) and effect size (f). The explanatory power of R^2 can be categorized as follows:

- Small: $R^2 \leq 0.25$ (low explanatory power)
- Medium: $0.25 < R^2 \leq 0.50$ (moderate explanatory power)
- Large: $R^2 > 0.50$ (high explanatory power)

R^2 relates to the capacity of the independent variable to explain the connection with the dependent variable. The R^2 value depicts that the mental health of employees shows 24.5% of their work-life balance and work-life balance depicts 25.1%. The results are shown in Table 8.

Table 8: R-Square

Construct	R-Square	Interpretation
Mental Health	0.249	Moderate
WLB	0.251	Moderate

Note: WLB: Work-life Balance

Effect Size

f^2 indicates effect size which depicts what proportion of the dependent variable's R an independent variable contributes to. Cut-off values for determining effect size were given as follows:

- Small effect: $f^2 \geq 0.02$
- Medium effect: $f^2 \geq 0.15$
- Large effect: $f^2 \geq 0.35$

The findings show that technostress has a medium to large effect on mental health (f^2 =0.122) and a large effect on work-life balance (f^2 =0.309). The results are shown in table 9.

Table 9: f-Square

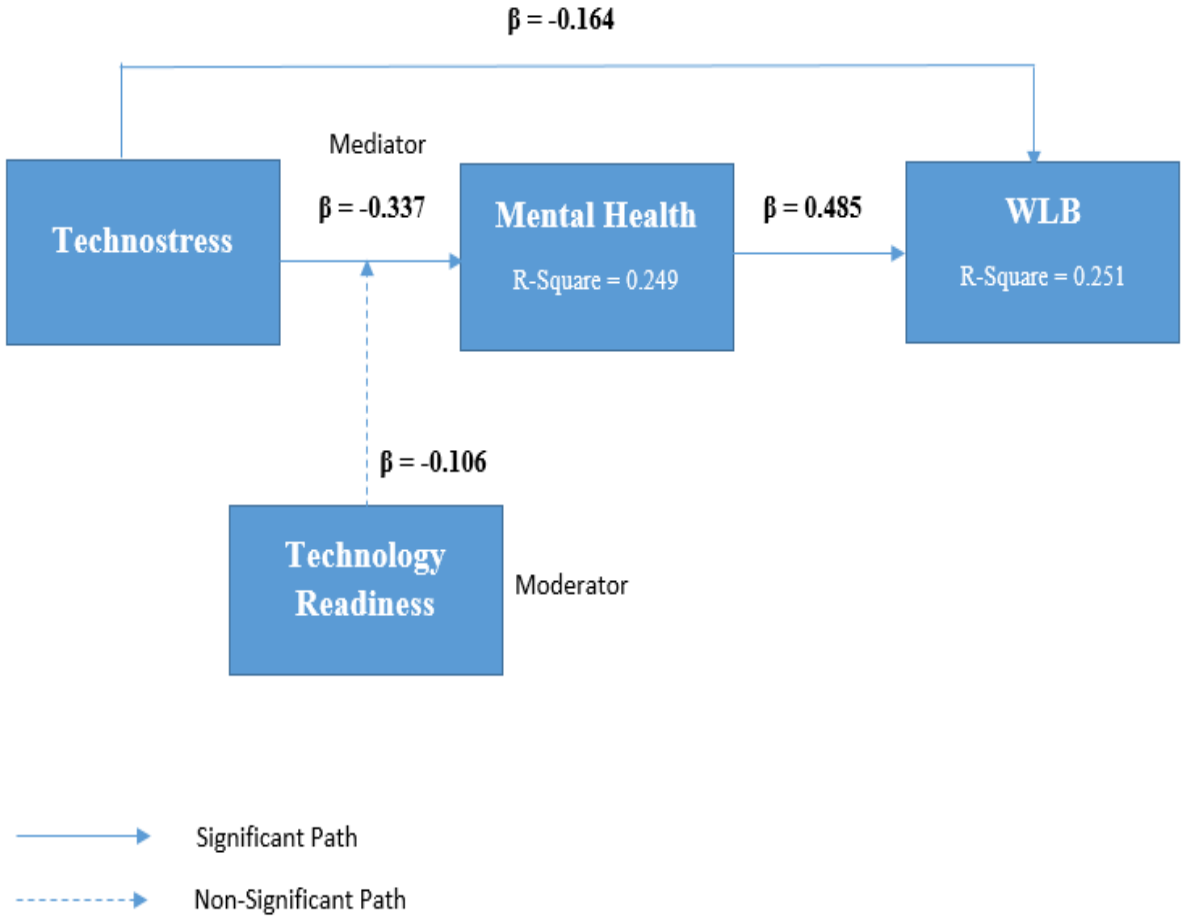
Hypotheses	F-Square	Interpretation
Technostress -› Mental Health	0.122	Small-Moderate
Mental Health -› WLB	0.309	Moderate-Large
TS × TR -› Mental Health	0.019	Very Small

Note: MH: Mental Health, WLB: Work-life Balance, TR: Technology Readiness

4.12 Structural Model Diagram

The structural model examines the connections amongst the constructs (Sang et al., 2010). Figure 2 presents the structural model with standardized path coefficients. The coefficients indicate the strength and direction of the relationships among the study variables, while the R^2 values show the proportion of variance explained in each endogenous construct.

