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THE ROLE OF TECHNOSTRESS IN THE DEVELOPMENT OF BURNOUT AMONG PROJECT MANAGERS

Master's thesis

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Nuolat spartėjantis skaitmeninių technologijų augimas ir diegimas darbo aplinkoje lėmė reiškinį, vadinamą technostresu, kuris kelia grėsmę darbuotojų gerovei ir veiklos rezultatams organizacijoje. Vis didėjantis projektų vadovų poreikis naudoti sudėtingas skaitmenines technologijas, kad galėtų veikti aukštų reikalavimų aplinkoje, skatina suprasti psichologinius procesus, siejančius technostresą ir darbo rezultatyvumą. Šio tyrimo tikslas – ištirti, kokiu būdu technologijų keliama įtampa veikia darbo rezultatus, atsižvelgiant į perdegimo komponentų poveikį ir skaitmeninio organizacijos palaikymo moderuojantį vaidmenį.

Pagrindinis šio tyrimo tikslas buvo išnagrinėti technostreso reiškinio ir darbo rezultatų sąsajas, atsižvelgiant į perdegimo dimensijų mediacinį ir organizacijos skaitmeninio palaikymo moderacinį poveikį. Šiuo tikslu buvo suformuluotos aštuonios hipotezės, paremtos konceptualiu pagrindu, kurį suteikia darbo reikalavimų ir išteklių (Job Demands–Resources) modelis. Pagal šį modelį technostresą sukeliantys veiksniai traktuojami kaip skaitmeniniai darbo aplinkos reikalavimai. Tyrimas buvo kiekybinis, skerspjūvio dizaino, o imtį sudarė 156 projektų vadovai.

Tyrimo rezultatai parodė, kad technostresas prognozuoja perdegimo pasekmes. Mediacinės analizės rezultatai patvirtino, jog emocinis išsekimas visiškai mediavo technostreso ir darbo rezultatų ryšį (patvirtinta H1 hipotezė), taigi galima teigti, kad technostreso poveikis darbo rezultatams pirmiausia yra neigiamas dėl emocinių išteklių išeikvojimo. Profesinis efektyvumas pasirodė esąs dalinis mediatorius (patvirtinta H3 hipotezė), o cinizmas nebuvo reikšmingas mediacinis kintamasis (H2 hipotezė nepasitvirtino). Organizacinis skaitmeninis palaikymas nepasireiškė kaip reikšmingas technostreso ir darbo rezultatų ryšio moderatorius.

Teoriniu požiūriu šis tyrimas papildo literatūrą, aiškiai identifikuodamas emocinį išsekimą kaip pagrindinį mechanizmą, per kurį skaitmeninė įtampa veikia darbo rezultatus, ir taip patvirtindamas JD-R sveikatos pažeidimo modelio taikymą skaitmeninei darbo aplinkai. Praktiniu požiūriu rezultatai ryškiai pabrėžia, kad organizacijoms ir jų vadovams svarbu sutelkti pastangas darbuotojų emociniams ištekliams palaikyti ir saugoti, taikant efektyvumą didinančias ir ribų valdymo strategijas, o ne vien orientuotis į palaikančias ir technines priemones, siekiant ateityje gerinti darbo rezultatus skaitmeninėje aplinkoje.

INTRODUCTION

Relevance of the Topic. Technostress is formed as a psychological strain experienced by people as they adapt to changing technological environments. It has become a serious problem for organizations in the digital age. This situation is exacerbated by the influence of three main trends: the dependence of modern organizations on increasingly complex information systems, the speed of technological innovations surpassing traditional adaptation capabilities, and the fact that stress is felt more acutely in professional groups that work more with technology.

Improper management of technostress has a negative impact on both business performance and the human factor. According to studies, technostress that is high in the organization results in decreased productivity, dissatisfaction, turnover, and a deteriorated culture. For the individual, it results in burnout syndrome, wherein the worker suffers from exhaustion, cynicism, and decreased effectiveness. Findings from these studies emphasize that it is important to identify who suffers from technostress and which circumstances.

In this field, project managers are a group that requires extra care but has yet to be explored sufficiently. Project managers are working on various technology platforms, are in charge of information flow between various stakeholders, and are also responsible for project teams all around the world working in a streamlined manner through different technology systems that keep changing. Unlike a usual office setting, a project setting demands integrated technology, rapid technology adaptation, and team management with varied technology skills. This makes project managers prone to technostress.

Research on the Topic. Existing research has established an important theoretical framework for technostress and burnout. Technostress arises from five main sources. These are techno-overload, techno-invasion, techno-uncertainty, techno-unsecurity. Burnout has three main components. Emotional exhaustion, cynicism, and professional efficacy are the main components of burnout. This study is based on the Job Demands Resources (JD-R) framework. Under this model, technology-related job demands that lead to technostress deplete an individual's energy, potentially resulting in burnout, but this stressor is protected against by support, training, and autonomy. Technological support that involves technology infrastructure, training, and communication, on the other hand, plays a vital role in responding to technology-related concerns.

Scientific Novelty. The scientific novelty of this study has several important implications. The study focuses on project managers who are under-researched in technostress but who are persistently exposed to technology-intensive work demands and who are technologically competent. This group is important for understanding the effects of technostress, but it is under-researched.

It constructs five technostress dimensions and three burnout dimensions together with well-established theoretical frameworks, systematically testing both their impact and the mechanisms by which technostress influences job performance through burnout.

The study takes the organizational digital as a moderator. This approach provides new empirical insights into how organizational resources can mitigate the negative consequences of technostress.

Object of the Study. The present study highlights relationship between five dimensions of technostress (techno-overload, techno-invasion, techno-uncertainty, techno-insecurity, and techno-complexity) and three burnout components (emotional exhaustion, cynicism, and professional efficacy). The study also examines whether these forms of burnout mediate the relationship between technostress and job performance for project managers.

Research Problem and Research Questions. The main questions that this study seeks to answer are formulated as follows: to what extent does the impact of technostress on job performance in project managers occur through the various components of burnout? More specifically, the study determines whether emotional exhaustion, cynicism, and decreased professional efficacy are the main psychological channels extending from technostress to performance. At the same time, the study examines how organizational digital support affects this process, that is, whether it modifies the relationships associated with burnout.

The Aim of the Study. The main aim of this study is to investigate how technostress affects burnout in project managers and whether burnout mediates the relationship between technostress and job performance.

Research Objectives. This study pursues the following research objectives:

1. To examine the direct relationships between types of technostress and forms of burnout in project managers.
2. To assess how different forms of burnout are related to job performance
3. To test whether burnout mediates the effect of technostress on performance.
4. To determine which form of burnout each type of technostress most strongly predicts.
5. To provide practical recommendations aimed at reducing technostress and burnout by using organizational resources.

Research Hypotheses. This research tests the following three types of hypotheses:

Mediation Hypotheses:

H1. Emotional exhaustion mediates the relationship between technostress and job performance.

H2. Cynicism mediates the effect of technostress on performance.

H3. Decreased professional efficacy is a mediating factor explaining the effect of technostress on performance.

Direct Effect Hypotheses:

H4. Techno-overload and techno-invasion increase emotional exhaustion.

H5. Techno-complexity and techno-uncertainty increase cynicism.

H6. Techno-insecurity predicts decreased professional efficacy.

H7. All forms of burnout are associated with decreased job performance.

Moderation Hypothesis:

H8. Organizational digital support attenuates the negative effect of technostress on burnout and plays a protective role.

Methodological Overview. This study is based on a quantitative approach and was conducted with a cross-sectional design using a self-administered online survey. The survey measures five dimensions of technostress, three forms of burnout, job performance, and organizational digital support. Regression and bootstrap mediation analyses are conducted in SPSS and JASP to assess direct and indirect effects.

Structure of the Thesis. The theoretical part explains the concepts of technostress and burnout, presents the JD-R model, evaluates existing empirical findings, and identifies gaps. Information for the thesis was collected from 58 reliable sources, ranging from Google Scholar, Elsevier, ScienceDirect, EBSCO Information Services, and more. The proposed methodology details the study design, survey implementation, sampling, instruments (scales) used, and the respective analyses performed. Finally the results include the descriptive statistics, correlation matrix, and the result of the mediation analysis.

Vocabulary of the Study

Technostress: A form of psychological and emotional stress caused by employees who have difficulty in adapting to changes in complex information and communication technologies. Technological demands exceeding the capabilities of the employee cause this form of stress.

Burnout: The process of psychological wear and tear caused by work-related stress. It has three elements.

Job Performance: This is the degree to which an employee meets the specifications of their profession.

Organizational Digital support: This refers to the level of support that the organization provides for the use of technology. This support includes training, technology support, technology policies, and communications.

Job Demands Resources Model (JD-R): This model suggests that the presence of demands and resources in the work environment affects the well-being and performance of employees. While demands are known to cause burnout, resources are the drivers of work motivation.

Mediation: The way in which the impact of one variable (for example, technostress) on another variable (performance) is mediated by yet another variable (burnout).

Moderation: The way in which a third variable (such as digital organizational support) can change how one variable relates to another.

CHAPTER 1. LITERATURE REVIEW

1.1 Introduction

In the late 20th century, carrying through to the early decades of the 21st century, working environments went through a unique and deep digital revolution.Such novel technologies enabled organizations to do all kinds of things more efficiently, to simplify real-time collaboration between workgroups, and to support decisions with hitherto impossible to contemplate volumes of data. However, with ICTs (Information Communication Technology) becoming ever more ingrained within day to day working, these automatically bring with them novel psychosocial challenges that need to be recognised and confronted (Marsh et al., 2022).

The relevance of this topic has been even further defined in relation to the pandemic of COVID-19. With a sudden switch to working from home, there has been a huge increase in demands for connectivity. The employees are now left with a challenge of multitasking in their video conferences, which has brought along insecurity in their employment and technological capabilities (Bahamondes-Rosado et al., 2023). There has been a definition from technostress as a personal experience to a public challenge.

Information technology has spread quickly in contemporary society, and this has further accentuated this experience. Although technology would make communication easier, flexible, and efficient, it also brings with it certain requirements that increase stress. An individual has access to a lot of information, has to be reachable all the time, has to access different technologies, and has to keep updating himself. This suggests that technology offers opportunities, as well as additional stress, to individuals.

Some of the most commonly cited authors in technostress studies, including authors like Tarafdar, Ragu-Nathan, Ayyagari, and Salanova, have defined how techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity are major stress-generating constructs. These studies and authors described how technology-related pressures impact performance and increase stress in a technology-mediated work environment.

Nowadays, technostress has become important for not only individuals but also for organizations. Therefore, when organizations implement new technology, it is important that their focus be not only on efficiency but also on the human side of it, which involves adaptability and well-being of individuals.

Within organizational occupations, project managers are an unprecedented population for examining technostresses and its effects. Project manager, coordinating intricate, time-critical projects with cross-functional teams, diverse stakeholders, and diverse technology environments, are asked to

constantly process extensive volumes of knowledge, decide quickly under doubt, and interact without interruption at dispersed sites (Salanova et al., 2013, pp.424-426). The challenge in project management in the contemporary world has been worsened by worldwide supply chains, remote teams, and ever-shorter time-to-market cycles. This has increased demands for technology know-how as well as rapid turnaround cycles (Zhang et al., 2025). This can result in burnout, a chronic syndrome characterized by emotional exhaustion, cynicism, and low professional efficacy (Maslach & Jackson, 1981).

A literature review seeks to examine systematically the manifestations of relevance that are associated with the technostress phenomenon, as well as their associations with burnout in a professional setting, and seek to investigate which resources are able to mitigate this consequence. The main goal of the study is not only to confirm the existence of technostress, but also to explain in depth the mechanisms of its formation, consequences, and ways to prevent it on theoretical and empirical grounds. These goals are formulated in the following directions:

1. Definition of the concepts of technostress and burnout.
   Here, the essence, key features, and methods of measurement of both concepts are taken into consideration. Thus, it is attempted that, in this study, the associations between various components of technostress, such as techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and technoinsecurity, and different characteristics of burnout, like emotional exhaustion, cognitive impairment.

2. Application of the Job Demands-Resources (JD-R) Model.
   The article offers a description of JD-R as a fundamental theoretical perspective employed in understanding technostress influence mechanisms. JD-R adds on to understanding technostress effects associated with technological demands, like info overload, constant connection requirements, among other technologically related factors, in relation to employee well-being and performance. Furthermore, JD-R explains how factors such as social support, technology skills, and organizational flexibility can mitigate these effects.

3. Synthesis of empirical evidence.
   This particular section provides a compilation of studies that exist in the realm of science, highlighting how technostress influences burnout and work performance. It also looks into direct effects, as well as mediators, like work motivation, which might be decreased due to technostress.

4. Identification of research gaps and suggestions for future directions.

   The limitations of theoretical and methodological approaches found in former studies, such as a limited number of longitudinal studies, a lack of focus on project managers, and an inadequate analysis of differences in cultural contexts, are critically analyzed. On this basis, directions for further studies are established.

5. Formation of a theoretical basis.

   The review provides a consistent theoretical explanation of technostress and burnout and prepares a scientific groundwork for developing models of hypotheses for further studies. Therefore, in accordance with this model, this study systematically explains the role of technology job demands and resources in influencing well-being and performance of project managers.

This literature review systematically examines how technostress manifests itself among project managers, analyzes its relationship to professional burnout, and identifies individual and organizational resources that can mitigate these effects. Putting technostress into the context of the Job Demands Resources (JD-R) model, allows researchers to systematically examine resources and their impact on employee well-being (Pansini et al., 2023; Scholze & Hecker, 2023). According to available studies, mindfulness approaches (Ioannou, 2023), organizational support processes (Berger et al., 2023), and finding value in technostress, techno-eutress (Nascimento et al., 2025) may provide protective factors against harmful effects. Each of the following sections will outline the current theoretical frameworks of technostress and burnout (section 1.2-1.3), the Job Demands Resources model's potential to examine technostress and burnout (section 1.4), the empirical research on the relationship between technostress and burnout (section 1.5), and the broader landscapes of current research and research agendas (section 1.6).

1.2 Technostress: Conceptual Foundations, Core Dimensions, and Psychometric Measurement

During the last four decades, the integration of digital technology has occurred at a speed and scale that are unmatched. This shift not only impacts the issue of efficiency but also the dynamic of work, communications, and performance. Even though modern organizations use technology for improving collaboration and agility, they also create new levels of psychosocial demand and risk.

Researchers collectively refer to this set of negative effects as "technostress." Technostress, broadly defined, encompasses the negative emotional and behavioral responses that arise when individuals

struggle to adapt to the demands of a rapidly changing information and communication technology (ICT) environment.

The concept of technostress was first identified in an early ethnographic study by Brod (1984). His research centered around understanding the experiences of early adopters of computer technology and described that anxiety, frustration, and irritability arose when individuals have to learn to navigate the use of an unfamiliar software system, particularly without adequate training and support. Brod's ethnography revealed two principles:

1. Technology itself is not the cause of stress, but the mismatch between the user's skills and the demands of the technology.
2. Technostress appears across cognitive, emotional, and behavioral components. These components include decreased attention/concentration, decreased focus, irritability, tension, avoidance, and resistance.

The theoretical basis laid down by Brod has long been a part of technostress studies. On this theoretical foundation, Ragu-Nathan et al. (2008) redefined technostress using the theoretical lens of transaction cost theory, defining technostress as a consequence of a misfit between an individual's needs and those of the technology environment.

One of these stressors techno-overload occurs when ICT users are confronted with multiple and simultaneous tasks, continuous information flow and parallel communication channels. In such conditions, employees are forced to process large amounts of information rapidly and adapt to changing tasks, which leads to emotional exhaustion, reduced job satisfaction and impaired work-life balance (Salanova, Llorens & Cifre, 2013).

Techno-overload is also very visible when it comes to project management. Project managers are constantly flooded with data coming from various software systems simultaneously. For example, they get data coming through email communications, instant messaging, project management software, and cloud-based document management software. This situation causes constant task switching which affects the quality of outputs negatively, along with the well-being of the project manager (Ragu-Nathan et al., 2008; Tarafdar et al., 2010; Valta et al., 2025; Zhang et al., 2025).