Figure 2: Structural Model



The statistical analysis of the data is presented to address the research questions and hypotheses. A total of 253 employees participated in the study. The results showed significant findings, particularly:

- A negative correlation between Technostress and Mental Health ($\beta = -0.337$, $p < 0.001$), confirming that higher technostress is associated with poorer mental health.
- A positive correlation between Mental Health and Work-Life Balance ($\beta = 0.485$, $p < 0.001$), meaning better mental health is linked to a better work-life balance.
- The hypothesis that Technology Readiness moderates the relationship between Technostress and Mental Health was not supported ($\beta = -0.106$, $p > 0.05$), indicating that technology readiness does not significantly buffer the effects of technostress on mental health.

Furthermore, Mental Health was found to mediate the relationship between Technostress and Work-Life Balance ($\beta = -0.164$, $p < 0.001$). This mediation effect underscores the importance of mental health in explaining how technostress impacts work-life balance.

4.13 Summary of results

Statistical analysis of the data was given in this chapter to deal with the research questions and to test the hypothesis. The description of the hypothesis and the results of the hypothesis testing were given. 253 employees made up the sample of this study. Findings indicated a negative correlation between technostress and mental-health and also negative correlation between low mental health and WLB.

CHAPTER 5: DISCUSSION

5.1 Introduction

The focus of this chapter will be giving a recap to of what the objectives and methods used were, along with the hypothesis and the results of which hypothesis were supported and rejected. Moreover, it provides a detailed discussion of the results along with supporting material from the literature. It goes onto describe what contributions this study has made both theoretically and practically. It mentions what limitations caused this study to not achieve its full potential and how future studies can pick up.

5.2 Objectives, Methods and Recap

This study aimed to assess the impact of technostress on an employee's mental and work-life balance. All while keeping in mind how their Technological Readiness impacted this. The goal was to see how these factors differ between working men and women. The gap in the literature showed the little focus that there was on employee's mental health and technological readiness. The aim of this quantitative and non-experimental study was to assess how the technostress, particularly its two dimensions called techno complexity and techno overload, impacts the work-life balance of employees.

This quantitative study used a survey to collect data majorly from the banking, IT and telecommunication industries, with a small quantity of data collected from other industries too. The questionnaire had a total of seven sections in total. After data analysis, it was discovered that Technostress is negatively associated with mental health and work-life balance. Thus, these results showcase that technostress faced by employees does in fact impact their mental health and work-life in a negative manner.

5.3 Table of hypothesis

Table 10: Summary of Hypothesis

	Hypothesis	Supported? (Yes/No)
H1	Technostress is negatively associated with mental health	Yes
H2	Low mental health is negatively associated with work-life balance	Yes
H3	Mental health will mediate the relationship between technostress and work-life balance	Yes
H4	Technological readiness will moderate the relationship between technostress and mental health.	No

5.4 Discussion

Technostress and mental health.

This is what Bondanini et al. (2021) found in their study addressing that technostress, which affects mental health in a way that it may emerge as a struggle to embrace technology, is often understood to be an inability to cope with new technologies. Whereas Salanaova et al. (2024) described technostress as a psychological condition associated with utilizing or misusing technology. This can be further linked to how technostress has also been linked to worry, mental stress and mental exhaustion with the perception of uselessness being thought to be multifaceted. It has been characterized as a poor psychological condition connected with the usage or fear to adopt new technology (Salanova et al., 2007 as cited in Brivio et al., 2023). Experiencing these various unpleasant emotions as a result of technostress is what Borle (2021) also found was that various technological stressors also repeatedly demonstrated detrimental effects on unpleasant emotions, tension or stress and self-rated health.

Moreover, La Torre et al. (2019) believed that technostress has the potential to predict a decline in life happiness, and is frequently linked to the onset of mental and behavioural problems. A negative effect on mental health eventually impacts one's work life as Boonjing and Chanvarasuth (2024) researched that technostress provides more chances for people to experience stress at work. Employing more technological devices increases employee stress. As a result, the constant stress may hinder or even intensify work-related stress. Stress related to the workplace has been linked to mental health issues and disorders like depression, anxiety and burnout (O'Connor et al., 2023; Aronsson et al., 2024). Therefore, showing that employees can be stuck in a vicious loop of mental health problems. From the viewpoint of occupational health and safety, it's critical to pinpoint the precise components of the digitization practices that cause stress and subsequently have a negative impact on mental health (Stacey et al., 2023).

Low mental health and work-life balance.