Techno-invasion explained by Ragu-Nathan et al. (2008), refers to the blurring of the line between work-related and personal life because of technology. The use of smartphones, cloud computing, and collaboration software gives employees 24/7 access to the workspace, so disengagement becomes much harder. Zhang et al. (2025) indicated that techno-invasion was a powerful predictor of work-family conflict and was shown to increase stress levels when not working, reduce recovery, and reduce sleep quality. This is even more problematic for project managers since they are often on call

during the weekend and on weeknights. Having to keep a lookout for emergency messages, messages that demand instant responses, is likely to inhibit disengagement and, consequently, build the potential for burnout.

According to the findings of the Oliveira Malaquias et al. (2025), technostress and burnout are specifically mediated by the variable of role ambiguity when it comes to teleworking. Technostress is fueled within the digital context when there is a lack of specific definitions regarding work expectations, decision-making, and work performance standards on the part of the involved workers and their management. For project managers, the situation embodies specific challenges regarding the effects of technoinvasion when the definitions of accountability and control are not clear regarding the distributed workteams that belong to different time zones, making it difficult for the project managers to cope with the need for uninterrupted communication and control.

Techno-complexity (Ragu-Nathan et al., 2008, p. 427) signifies the learning difficulty, challenges, and frustration involved when using complex information and communication technology. The fact that these systems update regularly, have various and sophisticated features, and their interfaces are not user-friendly forces users of these systems to learn and adapt on a constant basis. La Torre et al. (2019, pp. 6-8) indicated that users of these systems, when they face high techno-complexity, feel incompetent, sense inadequacy, and lose control. This condition gives rise to avoidant behaviors, that is, restraining the use of technology, outsourcing technology-related tasks, or postponing technology integration. In the context of project management, techno-complexity results in delays, loss of confidence, and poor accuracy, especially when integrating various platforms, problem-solving, and configuring information systems.

Techno-insecurity refers to the employees' fears of their career continuity and importance when faced with the increasing pace of automation, artificial intelligence, and algorithmic decision-making technology. Previous conceptual frameworks, like that of Tarafdar et al. (2007, pp. 305-306), indicated that the fear of technological displacement gets entangled with fears of anxiety, cynicism, and the loss of career identity. More contemporary studies, on the other hand, Zhang (2025, pp. 4-7), illustrate that the middle career group believes that the increasing use of artificial intelligence and analytics will affect their careers. Project managers also retain similar fears because they worry that the use of predictive AI technology will result in the automation of their very own career, which will make their management skills irrelevant. Techno-uncertainty entails a condition of perpetual stress influenced by recurring and unforeseen technological changes. Techno-uncertainty results from unforeseen system updates, software changes, service downtimes, security protocol changes, or changes in suppliers' policies.

According to Kaltenegger et al. (2023, pp. 2-4), techno-uncertainty is not only characterized by psychological sources of stress but also by physiological sources of stress, which include the presence of cortisol and inflammation. Techno-uncertainty affects project managers in distinct ways since they are constantly faced with the need to formulate contingency plans for technological changes and, accordingly, time wasted on risk management strategies, meaning that attention is diverted from strategy formulation. This results in reduced efficiency of decision-making, reduced coordination of work, and reduced productivity.

Besides the five foundational technostressors: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty, a new, prominent technostressor identified by recent literature studies is techno-reliability. According to the definition provided by Meyer and Tisch (2024), techno-reliability can be defined as a "stress modality of technology that stems from the instability of technology, for example, software crashes or unexpected service disruptions." This new technostressor was identified not to be the antonym of techno-uncertainty, since instead of focusing on fear about the future, it originates in frustration because it is actually the aftermath of occurred technological issues.

This particular type of stress affects project managers, especially when the critical phases of the project are involved, because the use of essential technological tools is not possible, hence the need for alternative approaches. It has been shown that the issue of techno-unreliability is significantly associated with the symptom of emotional exhaustion. Lack of trust in the technology system affects the control beliefs of individuals, eventually leading to feelings of helplessness, demotivation, and lower levels of well-being.

Despite the initial studies on technostress focusing on professionals who deal with information technology, contemporary systematic analyses have shown that technostress is not merely a problem specific to these individuals. In fact, a very comprehensive systematic analysis performed by Borle et al. (2021) illustrated that technostress types, specifically techno-overload, techno-invasion, and techno-complexity, have negatively influenced mental well-being in various occupations.

These findings are also reinforced by studies that were done in the domain of healthcare. For example, a report by Keshavarz et al. in 2025 demonstrated that technostress still affects healthcare personnel in a hospital setting due to various reasons, which continue to induce burnout as well as distress among these individuals.

In general, it appears that these findings indicate that technostress does not relate to a specific area but rather has evolved as a widespread property of working environments shaped by technology, which has a potential to cause similar psycho-behavioral phenomena. Some of the most valid methods used in determining technostress are Technostress Factors Scale, as developed by Ragu-Nathan et al. in 2008, and a shortened version, which was developed by La Torre et al. in 2019. The former has 23 items,

whereas the latter has 12. Both are established as tools with a high internal reliability of 0.78 to 0.86. These scales are effective in determining technostress by covering all five root causes of technostress.

The current research explains the significance of technostress scales in the Job Demands-Resources model in a systematic review carried out by Pansini et al. in 2023. The outcome of this research reveals that technostress scales show high correlations with a number of job demands, including quantitative overload, pressures of time, cognitive overload, emotional uncertainties, and unpredictability. This adds new knowledge concerning the technostress phenomenon in both an organizational setting and in relation to available resources that can affect it.

Such designed instruments facilitate the process of estimating the level of technostress for both researchers and management practitioners. Nevertheless, since large-scale surveys and long questionnaires are time-consuming, La Torre et al. (2019, pp. 2-3) designed and validated a short scale for the technostress measure. The short scale, which consists of only 12 items, retains the existing five-factor structure of the technostress scale, shortening the total time taken for completion by 40% compared with the initial instrument. The short scale also demonstrates excellent reliability and correlation ($\alpha > 0.80$, $r > 0.90$) and translates very well into the existing instrument, performing well globally despite varying language barriers, environmental distinctiveness, and other cultural differences. This instrument can, therefore, be considered very useful for surveys, especially when carried out on a multinational scale.

Recently, there has been a growing number of studies using quality and mixed methodology that aims to understand the creation of technostress. Project managers, through interviews (Consiglio et al., 2023, pp. 5-7), cite the following as sources of technostress: constantly switching between various platforms, the steady stream of messages, and constantly shifted priorities. This, according to them, results in the "mental fragmentation" of individuals, where they cannot concentrate properly.

Modern studies on organizational culture using the mixed-method approach (Scholze et al., 2024, pp. 2-5) illustrate that the culture of "always being available" is already embedded.In this regard, attending to calls when they come after work hours can be considered a duty, and not attending to them can be seen as a sign of apathy and poor work ethics. However, this imposes additional mental tension on the already strained workers.

Longitudinal studies that measure the dynamics of technostress over time offer rich findings. In the financial services industry, where the study was carried out for 12 months, the data collected by Zhang (2025, pp. 13-15) indicated that techno-uncertainty and techno-complexity were heightened during the implementation of AI technology, but the employees adapted very slowly when the organization provided them with support. It is, therefore, safe to conclude that technostress is not a static concept, but instead is determined by the pace of technology and the support provided by the organization.

The underlying components of technostress, that is, the classic components of technostress (overload, invasion, uncertainty, and insecurity) and the new/emerging components of technostress (unreliability), have presently been validated. This allows the attention of researchers, scholars, and experts to shift towards the next comparable construct, that of burnout.

Technostress, although specifically identified with the demands that come along with the use of technology, does not account for burnout. The reason is that burnout appropriately identifies a condition that continues along with feelings of exhaustion, cynicism, and reduced personal accomplishment developed from the presence of technological, organizational, and psychosocial demands. That is, technostress is a specific source of stress, which burnout can potentially or actually represent.

While technostress is present in many professions, project managers are considered a particularly vulnerable group. This is because of the unique structure of their work. Project managers coordinate different technological systems at the same time, lead teams with different functions, and have to make quick decisions under conditions of high uncertainty. This multi-layered responsibility makes them more susceptible to technostress. Project managers suffer from a higher level of techno-overload because of the use of different platforms that are not compatible with each other. This also results in project managers constantly switching between project management software, communication tools, analytics, ERPs, and client-based approaches. Information from these systems flows in different directions, at different rates, and sometimes in conflict with each other. This creates a situation that is more complex than the usual specific.

In addition, they face significant techno-invasion based timelines of responsibilities. Since project managers lead international teams, they often have to respond to urgent issues outside of working hours. Since delayed response can be available in not an option but an operational requirement. Techno-comlexity also poses a particular challenge for project managers, as they manage projects that involve both legacy and new systems at the same time. Tools upgrades or changes often take place during execution. This requires them to be able to adapt quickly and maintain project momentum that is a challenge not found in stable technical environments.

Project managers face both project uncertainty (e.g., scope changes, resource shortages) and technological uncertainty (system failures, integration issues) simultaneously. When these two types of uncertainty overlap, stress builds up to a level that the individual cannot handle, resulting in a more complex stress profile for project managers than in order professions.

The following section explains the concept of burnout in more detail, analyzes its main dimensions and assessment tools, and examines how technostress plays a role as an important initial stage of this broader occupational health phenomenon.

1.3 Burnout Syndrome: Theoretical Underpinnings, Dimensional Structure, and Assessment Instruments

Burnout is a central concept that has been recognized for more than four decades within the realm of occupational health psychology. It was predominantly identified within the realm of the human service occupations, including healthcare professionals, educators, social service workers, and therapists. However, it eventually encompassed every industry, including high-tech work environments.

Even though the idea of burnout is widely accepted, debate continues among researchers about whether burnout is a distinct entity or simply symptomatic of chronic stress and depression. For the purposes of the current study, burnout, although showing overlap with other disorders, will be considered a distinct entity and confined mainly within the work environment (Wirth et al., 2024). This is of particular relevance within the digital work environment, where exposure to technology-related demands can serve as a trigger that precipitates both stress reactions and depressive-like symptoms of emotional exhaustion. This also explains why burnout occupies a central place regarding the fragile balance between stress and emotional well-being as a distinct entity within the context of technology-mediated work environments.

Analysis of the history of burnout highlights the evolution of burnout concepts and experiences, which originated with qualitative observations to become a quantifiable scientific concept with a sound model of norms and measurement instruments. This chapter provides insight into the essential concept of burnout, the burnout model, burnout instruments, and the adoption of the model for the current technological work environment.

The concept of burnout was formally conceptualized systematically by Freudenberger (1974). He recognized a phenomenon characterized by depletion of energy, motivation, and spirit among volunteers caring for patients with substance use disorders, conceptualized it as a consequence of emotional and physical exhaustion brought about by their occupation. This concept was later contextualized within a scientific paradigm systematically by Maslach (1976), and later in a more comprehensive manner by Maslach & Jackson (1981), conceptualized on the premise of burnout that exists on a threefold spectrum of exhaustion, cynicism (instead of depersonalization), and reduced feelings of personal accomplishment (instead of reduced personal accomplishment), respectively. This led to the development of the Maslach Burnout Inventory (MBI), known presently as the “gold standard” for burnout assessment, widely used across various countries.

Emotional exhaustion is the core and commonest symptom that is often observable among the burnout parameters. It is characterized by the depletion of the individual’s emotional strength, together with a loss of concentration and the will to work. People undergoing the condition feel that they cannot recover, even after short holiday times. Emotional exhaustion is very common, especially among

complex environments, for instance, project management. Project managers face pressure, tight deadlines, demands for success, and high accountability. According to Green and Wokey (1998), project managers undergoing emotional exhaustion often suffer from decreased cognitive flexibility, inefficient risk analysis, and decreased tolerance for uncertainty. Schaufeli and Enzmann (1998) explained the physiological effects of the condition, stating that it is often indicated by the presence of high cortisol, sleeping disorders, and other signs of burnout.

Cynicism, also previously termed "depersonalization," is the second major dimension of burnout. It is characterized by the development of a negative, indifferent, or estranged perspective of work, colleagues, and the organization. Often, cynicism develops as a coping strategy where the person shields himself/herself emotionally, but eventually, the lack of empathy, poor team building, and moral identification with the work suffers. In the project environment, cynicism can also take on various guises, for example, skepticism of client needs, lack of trust for other project team members, or skepticism of the organizational decision-making process. According to Leiter & Maslach (2009), cynicism often follows the state of emotional exhaustion and the transformation of the overinvolved state to disengagement. Essentially, the person could have started off with very high identification with the work goals but, following the state of extended emotional exhaustion, becomes distant emotionally as a coping mechanism.

Empirical literature has found that there are a number of negative outcomes that are linked with cynicism, including decreased cohesion, conflict, decreased consumer satisfaction, as well as decreased performance. In relation-based professions, like project management, there are potential negative effects of cynicism with regard to project processes as well as performance.

Professional efficacy and a lack of feelings of competence are part of the burnout experience and refer to a degradation in functioning due to a lack of perceived competence, productivity, and valued output. The person suffering from burnout often perceives themselves as incompetent, their own work as devalued, and their contributions as meaningless to their profession. The burnout literature begins with a discussion of understanding "personal achievement" as a definition of "professional efficacy" and burnout as a degradation of professional identity that encompasses a loss of the professional self.

Accordingly, the literature on project management could understand reduced professional efficacy, for example, when project managers feel less inclined to take on the challenges of innovative work, prefer less innovative and safer approaches, or adopt procedural ways to make up for the shortcomings of their skills. According to Leiter & Maslach (2004), a cycle begins when reduced self-esteem affects work interest and, conversely, impacts reduced performance that cements the poor evaluation of the self.

Modern-day work environments, especially the knowledge-work environment, have evolved with more complex expressions of burnout. Taking into account the advancements that have occurred,

Schaufeli, De Witte, and Desart (2020) introduced the fourth dimension of “cognitive impairment” using the Burnout Assessment Tool (BAT). Cognitive impairment includes the following: problems regarding concentration, problems involving memory, and problems involving decision-making.

Such symptoms are very common among project and IT professionals who handle numerous tasks simultaneously using digital platforms. Burnout has been found to be related to cognitive impairment that occurs in conjunction with a lack of judgment, a tendency to rely on intuition, and cognitive bias. This condition has been evidenced by Kaltenegger et al. (2023), which showed that IT project teams with higher degrees of cognitive impairment experienced delays, errors, and efficiency issues in their task resolution.

Project managers are prone to burnout which has been shown to be different in nature and, by definition, relatively more complex than other professions. This is due to a series of complex issues that project managers are faced with, including data processing, a variety of stakeholders, a rapid rate of change in technology systems, and uncertainties in both project processing as well as technology environment uncertainties. There seems to be an emerging notion of emotional exhaustion being a part of project management burnout. This has been a result of platform changes, management expectations, and unclear needs from stakeholders. There also seems to be a certain point of cynicism, as if this work in new technology seems far-off, and people are hopeless about who has the ultimate say when it comes to technology integration and what would happen if technology were to fail.

There are concerns that efficiency in professional circles has worsened due to increasing complexity. Project managers are also afraid that, in addition to a decreased efficiency rate, their reputation as a person who lacks tech skills would also be adversely affected. With the increasing use of artificial intelligence and other tech-related tools in a lot of project-related activities, it seems that expertise in understanding complex systems, various project tech platforms, and data-driven decisions would no longer be needed. This burnout pattern arises from the interaction of technological anxiety, burnout, and disengagement.

Therefore, it is important that the approaches project managers adopt for burnout risk assessment and intervention strategies be adjusted in line with the particular work environment.

There have been several conceptual frameworks proposed that attempt to clarify the processes that contribute to burnout. According to Maslach and Leiter (2008), burnout can be understood as the result of a mismatch between the individual and the following six basic principles of work and the rest of their lives: workload, control, rewards, community, justice, and values. This view highlights how the organizational environment affects the satisfaction of the psychological needs of the individual. Hobfoll's Conservation of Resources Theory (1989) suggests that burnout is the consequence of resource depletion. Chronic burnout results when the individual's emotional, cognitive, and social

resources are not sufficient for the demands of work, and this model also highlights the cyclical process of resource depletion brought about by the initial loss of resources.