Haar et al. (2022) observed that work-life balance is favourably related to both job and life satisfaction. However, it was discovered that depression and anxiety had a detrimental impact on work-life balance. According to the data collected in this study, employees felt that the state of the mental health did have an impact on their work life balance. A poor mental health condition meant that work-life balance was also not in a great condition. Moreover, Ayyagari et al. (2021) researched that anxiety significantly increased as the lines between job and personal and family life began to blur. Because people only have so much energy and time, increasing conflicts between their personal and professional lives stress them.

Moreover, Ayyar (2022) stated that the imbalance between work and life leads to stress, and that negatively impacts the quality of work and family life as well as the health of the worker. This is in line with what Health and Safety Executive (2025) reported that stress was responsible for approximately fifty percent of all working days lost due to illness. Poor mental health has a clear impact on how individuals interact at work. This shows that mental health problems, that too in the form of stress have been a hindrance for employees. Furthermore, a survey carried out by

mental health foundation (2025) showed that one in three employees are unsatisfied with the amount of time they spend working, which they would have directed to doing other things. It also stated that a loss of personal growth, a miserable home life, and problems with their physical and mental health are just a few examples of how working has adversely impacted the daily lives of nearly two thirds of employees. Therefore, these studies are in line with our hypothesis that mental health is negatively associated with work life balance and supports it.

Mental Health as a mediator

After an analysis of the data, it showed that mental health does mediate the relationship between technostress and work life balance. Salanova et al. (2024) observed that technostress has an effect on organizational commitment, work satisfaction, and work results, such as turnover and absenteeism. On the other hand, employees who experience exhaustion, stress, doubt, and anxiety have poor self-efficacy about their use of communication and information technology. This goes onto show that technostress creates an environment where potential motivators for employees i.e. work satisfaction can be disrupted a lead to an unfavorable situation for both the organization and employee resulting in absenteeism and turnover.

Whereas, how mental health connected to this relationship Zhou et al. (2023) found that Chinese women's mental health was found to be negatively linked with opinions on conflict between the family and the workplace. It was discovered that perceived stress and psychological discomfort were negatively correlated with mental health. Their mental health looked to be affected by work and family issues. Therefore, these previous studies seem to be in line with the results of the study that outline how mental health does mediate and how controlling the harmful effects of technostress may reduce the harmful effects on an employee's work-life balance.

Technology Readiness as a moderator

Technology readiness was found to show no significant role as a moderator between technostress and mental health after an analysis of the collected data. This can also be because of that fact that the two dimensions of technology readiness, innovativeness and optimism, do not have an impact on the role of technostress and mental health. It shows that an indiviual's optimistic attitude and their need to be innovative and an idea blazer does not play a significant role when the technostress they face overpowers the very two factors that pushes one towards technology acceptance. Since they are domain specific and may be influenced by a person's current surroundings and past experiences, situational characteristics like technology readiness are far less reliable and are vulnerable to change (Blut and Wang, 2023).

There are a few antecedents to technology readiness that might explain why technology readiness was not able to moderate the relationship. The type of technology used, be it technology used at home or work, impacts one's readiness. Venkatesh et al. (2022) compared technology readiness in consumer setting vs. organizational setting. The study indicated that consumer technology usage seems to occur due to personal reasons, as opposed to when working in an organizational setting. Irrespective of how employees feel about it, organizations frequently impose requirements on the usage of technology. Whereas, a customer's own opinions about technology are relevant to both technology readiness motivating factors and constraints. An individual's views on technology

readiness and usage are more impacted by motivators and constraints when utilized at home as opposed to at work. Therefore, showing that the technology readiness did not moderate over here because the employees who participated in this study felt that their readiness is probably not accounted for when organizations imposes it upon them and therefore, their technsotress overbears their technology readiness and does not regulate the relationship technostress has with their mental health.

Building on the previous point, an individual's technology readiness can be impacted by the fact that if their usage of technology is voluntary or mandatory. Voluntary action is a major modifying factor in the relationship between technology usage and beliefs (Venkatesh et al. 2022). When an individual uses technology willingly, their desire to utilize it and their actual usage indicate their opinions and views about it, but in non-voluntary circumstances, they adhere to company rules.

Moreover, another influencing factor is firm support. On how people perceive and use technology, there is a negative relationship impact between the help that is offered and technology readiness. Individuals with high technology readiness motivators i.e. optimism and innovativeness, do not gain from firm support compared to individuals who are low in technology readiness motivators (Blut and Wang, 2023). This goes onto show that the employees who were a part of this study might have been indifferent to how they perceived their technology usage and readiness because their firms provided support and that nullified the impact on their technology readiness.