The Job Demands-Resources (JD-R) model (Demerouti et al. 2001; Bakker and Demerouti 2017) integrates these approaches and frames burnout as a "health impairment process". According to this model, job demands (e.g., long work hours, high responsibility, technostress, and information overload) deplete an individual's energy, while job resources (e.g., social support, autonomy, and recognition) can mitigate this effect. If resources fail to balance demands, symptoms such as emotional exhaustion, cynicism, and decreased professional efficacy result.

There are a number of standardized measurement tools used in different professional fields to assess burnout. Each tool emphasizes different aspects of burnout to a different extent, such as emotional exhaustion, cynicism, decreased professional effectiveness, or cognitive impairment. In environments that are closely related to technology, such as project management, choosing the most appropriate tool is particularly important for studying technostress related forms of burnout. The comparison presented below allows us to assess the relevance and practical value of the main tools that can be used for purpose (Maslach & Jackson, 1981; Demerouti et al., 2001; Kristensen et al., 2005; Schaufeli et al., 2020; Knox et al., 2018).

Table 1. Comparison of Four Burnout Measurement Scales

Scale Name	**Number of Items**	**Dimensions Measured**	**Primary Focus**	**Suitability for Digital Contexts**
BAT (Burnout Assessment Tool)	12	Exhaustion (4) Mental Distance (4) Cognitive Impairment (4)	Modern understandings of burnout include a cognitive dimension	High - captures digital related cognitive impairment
MBI (Maslach Burnout Inventory)	22	Emotional Exhaustion (9) Cynicism (5) Professional Efficacy (8)	Emotional and behavioral exhaustion ; disengagement	Moderate- does not capture cognitive impairment
OLBI (Oldenburg Burnout Inventory)	16	Exhaustion (8) Disengagement (8)	Common exhaustion and withdrawal from work	Limited-misses cognitive and affective complexity
CBI (Copenhagen Burnout Inventory)	19	Personal Burnout (6) Work-related Burnout (7) Client-related Burnout (6)	Personal, work-related, and interpersonal aspects	Moderate- best for client facing professions

The table 1 highlights essential differences in measurement. The Maslach Burnout Inventory (especially MBI-HSS) is still considered the gold standard, as it has 22 items across three dimensions for measurement burnout, while the Burnout Assessment Tool (BAT) has items explicitly designed for contemporary, technology-mediated environments, because it adds cognitive impairment as a 4th, relevant dimension. This distinction between the two measures is very important: The MBI assesses primarily emotional or behavioral symptoms, while the BAT includes memory problems, trouble concentrating, and difficulty making decisions, which are symptoms related to technostress in project management situations.

Alternative assessment tools include the Oldenburg Burnout Inventory (OLBI) and the Copenhagen Burnout Inventory (CBI). The OLBI assesses dimensions of exhaustion and disengagement, while the CBI assesses personal, work-related, and customer-related aspects of burnout. However, these instruments do not offer the broad cognitive focus of the BAT and are not considered suitable for analyzing the impact of technostress.

In general, burnout can be described as a complex syndrome consisting of four main components: emotional exhaustion, cynicism, decreased professional effectiveness, and cognitive exhaustion, which has explanatory potential for both individual and organizational problems in terms of demand and resource imbalance. The most reliable approaches to capture this problem are the MBI and BAT approaches. In particular, it should be noted that the main advantage offered by the BAT test is related to its cognitive component, which creates a profound opportunity to capture burnout as well as technostress in technology-oriented environments.

Recent empirical studies indicate that stressors related to artificial intelligence (AI) contribute to burnout and mental health problems in cyber environments. Liţan (2025) found that concerns about AI-related technostress, lack of transparency in algorithmic decision-making, adaptation problems in human-AI collaboration, and the effects of automation on the workplace were direct predictors of depression and anxiety.

Contrary to expectations, the findings of the study by Wirth et al. (2024) revealed that perceived support in the organization had a significant moderating role in technostress and burnout. This indicates that communication, resources, and support are vital in shielding employees' psychological conditions from technostress in a technological transformation.

Finding key points for measuring burnout as well as ways to manage burnout has been a challenge. Ioannu (2023) proved that even a mindfulness approach, which involves tasks that focus on being in the present every day, has been effective in dealing with technostress and burnout for knowledge workers. This has been effective in dealing with the psychological fragmentation that arises when there are technological changes, allowing an individual to concentrate and stay composed.With the support

of organizations and work-life balance strategies, strategies to maintain mindfulness in this area appear to be effective. The modern concept of burnout is considered a multidimensional construct that encompasses not only emotional and behavioral changes, but also cognitive impairment and a general decline in performance.

1.4 The Job Demands–Resources Model: Theoretical Framework and Application to Technology-Induced Stress and Burnout

1.4.1Traditional Job Demands-Resources Framework: Foundational Concepts

The Job Demands-Resources (JD-R) model was first formulated by Demerouti et al. (2001) and later expanded by Bakker and Demerouti (2017). This model provides a simple, yet flexible and universal theoretical framework for explaining how workplace characteristics affect employee well-being, motivation and overall performance. Its strength lies in its division of all job characteristics into two main categories "demands" and "resources" and in its distinction of two main psychological processes: "disorder process" and "motivation process" that explain the mechanisms of interaction between two factors. Through this approach, the JD-R model combines theories of stress, motivation, and engagement, creating an ideal conceptual framework for understanding modern, technology-mediated work environments.

At the heart of the model is the concept of "job demands". Demerouti et al. (2001, p.500) define this concept as "those aspects of work that require sustained physical or mental effort and that are accompanied by certain physiological and psychological costs". That is, job demands are elements that consume the worker's energy resources and can have a negative impact on his or her health and well-being in the long term. Traditionally, high workload, emotional labor, role ambiguity, and conflict are classic examples of these demands. In the digital era, a new type of stressor introduced by technology, that is, technostressors, is added to this list.

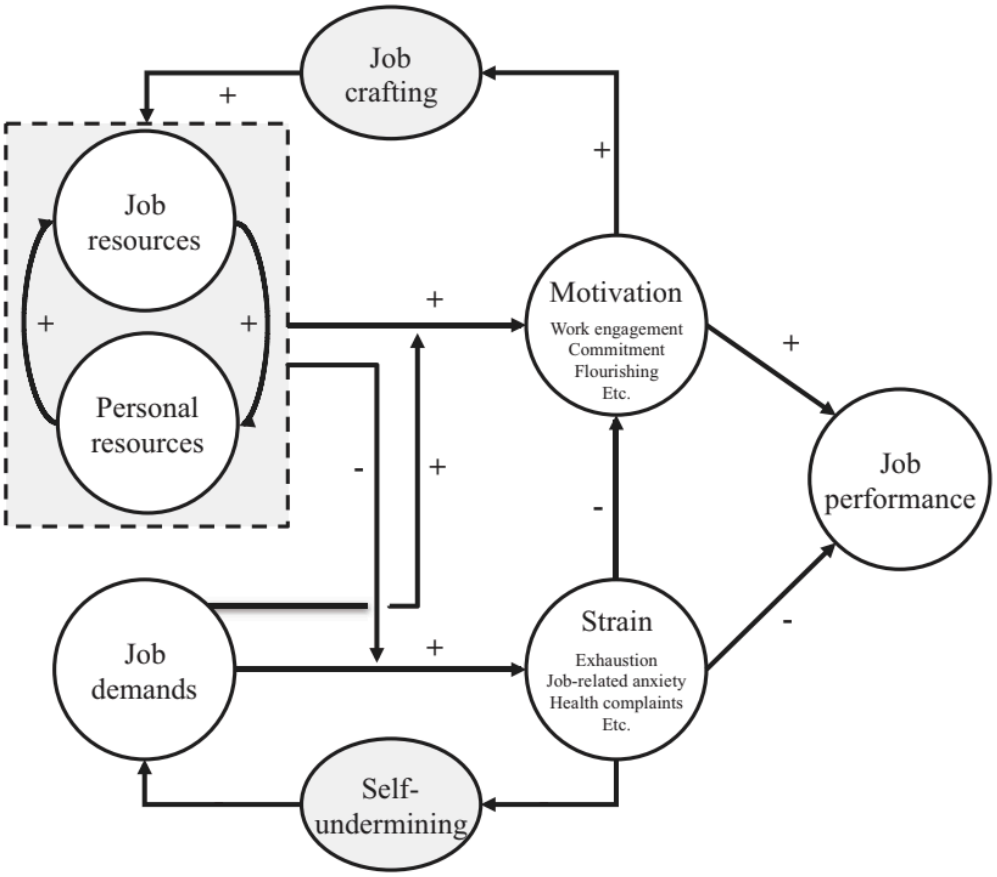
The other side of the model is "job resources". These are physical, psychological, social, or organizational aspects of work that help achieve work goals, reduce the physical and psychological costs caused by demands, and promote individual development, learning, and motivation (Bakker and Demerouti, 2017, p.275). Job resources not only reduce stress, but also activate the motivational mechanism, strengthening interest and engagement in work.

Resources are presented as a multi-level concept and operate at different levels. The role of resources contributes to employee protection of well-being and performance at three complementary levels. The organizational level establishes clear digital rules, trusted relationships, established communication systems, and training opportunities all of which make work processes more predictable. The social

level provides peer and supervisor support, positive and respectful relationships, and an environment of open dialog to encourage collaboration and a sense of safety while also reducing stress. The individual level provides the employee with a sense of control over their work, self-efficacy, emotional resiliency, curiosity to learn, and professional skills to help them adapt more successfully in difficult situations. Together, these three levels represent a powerful protective mechanism for both well-being and performance.

To visualize these key dynamics, Figure 1 presents the classic JD-R model, depicting job demands, job resources, motivation, strain, self-affirmation, job creation cycles, and performance outcomes.

Figure 1. The classic JD-R model (Bakker, A. B., & Demerouti, E. (2017))



The motivational process, in contrast, suggests that an abundance of resources energizes employees, increases intrinsic motivation, and ultimately results in higher performance, dedication, and engagement. This situation is characterized by the employee's greater attention, moral commitment, and satisfaction with their work. The "buffering effect", one of the main assumptions of the JD-R model, is explained by the fact that resources weaken the relationship between demands and strain. A study by Consiglo et al. (2023) showed that high e-work skills among remote workers significantly reduced the association between technostressors and emotional exhaustion. This study also showed

that clear digital communication protocols and organizationals support attenuated physiological stress responses in situations of techno-invasion and techno-uncertainty.

The process of health impairment explains how persistent and high demands in the work environment deplete employees' reserves resulting in both physical and psychological costs. In this process, indicators such as high cortisol levels, sleep disturbances, and cognitive fatigue are often observed. In the long term, this loss of energy can develop into exhaustion, manifesting itself in the form of fatigue, work-related anxiety, loss of motivation, and various health complaints.

1.4.2 Technology-Mediated Job Demands and Digital Resources: Digital Work Context

Recent studies have also widened how JD-R has been used, with a focus on digitalization. Scholze and Hecker in 2023 provide a concrete analysis of how digital job demands and resources are incorporated in JD-R. These authors identify traditional job demands as opposed to technology-related demands, and highlight how technology-related resources such as digital literacy, IT support, and rules for digital communication are important in JD-R. This provides a mechanism for better interventions targeted at issues in the technology world. To verify that the JD-R model remains a robust theoretical foundation for technostress, a systematic review by Pansini et al. (2023), ascertained that technology-related demands are a reliable predictor of burnout and overall well-being in various types of employment.

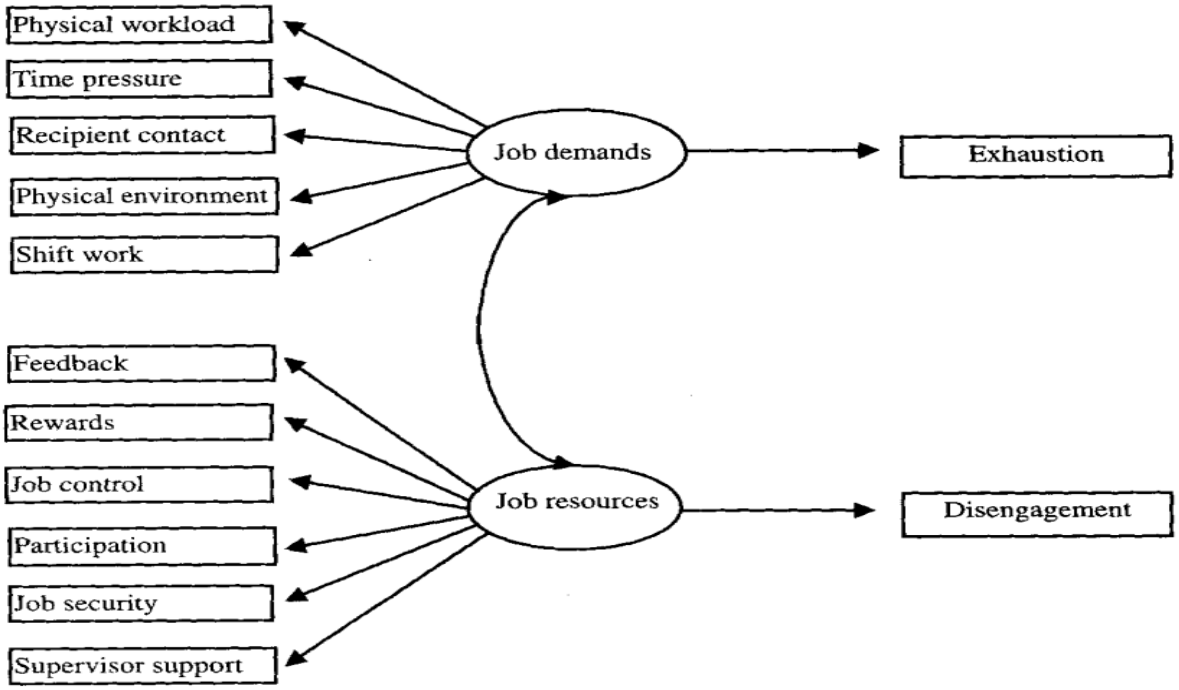
The JD-R model has identified five important technostress factors that project managers experience. Techno-overload refers to the situation where there is a constant urge to use information and serve personal needs, which results in energy depletion and cognitive overload. This also impacts privacy and personal life due to constant pressures to be connected, which results in a lack of balance. Techno-overload also involves upgrading systems and challenging software interfaces, which reduces project managers' resistance to new technology.

There is a marked distinction between techno-distress and techno-eustress in contemporary literature. Techno-distress arises when individuals perceive technology-related demands as threats that sap their energy, whereas techno-eustress arises when individuals perceive these demands as opportunities for enhancement. According to Tarafdar et al. (2019, pp. 28-30), when individuals have access to sufficient resources, some technology-related demands become motivational rather than stressful, and these demands facilitate creativity, malleability, and innovation.

On a practical note, it has been found that techno-eustress has a positive correlation with work engagement, creativity, and job satisfaction in autonomy-based and supportive environments where individuals can grow. On the other hand, when there are limited resources, limited support from management, and ambiguous expectations, it creates a situation for techno-distress, which results in

cynicism, burnout, and decreased performance at work (Tarafdar et al., 2019). Figure 2 illustrates a burnout pathway in JD-R. Therefore, demands cause exhaustion, while a lack of resources can lead to disengagement and burnout.

Figure 2. Burnout-specific pathway within the JD-R model (Maslach, Schaufeli, & Leiter, 2001)



With the advent of the digital age, it appears that AI systems are quickly establishing themselves in the working environment. This emerging reality has introduced a range of new possibilities and, along with it, new challenges for employees. Some of key concerns being raised as a result of AI requirements are a lack of transparency due to a lack of understanding as to how AI reaches a certain conclusion, issues of trust being a potential concern in a human-AI partnership, and a fear of technology undermining valuable skills (Zhang, 2025). To mitigate this, employees can strive to protect their decision-making powers and professional identities from technology. IT workshops for AI literacy provide a mechanism for employees to understand how this technology works, what it can do, and where it stops.