Rosenbaum and Wong (2025) believed that technology readiness refers to a person's attitudes, convictions, and emotions toward technological items and services. A person may concurrently express both positive and negative technology dependence, and the balance between these beliefs determines whether they are more likely to accept or reject a modern technology. Therefore, this might be able to explain why technology readiness did not moderate the relationship because largely the beliefs of the majority of employees could have been that they had to adopt new technology or maybe their during the data collection revealed during discussion that their technology readiness wasn't a big factor because their organization would first run a pilot test of the software that they had to introduce, this would allow them to get used to the new software while still using their old one. Plus, they would give readiness wasn't an important factor when their organizations introduced new technology. Once employees gave ample feedback to the software engineers to make changes that suited their needs that by the time the organization would roll out the software officially, they would have used it a couple of time. Moreover, another employee stated that the changes in their organizations were not that constant, so when a new software was being introduced they would give them ample trainings that acclimatized them.

On the other hand, (Chang & Chen, 2021) believed that technology readiness has been found to be a reasonably excellent predictor of technical attitudes, intents, and behaviours, mostly in the context of e-services. Tsourela and Roumeliotis (2022) revealed that a person's willingness to try out current technologies is significantly influenced by their level of technology readiness. High technology readiness individuals are knowledgeable, enthusiastic, and at comfort with new technologies. Whereas, on the other end of the spectrum, people who are not high on technology readiness are more likely to be hesitant and uneasy, which prevents them from embracing new technologies (Chang & Chen, 2021). Therefore, raising questions about the fact that if technology

readiness of employee of always important when introducing new technology into organizations or if there are other factors. This can be explained by Blut and Wang (2023) who mentioned that the type of technology i.e. hedonic or utilitarian, firm features i.e. voluntary versus required use and firm support, and nation environment all affect how strong technology readiness-technology utilization connections are. Finally, technology readiness is influenced by the age, expertise and education level.

Based on this literature review, it was believed that technology readiness will moderate the relationship between technostress and mental health but results from the primary data show that this hypothesis is not supported.

5.5 Theoretical contributions

This study contributes to the understanding of technostress and its impact on mental health and work-life balance, particularly in the context of high-tech sectors in Pakistan. The research addresses important gaps in the literature and provides both theoretical and practical insights. The key contributions of this study are:

First Empirical Test of the Model in Pakistan

This study presents the first empirical test of the relationship between technostress, mental health, and work-life balance in the Pakistani context, particularly within the banking, IT, and telecommunications sectors. By focusing on a developing economy like Pakistan, this research provides novel insights into the role of technostress in high-tech industries.

Mental Health as a Mediator

The review of the literature prompted the question of whether technostress indeed affects an employee's ability to balance work and life. This led to the inclusion of mental health being studied as a mediator, which is also the second contribution. It showed the technostress does have a negative relationship with an employee's mental health. Also, mental health does mediate the relationship between technostress and work-life balance.

Use of Boundary Management Theory

The other contribution is the use of the boundary management theory. In order to describe how to control the crucial boundaries between the different life domains, either through integration or segmentation, boundary management theory was used. By further strengthening our understanding of these notions in relation to how working men and women defined their boundaries. In doing so, it contributes insights about whose work-life balance is more effected due to technological stresses. The inclusion of this theory helps us in contributing how work-life balance can further be improved when an individual recognizes the importance of setting up their relational, geographical, spatial and temporal boundaries. This can be further applied to how setting up these boundaries eventually impact an employee's relationship with their use of technological gadgets at their disposal and how that eventually helps them in overcoming low mental health as a result of technostress.

Exploration of Technology Readiness

Technological readiness was used in the relationship of technostress and work-life balance. This helps in drawing insight into how much an individual's readiness to accept and adopt technology can or cannot impact their levels of technostress and how that readiness determines whether their relationship with technology and its use will be a positive one or not.

Contextualization of Technostress in a Pakistani Organizational Environment

This research contextualizes technostress within the Pakistani organizational environment, adding depth to the global conversation on technological stressors. The study highlights the unique challenges faced by employees in the Pakistani high-tech sectors and the impact of cultural, organizational, and technological factors on technostress. This contribution opens the door for more region-specific studies and provides insights that can be applied to similar emerging markets.

Sector-Specific Insights for Addressing Technostress

By examining technostress in the banking, IT, and telecommunications sectors, this study offers sector-specific insights into the unique stressors faced by employees in each sector. The findings help identify targeted strategies to manage technostress and improve employee well-being, suggesting that organizations within each sector can benefit from customized interventions.

Gender-Specific Insights on Work-Life Balance

This research also contributes to the understanding of how gender influences the relationship between technostress and work-life balance. Building on the work of Ollier-Malaterre and Lu (2021), the study adopts a gender-comparative approach, showing how working men and women experience technostress differently and how these experiences impact their ability to maintain a healthy work-life balance. This gender-sensitive perspective adds another layer to the understanding of work-life balance and its complexities in the context of technostress.

5.6 Practical Contributions

Firstly, our results show that managers should focus on how techno stress has a negative impact on mental health in their organization. These results might persuade managers to tread carefully when implementing new job-related software or equipment and controlling the regular IT use (Richardson, 2023). A specified email policy which involved trying to check email only at predetermined time, was found to reduce stress and improve mental health in an experiment (Kushlev and Dunn, 2025).

Also, factors that lead to stress should be addressed. Korner et al. (2024) researched that technical issues, poor functionality, a lack of context awareness, and the demand for new abilities lead to stress. When staff were unable to resolve technical issues within their own capacity, the work process was hindered and there was more time pressure. Hence, by assisting workers in coping with the effects of technostress, companies can considerably benefit from reducing the mental health concerns that arise from technostress among their workforce. Also, Richardson (2023)

advised to assist employees who experience technostress and prevent the waste of resources, firms could also provide stress prevention strategies and plans.

Park et al. (2023) found a link between burnout and using a smartphone for professional purposes after hours. To avoid burnout, the ability to detach after work should be exercised. Since a lack of work-life balance is a factor in employee turnover and burnout, encouraging work-life balance may also assist companies to keep qualified workers (Marie, 2024).

5.7 Practical Implications

Given the significant negative impact of **technostress** on employees' mental health and work-life balance, it is essential for organizations to develop strategies to understand and mitigate these effects. The findings of this research provide a foundation for tailoring interventions based on the unique challenges faced by different sectors, including banking, IT, and telecommunications.

Banking Sector:

Employees in the banking sector face high workloads and stress due to time pressures and customer demands. This can exacerbate technostress, leading to burnout. By focusing on **technostress-related training** and **mental health support**, banks can reduce the strain on their employees. For example:

- **Technology-Specific Training**: Employees can benefit from focused **training** on the technology used in banking systems, tailored to their skill levels. This would build confidence and improve **IT control**, helping to alleviate stress related to unfamiliar systems.
- **Mental Health Prioritization**: Managers should engage in **personalized conversations** with employees to understand their specific stressors, which may vary depending on the employee's role within the bank. Providing personalized support will reduce technostress and improve mental health outcomes.

IT Sector:

The **IT sector** is characterized by constant technological change, which can be a significant source of stress for employees who are expected to stay ahead of rapid advancements. For this sector, the following strategies can be effective:

- **Autonomy in Technology Selection**: Allowing IT professionals the **autonomy to choose technologies** (within certain constraints) can boost their perceived **control** and **job satisfaction**, reducing technostress.
- **Formal Tech Adoption Training**: Introducing gradual **training programs** with peer support groups to **demystify new technology** can reduce the **techno-complexity** faced by employees. This also builds a community of practice where employees can share coping strategies, reducing isolation and stress.

Telecommunications Sector:

Telecommunications employees often experience stress from long hours and the constant pressure of staying connected. The following measures can help:

- **Digital Detox Policies**: Implementing **"right to disconnect" policies** in telecommunications companies can prevent employees from being expected to work after hours, helping them better manage their personal and professional lives.
- **Flexible Work Arrangements**: Providing employees with **flexibility in technology use** and work hours can give them more control over their work-life balance and help them manage the impact of digital overload.

With the help of these strategies, organizations will be able to reduce the impact of technostress, preserve the mental health of employees, and increase their work-life balance, thereby improving their well-being and productivity.

5.8 Research Limitations and Future Directions

The following table 11 summarizes the key limitations encountered in this study along with corresponding discussions or solutions. This matrix aims to clearly present the limitations of the research design, data collection methods, and analysis, while offering suggestions for how future research can address these challenges.

Table 11: Limitation-Discussion Matrix

Limitations	Discussion/Solutions
Cross-Sectional Data	This study employed a cross-sectional design, which limits the ability to establish causal relationships among variables. While PLS-SEM allows testing of hypothesized associations, the temporal order of technostress, mental health, and work-life balance cannot be confirmed. Therefore, the findings should be interpreted as indicative of associations rather than definitive cause-and-effect relationships. Future research using longitudinal or experimental designs could better validate the causal mechanisms proposed in this study.
Non-Probability Sampling	Purposive and snowball sampling methods were used, which can introduce selection bias. These methods may not fully represent the broader population. Random sampling or probability sampling techniques could be used in future studies to enhance generalizability.
Small Sample Size per Sector	The sample size from each sector (banking, IT, and telecom) was relatively small, which may limit the statistical power and external validity. Future research should aim for larger sample sizes within each sector to improve the robustness of findings.