Multi-level studies using JD-R (Job Demands-Resources) model show that resources available at the team level- such as shared digital skills, supportive team spirit, and a collaborative culture- significantly attenuate individual technostress responses. Bondanini et al. (2020) and Bosch Rekveldt et al. (2023) conclude that a positive and supportive organizational climate not only enhances individual well-being but also overall team productivity.

1.4.3 Why JD-R is the Chosen Framework

While there are other frameworks that sought to examine workplace stress and technology, three main alternatives that should be considered are the Technology Acceptance Model (TAM), the Compensatory adaptation Theory System (CATS), and the Conservation of Resources Theory (COR). The table below compares how each of these frameworks addresses important dimensions relevant to project management research.

The comparison in Table 2 shows that the JD-R model is the framework that most fully brings together the key elements required to understand technostress induced burnout in project management. The TAM approach (Davis 1989; Venkatesh & Davis, 2020) focuses more on technology adoption and usage intentions and is limited in explaining outcomes such as psychological strain and burnout. The CATS model (Hancock & Warm, 1989) explains processes such as attention and cognitive load, but does not cover emotional aspects and the organizational context. Although The COR Theory (Hobfoll 1989, 2001) explains resource loss and exhaustion, it does not take into account the different types of demands in detail and is not fully adequate in tracking the motivation, involvement and behavioral outcomes that are important for project managers.

The JD-R model combines all advantages of all these frameworks to create a more comprehensive structure. It clearly links the specific demands of technology, the resources provided by the organization, and the psychological consequences that rise in the project management environment. Therefore, the JD-R model is considered the most relevant and functional theoretical framework for understanding how technostress translates for understanding how technostress translates into burnout in project managers.

Although the JD-R model has strong explanatory potential, it also has certain limitations, especially in a multifaceted and dynamic professional field such as project management. The model is largely descriptive: it identifies relationships between demands, resources, and outcomes, but it does not fully explain how these relationships develop over time and the dynamic processes by which technostress can translate into burnout in complex roles.

Strategic interventions based on the JD-R approach i.e., reducing demands (limiting notifications, establishing technology free times) and enhancing resources (increasing digital literacy, leadership support, peer support networks) have already been shown to have significant positive effects on employees' psychological well-being and overall organizational performance.

Table 2. Framework Comparison

Framework	**Strengthens**	**Limitations for this Research**
Technology Acceptance Model (TAM)	Clarifies the thoughts and intent to adopt technology through user acceptance.	Does not address psychological stress or mechanisms of burnout; It focuses on the acceptance of technology to understand why an individual becomes burned out and may be sufficiently bothered by technological tools.
Compensatory Adaptation Theory System (CATS)	Explicitly identifies cognitive compensatory strategies that individuals utilize during stressful experiences.	Does not delve into the emotional and organizational dimensions that provide a fuller and more comprehensive explanation of burnout; it deals only with coping mechanisms.
Conservation of Theory (COR)	Even effectively clarifies resource depletion dynamics and dynamics of stress.	IT does not distinguish between certain types of job demands and certain types of job resources; it is deficit oriented and does not explain employees motivation and engagement.
Job-Demands Resources Model (JD-R)	Adequately integrates job demands, job resources, motivation, and dual psychological pathways simultaneously.	Essentially, it provides and ideal model for understanding burnout caused by technostress in project management situations.

The JD-R model offers a comprehensive theoretical approach to understanding technostress. With this model, technological demands can be classified as job demands. This model assists in developing a proper resource perspective of technostress. This model also describes stress and motivational processes. Recent studies in the literature (Scholze and Hecker, 2023; Pansini et al., 2023) report that among all theoretical models, in a digital working environment, JD-R model provides a comprehensive theoretical approach to understanding technostress development, as well as how personal and organizational resources mitigate it. Though this model has certain limitations when it comes to heavy professional role tasks, such as project management tasks, this model format is flexible. This model

can be utilized by researchers and practitioners for determining relevant demands and resources in a digital working environment.

Furthermore, the JD-R framework's strict distinction between demands and resources can sometimes oversimplify the real world working conditions of project managers. For example, some job characteristics, such as autonomy or responsibility, can act as both demand and resources, depending on the context and personal evaluation. This dual nature creates some uncertainties when applying the model in practice.

Also, while organizational level resources , e.g., training programs and support policies, are well documented in the literature, research on how individual (e.g., resilience, self-confidence) and team-level resources (e.g., collective digital competence, intra-team support) interact to mitigate technostress is still underdeveloped. This gap suggests the need for deeper, multilevel research to account for the complexity of project environments.

This approach is particularly relevant in project management. Modern projects are managed with the use of agile tools, close communication between multiple departments and specialties, as well as AI based analytics. In such conditions, JD-R based interventions produce concrete and measurable results. Studies conducted by enlarged technology companies show that two pronged strategies- both reducing demands and strengthening resources- provide the most effective results.

Demand reduction measures include limiting after-hours notifications, integrating different digital platforms, and implementing "tech-free periods". These steps provide employees with opportunities for mental rest and recovery. On the other hand, resources- enhancing initiatives- such as digital coaching programs, experience- sharing communities, and reflective discussion sessions- enhance employees' ability to learn and adapt. According to studies by Adam et al. (2023), Nguyen et al. (2024) and Valtonen (2024), such integrated measures have reduced burnout levels by up to 30% and increased project success rates by 25% in just six months.

Berger et al. (2023) conducted a Delphi-based expert consensus study to establish a research based basis for the potential of technostress in digital work environments. The findings reveal a number of companies that have significantly reduced technostress and burnout. Digital policies that clearly define communication expectations and accessibility from work. Literacy training tailored to specific tasks enhances control over technology use.

Management mechanisms that ensure that employees are engaged in the process of implementing technology increase the feeling of support and help reduce anxiety about innovations . Reliable technical support systems that respond promptly to user requests minimize anxiety and downtime arising from technical failures. In addition, psychological safety is a leader in the form of a work environment that normalizes technological processes and presents technology as an improvement

rather than a threat. These resources and their effective implementation, as shown by the JD-R model, have a strong impact on technostress.

Strategic interventions based on the JD-R approach i.e., reducing demands (limiting notifications, establishing technology free times) and enhancing resources (increasing digital literacy, leadership support, peer support networks) have already been shown to have significant positive effects on employees' psychological well-being and overall organizational performance.

The next section examines empirical findings showing the relationship between technostress and burnout and its effects on project managers' performance, and assesses the extent to which the JD-R model is validated in this context.

1.5 Empirical Research on the Technostress-Burnout Nexus: Direct Effects, Mediation Pathways, and Outcomes

There are empirical findings regarding the existence of a distinct relationship between technostress and burnout. For example, the studies of Ragu-Nathan et al. (2008) and Salanova et al. (2013) state that excessive information overload and frequent digital interruptions (technostress) make for the best predictors of emotional exhaustion. Furthermore, it is not only a problem for the work of information technology professionals, but the technostress and burnout level are higher, indicating that technostress is spreading among organizations. As shown by studies carried out during the obligatory lockdown during the pandemic (Consiglio et al., 2023), technostress also affects the enhancement of burnout, depression, and anxiety.

There have been recent studies that examine technostress effects on work-related outcomes. Most of these studies have been carried out using the JD-R framework, and the results of the studies show that although technostress does not affect performance, it is probably mediated by burnout. This was also found to happen in the study carried out by Salanova et al. in 2013. The study carried out using mediational analysis and found that work-related performance was negatively related to technostress, and a significant amount of this was explained by emotional exhaustion.

Recent research adds depth to our understanding of this phenomenon. Zhang et al. (2025) revealed that technostress not only damages burnout, but also depletes psychological resources such as a job's meaning and intrinsic motivation, which will impede performance at work. This finding indicates that technostress impacts psychological mechanisms in a more nuanced way, which was typically thought to be simple. More recently, several studies have indicated that technostress can, not only be detrimental, but it can be helpful. In the study by Tarafdar et al. (2019), researchers found that technostress can contribute to negative or positive experiences. Negative experiences are likely to increase cases of burnout and, in turn, worsen professional performance, whereas positive technostress

can increase professional motivation and, in some cases, performance. This result was proved in a 2025 study led by Lígia Nascimento, which found that positive technostress, also known as techno-eustress, can be found in conditions where technology support and a high degree of trust are established. Furthermore, it has been found that technostress can be overcome from both a company perspective and an individual perspective. The study by Wirth and Zhang verifies that a company can help with technostress in order to avoid feelings of burn-out and cynicism. On the other hand, for project managers, it has also been established that problem-solving strategies, as well as enhanced technology skills, as shown by Richmond and Skitmore (2006), as well as Wei, et. al., (2024) can ease technostress.