Lack of Sector-Specific Data Analysis	While sector-specific implications were discussed, they were not deeply analyzed in the results. Future studies should provide sector-wise in-depth analysis to tailor recommendations more effectively. This could lead to better-targeted interventions for each industry.
Self-Reported Data	Self-reporting biases are common, as individuals may not accurately report their experiences (Devaux and Sassi, 2024). Future research should incorporate mixed methods (qualitative and quantitative data) to reduce biases and improve accuracy. Observational or physiological data could also complement self-reports.
Limited Technostress Dimensions (Techno-Overload and Techno-Complexity)	This study focused only on two dimensions of technostress. Future research should expand the model to include all five technostress dimensions (e.g., techno-insecurity, techno-uncertainty, techno-invasion) to assess how these dimensions influence mental health across various industries.
Sectors with Different Technological Requirements	Employees from diverse sectors (banking, IT, telecom) may have different ICT requirements. Future studies should focus on sector-specific models of technostress to better understand how varying technologies affect employee well-being and mental health in different organizational contexts.
Distinction Between Distress and Custress	The study mainly examined the negative side of technostress (distress). Future studies should explore custress (positive stress) and its potential benefits. This could include understanding how stress can be productive and lead to growth when managed effectively.
Focus Only on Psychological Effects of Technostress	The current study focused primarily on the psychological effects of technostress. Future research should consider both the psychological and physiological effects of technostress. This could include biometric data (e.g., heart rate, cortisol levels) to provide a more comprehensive understanding of stress.
Limited Measurement of Technology Readiness	Only certain dimensions of technology readiness were considered. Future studies should incorporate broader models, such as the Theory of Planned Behavior, to understand how attitudes, norms, and perceptions about technology readiness influence employees' reactions to technostress.
Technostress in Work vs. Private Sphere	This study focused on technostress at work, but technology-induced stress can also arise in the private sphere. Future research should compare technostress from work-related and personal technology use to see how they intersect or differ. This could offer insights into how work-life balance can be influenced by non-work technology.

Lack of Personality Traits Consideration	Personality traits were not considered in this study, but these could influence how individuals react to technostress. Future research could incorporate personality measures (e.g., neuroticism, openness to experience) to see how these traits mediate or moderate the impact of technostress.
Use of Socio-Technical Systems Theory	This study did not utilize the Socio-Technical Systems Theory for technostress intervention. Future studies could apply this theory to explore how organizational design and employee involvement in the job redesign process can reduce resistance to technological change and mitigate technostress.

While these limitations may have impacted the findings and generalizability of the study, they also provide valuable insights into areas for future research. By addressing these limitations, future studies can enhance the robustness of the findings and contribute to a deeper understanding of the relationships between technostress, mental health, and work-life balance in various organizational contexts.

5.9 Conclusion

This study explored the impact of **technostress** on **mental health** and **work-life balance** across three high-tech sectors: banking, IT, and telecommunications. The findings reveal that while the overall relationships between these variables are consistent, the implications and severity of these relationships differ across sectors.

- In the **banking sector**, technostress was found to have a significant negative effect on mental health, which in turn led to poor work-life balance. Banks are encouraged to implement flexible work schedules and better stress management practices for their employees.
- The **IT sector** faces constant technological changes that exacerbate technostress, with mental health being a critical factor influencing work-life balance. IT companies should invest in improving technology readiness and mental health resources to support their employees.
- In the **telecommunications sector**, the pressure of being always available due to the nature of the work leads to increased technostress and mental health issues. Companies in this sector should focus on creating boundaries between work and home life and promoting a healthier work culture.

The sector specific findings highlight the need for tailored organizational strategies that address the unique challenges of each sector. Future research could explore these relationships further by incorporating larger samples and longitudinal data to better understand the long-term effects of technostress on employees.

References

Adisa, T., Gbadamosi, G., & Osabutey, E. (2020). Work–life balance and boundary management in the digital era. *Personnel Review, 49*(6), 1385–1404. https://doi.org/10.1108/PR-01-2019-0037

Ahmed, R., Salik, S., & Atif, M. (2021). *Pakistan banking perspective 2021*. KPMG.

Althobaiti, S., Alharthi, S., & Alzahrani, A. M. (2020). Medical systems' quality evaluated by perceptions of nursing care during the COVID-19 pandemic. *International Journal for Quality Research, 14*(3), 895–912.

Ayar, D., Karaman, M. A., & Karaman, R. (2022). Work–life balance and mental health needs of health professionals during the COVID-19 pandemic in Turkey. *International Journal of Mental Health and Addiction, 20*(1), 639–655.

Ayyagari, R., Grover, V., & Purvis, R. (2024). Technostress and employee well-being in digitally intensive work environments: A systematic review and future research agenda. *Computers in Human Behavior Reports*, *10*, 100156.

Bao, Y., Sun, Y., Meng, S., Shi, J., & Lu, L. (2020). 2019-nCoV epidemic: Addressing mental health care to empower society. *The Lancet, 395*(10224), 37–38.

Bai, X., Lin, L., & Wang, Y. (2024). Digital work demands, technostress, and employee mental health: The moderating role of organizational support. *Journal of Business Research, 170*, 114276.

Chang, Y. W., & Chen, J. (2021). What motivates customers to shop in smart shops? The impacts of smart technology and technology readiness. *Journal of Retailing and Consumer Services, 58*, 102325.

Christ-Brendemühl, S., & Schaarschmidt, M. (2020). The impact of service employees' technostress on customer satisfaction and delight: A dyadic analysis. *Journal of Business Research, 117*, 378–388.

Curcuruto, M., Williams, S., Brondino, M., & Bazzoli, A. (2023). Investigating the impact of

occupational technostress and psychological restorativeness of natural spaces on work engagement and work–life balance satisfaction. *International Journal of Environmental Research and Public Health, 20*(3), 2249.

Charoensukmongkol, P., & Phungsoonthorn, T. (2024). The effects of technostress on work–life balance and emotional exhaustion in hybrid work settings. *Technology in Society, 76*, 102352.

Dragano, N., & Lunau, T. (2020). Technostress at work and mental health: Concepts and research results. *Current Opinion in Psychiatry, 33*(4), 407–413.

Gaube, S., Cecil, J., Wagner, S., & Schicho, A. (2021). The relationship between health IT characteristics and organizational variables among healthcare workers. *Scientific Reports, 11*(1), 1–11.

González-López, Ó. R., Buenadicha-Mateos, M., & Sánchez-Hernández, M. I. (2021). Overwhelmed by technostress? Effects in times of forced digitalization. *International Journal of Environmental Research and Public Health, 18*(8), 4216.

Harris, K., Harris, R., Valle, M., Carlson, J., Carlson, D., Zivnuska, S., & Wiley, B. (2021). Technostress and the entitled employee: Impacts on work and family. *Information Technology & People, 34*(4), 1341–1362.

Johnson, A., Dey, S., Nguyen, H., Groth, M., Joyce, S., Tan, L., & Harvey, S. B. (2020). Technology-driven changes at work and employee mental health. *Australian Journal of Management, 45*(3), 402–424.

Kotera, Y., & Correa Vione, K. (2020). Psychological impacts of the new ways of working: A systematic review. *International Journal of Environmental Research and Public Health, 17*(14), 5080.

Kotera, Y., Green, P., & Sheffield, D. (2020). Work–life balance of construction workers and mental health. *Construction Management and Economics, 38*(3), 291–303.

La Torre, G., Esposito, A., Sciarra, I., & Chiappetta, M. (2020). Definition, symptoms, and risk of technostress: A systematic review. *International Archives of Occupational and Environmental Health, 92*(1), 13–35.

Lee, T., & Cho, G. (2020). Effect of office workers' work–life balance and work environment on job satisfaction and mental health. *Journal of the Korean Data and Information Science Society, 31*(6), 1021–1035.

Lonska, J., Mietule, I., Litavniece, L., Arbidane, I., Vanadzins, I., Matisane, L., & Paegle, L. (2021). Work–life balance during the COVID-19 emergency. *Frontiers in Psychology, 12*, 682459.

Luturlean, B., Prasetio, A., Anggadwita, G., & Hanura, F. (2021). Work–life balance as a mediator between HR practices and commitment. *International Journal of Learning and Intellectual Capital, 18*(2), 154–170.

Ma, J., Ollier-Malaterre, A., & Lu, C. (2021). The impact of techno-stressors on work–life balance. *Computers in Human Behavior, 122*, 106811.

Mahmoud, A., Fuxman, L., Mohr, I., Reisel, W., & Grigoriou, N. (2021). Workplace motivation across generations X, Y, and Z. *International Journal of Manpower, 42*(5), 844–861.

Mäkiniemi, J. P., Oksanen, A., & Heponiemi, T. (2024). Digital stress, technostressors, and employee burnout: A meta-analytic review. *International Journal of Environmental Research and Public Health, 21*(2), 987.

Mental wellbeing in digital workplaces: The role of digital resources, technostress, and burnout. (2025). *Technology in Society, 81*, 102844.

Mapping the impact: A systematic review of the psychological and social repercussions of technostress. (2025). *American Journal of Applied Scientific Research, 11*(4), 203–210.

Saleem, F., & Malik, M. I. (2023). Technostress, quality of work life, and job performance: A moderated mediation model. *Behavioral Sciences, 13*(12), 1014.

Tarafdar, M., Pirkkalainen, H., Salo, M., & Makkonen, M. (2020). Coping with technostress. *IT Professional, 22*(6), 82–89.

Tarafdar, M., Tu, Q., & Ragu-Nathan, T. S. (2021). Technostress research: Crossing to the dark

side. *Communications of the ACM, 64*(3), 78–85.

Understanding the impact of technology usage at work on academics' psychological well-being: A perspective of technostress. (2025). *BMC Psychology, 13,* Article 130.

Wang, B., Liu, Y., & Parker, S. (2020). How does the use of ICT affect individuals? *Academy of Management Annals, 14*(2), 695–725.

Wong, K., Lee, F., Teh, P., & Chan, A. (2021). Socioecological determinants of work–life balance and wellbeing. *International Journal of Environmental Research and Public Health, 18*(9), 4525.

Wu, J., Wang, N., Mei, W., & Liu, L. (2020). Technology-induced job anxiety during non-work time. *International Journal of Networking and Virtual Organisations, 22*(2), 162–177.

Zaman, J. (2022). What special technology zones mean for Pakistan's tech industry. *Forbes*.

Appendix

Research Questionnaire

A: Demographic Information

Please describe yourself by mark the relevant answer below:

Are you working from home?	□ Yes □ No
Gender	□ Male □ Female □ Other
Age	_____ (please specify)
Marital Status	□ Single □ Married □ Other
Education	_____ (please specify)
Industry	_____ (please specify)
Sector	□ Private □ Public
Job Category	□ Senior Management □ Middle Management □ Line Management □ non-Managerial □ Clerical
Work Experience	□ 0-5 years □ 6-10 years □ 11-15 years □ 16 years and above
Work Type	□ Part time □ Full time □ Temporary
Position	_____ (please specify)
City	_____ (please specify)

Section B: Please indicate the extent to which you agree or disagree with each of the statements given below:

Techno-Overload	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. When new technological applications are introduced in my organization, I am pressurized to work much faster and adapt to the new system.	**1**	**2**	**3**	**4**	**5**
2. When new technological applications are introduced in my organization, I am forced to do more work than I can handle because of increased work demands.	**1**	**2**	**3**	**4**	**5**
3. I am forced by the technological systems and applications in my organization to work with very tight time schedules.	**1**	**2**	**3**	**4**	**5**
4. I am forced to change my work habits to adapt to new technologies.	**1**	**2**	**3**	**4**	**5**
5. I have a higher workload because of increased technology complexity.	**1**	**2**	**3**	**4**	**5**

Techno-Complexity	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I do not know enough about the technological systems and applications used in my organization to handle my job satisfactorily.	**1**	**2**	**3**	**4**	**5**
2. I need a long time to understand and use new technologies used in my organization.	**1**	**2**	**3**	**4**	**5**
3. I do not find enough time to study and upgrade my technology skills.	**1**	**2**	**3**	**4**	**5**
4. I find that new employees in this organization know more about computer technology than I do.	**1**	**2**	**3**	**4**	**5**
5. I often find it too complex for me to understand and use new technologies introduced in my organization.	**1**	**2**	**3**	**4**	**5**

Techno-Uncertainty	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. There are always new developments in the technologies we use in our organization.	**1**	**2**	**3**	**4**	**5**
2. There are constant changes in computer software in our organization.	**1**	**2**	**3**	**4**	**5**
3. There are constant changes in computer hardware in our organization	**1**	**2**	**3**	**4**	**5**
4. There are frequent upgrades in the computer networks in our organization.	**1**	**2**	**3**	**4**	**5**

Mental Health	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I have been able to concentrate on whatever I was doing.	**1**	**2**	**3**	**4**	**5**
2. I felt that I was playing a useful part in my day-to-day activities.	**1**	**2**	**3**	**4**	**5**
3. I felt capable of making decisions in my life.	**1**	**2**	**3**	**4**	**5**
4. I enjoyed normal day-to-day activities.	**1**	**2**	**3**	**4**	**5**
5. I have been able to face up to my problems.	**1**	**2**	**3**	**4**	**5**
6. I felt reasonably happy, all things considered.	**1**	**2**	**3**	**4**	**5**
7. I lost much sleep by worrying.	**1**	**2**	**3**	**4**	**5**
8. I felt constantly under strain.	**1**	**2**	**3**	**4**	**5**
9. I felt I could not overcome my difficulties.	**1**	**2**	**3**	**4**	**5**
10. I have been feeling unhappy and depressed.	**1**	**2**	**3**	**4**	**5**
11. I have been losing confidence in myself.	**1**	**2**	**3**	**4**	**5**
12. I think of myself as a worthless person.	**1**	**2**	**3**	**4**	**5**

Work-Life Balance	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I currently have a good balance between the time I spend at work and the time I have available for non-work activities.	**1**	**2**	**3**	**4**	**5**
2. I have difficulty balancing my work and non- work activities.	**1**	**2**	**3**	**4**	**5**
3. I feel that the balance between my work demands and non-work activities is currently about right.	**1**	**2**	**3**	**4**	**5**
4. Overall, I believe that my work and non-work life are balanced.	**1**	**2**	**3**	**4**	**5**

Technology Readiness: Optimism	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Technology gives me more control in my daily life.	**1**	**2**	**3**	**4**	**5**
2. Products and services that use the newest technologies are much more convenient for me to use.	**1**	**2**	**3**	**4**	**5**
3. I prefer to use the most advanced technology available.	**1**	**2**	**3**	**4**	**5**
4. Technology gives me more freedom and mobility in my job.	**1**	**2**	**3**	**4**	**5**

Technology Readiness: Innovativeness	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. In general, I am among the first in my circle of friends/colleagues to acquire new technology when it appears.	**1**	**2**	**3**	**4**	**5**
2. I can usually figure out new high-tech products and services without help from others.	**1**	**2**	**3**	**4**	**5**
3. I can keep up with the latest technological developments in my areas of interest.	**1**	**2**	**3**	**4**	**5**
4. I enjoy the challenge of figuring out high-tech gadgets.	**1**	**2**	**3**	**4**	**5**
5. I find I have fewer problems than other people in making technology work for me compared to others.	**1**	**2**	**3**	**4**	**5**