Despite this, there are still some limitations in the current literature. A great many studies focus on IT, healthcare, and education, whereas project managers, a professional group with immense technological pressure, are relatively overlooked as subjects of research. Furthermore, a large number of studies are cross-sectional in nature, which are rather restrictive from a perspective of determining a project timeline with technostress as a factor. There are also a limited number of studies in which JD-R model interventions are used.

Overall, there is an urgent need for more in depth and systematic empirical research on project managers because digital transformation, hybrid work situations, and the rapid increase in artificial intelligence will cause new technostress forms.

1.6 Critical Gaps in the Literature and Directions for Future Research

Although interest in the topic of technostress and burnout has increased in the last decade in various professions, there are potentially significant gaps in this area, and this study aims to fill some of these gaps. While the existing literature is well documented and better understood in-depth, it is possible that project managers have been overlooked in these studies, despite being one of the groups with the highest technological demands. On the back of key insights that exist in this literature, it becomes clear that project management remains a relatively niche area of research, especially in IT education, healthcare professionals, and teaching. Project managers must manage their stakeholders, work with their internal teams, manage enormous amounts of data, make urgent, short-term decisions, and maintain this delicate tightrope walk between various platforms. This sort of technological duty typically does not exist in other lines of work. However, there is a significant gap in empirical research on the extent to which project managers experience technology-related stress and how this translates into burnout.

In addition to the paucity of specific research on project managers, another important gap is the extremely limited research on technostress and burnout in project management settings. In the existing

literature, technostress is often studied separately, and burnout is studied as a separate topic. Some studies examine the impact of burnout on performance, but there is almost no research that examines how technostress interacts with burnout in the project environment in the same context. This is a major shortcoming, as technology-induced stress may be shaped differently in projects than in other sectors.

Most of the existing literature only considers a few types of technostress. It often considers the more well-known types of technostress, such as techno-overload and techno-occupation. Also, the most well-known sources of technostress, such as techno-uncertainty, which is related to obsolescence due to constantly changing technology and unexpected technology updates, and techno-security, which is related to obsolescence due to technological innovation, are usually not considered. This means that project managers experience technostress due to a number of considerations, such as constant communication, technology complexity, constant technology improvement, unpredictable technology behavior, and individual technology skills. Therefore, it is important to understand the impact of different types of technostress on burnout and performance.

Another important gap that exists within the existing literature is the fact that the relationship between technostress, burnout, and performance is not depicted through a complete chain. This is because the topic is addressed partially. Some studies examine how technostress causes burnout. Others assess how burnout affects performance. However, there are very few studies that integrate all these elements into a single framework. As a result, it is difficult to see in full the sequence and by what mechanisms technological demands affect project managers' work outcomes.

Another aspect of this topic is research considerations for burnout measurement. While traditional studies were linked to classic symptoms related to burnout, which include exhaustion, cynicism, and feelings of being ineffective in their job, recent studies suggest that burnout encompasses not only feelings, but also cognitive functions. Symptoms of burnout, in addition to those experienced on a day-to-day basis, also relate to a lack of attention, memory, and decision-making abilities.

However, a few studies have considered these cognitive symptoms in their investigation of burnout due to technostress, especially in project managers. This creates a significant research gap since cognitive tasks are core in project management. Closing this gap would help in developing a realistic understanding of how technostress affects project managers in their performance.

Existing research has paid little attention to distinguishing between different dimensions of performance and how burnout may differentially affect these dimensions. Most studies treat performance as a single-dimensional outcome. However, the work of project managers is not limited to completing core tasks. They also contribute to broader organizational goals through contextual behaviours such as team collaboration, adaptability, initiative, and value creation. Therefore, understanding how burnout caused by technostress is related to these different types of performance is important for more targeted interventions.

This study aims to fill these gaps. The study focuses on project managers and systematically assesses the relationships between five dimensions of technostress (techno-overload, techno-invasion, techno-complexity, techno-uncertainty, techno-insecurity), four dimensions of burnout (emotional exhaustion, cynicism, diminished professional efficacy, cognitive impairment) and two types of performance (task performance and contextual performance).

The study uses a cross-sectional survey design and empirically reveals how these variables are related to each other at a given point in time. Although this design does not allow for causality, it provides clear evidence about the strength and structure of the relationships between technostress, burnout, and performance. Measuring all constructs simultaneously provides a more precise picture of how specific types of technostress are linked to specific aspects of burnout and how these components of burnout are related to different performance outcomes.

This integrated approach better reflects the real-world working conditions of project managers. They are typically faced with multiple technological demands at the same time, rather than a single stressor. Therefore, the model's consideration of all these variables together more accurately reflects the real-world experience of project managers and is an important step in developing theoretical and practical knowledge in the field.

Based on the Job Demands Resources (JD-R) framework, the survey also included digital support received from the organization. This theoretical approach argues that project managers are significantly impacted in their experience and management of technostress from an organizational point of view. While the dominant purpose of this research remains focused on investigating the burnout-performance relationship, by taking into account performance and technostress burnout, it also provides an explanatory analysis of organizational support, a vital contextual factor in this investigation.

While there has been a continuing extension of research studies on work-related stress issues and organizational well-being, knowledge on performance related to technostress burnout remains relatively sparse, despite the heavy technological pressures that project managers face. So far, a broad range of models that encompass different antinomies of technostress, including techno-uncertainty and techno-insecurity, has yet to be defined in relation to traditional and cognitive burnout manifestations. Furthermore, how these forms of burnout are cognitive burnout symptoms. Furthermore, how these forms of burnout are related to the different types of performance specific to project management is also poorly understood.

This study addresses this gap by providing empirical evidence on the relationships between five dimensions of technostress, four dimensions of burnout (including cognitive impairment) and two dimensions of performance for project managers. This integrated approach contributes to a more complete understanding of this understudied occupational group and provides a strong basis for future research and practical interventions in project management contexts.

CHAPTER 2. METHODOLOGY

2.1 Methodological Approach

This paper applies a cross-sectional study, using a quantitative approach, to examine the relationship between various types of technostress, burnout, and performance variables among project managers. Applying the quantitative approach permits the study to adopt a paradigm that is positivist. This paradigm believes that various social events can be measured in numbers, permitting the precise analysis of variables defined well and how they affect each other.

The quantitative method allows for the analysis of data generated by a large number of project managers across the geographically dispersed population, since the online survey provides the same set of questions for all participants. Through this approach, the data generated is on a consistent scale and hence is open to analysis. Additionally, using the quantitative method, the analysis of abstract concepts, such as emotional exhaustion, cynicism, and professional efficacy, is accurate. More specifically, the quantitative method gives the researcher the opportunity to explore both direct and indirect links between variables, which is paramount for determining if burnout mediation on the link between technostress and performance is applicable.

A cross-sectional study design, in which all variables are measured simultaneously, is considered logical and adequate for this study. There are several reasons for this. First, the aim of the study is not to track changes over time, but to determine the nature and strength of the relationships between variables. In this regard, a cross-sectional design allows for direct answers to questions.

Second, this approach is practical and efficient for studying project managers working in geographically diverse locations. It avoids the problems of large organizational burden, cost, time loss, and participant attrition that are common in longitudinal studies.

Third, this design fits well with the Job-Demands Resources (JD-R) model on which the study is based. This model explains how job demands, such as technostress, and resources, such as organizational support, affect well-being and performance outcomes. When cross-sectional data are analyzed with regression-based statistics, these theoretical paths can be reliably tested.

Finally, the fact that the relationships between exhaustion and performance are already well documented in the existing literature makes it possible and scientifically sound to test mediation hypotheses in this design.

The main limitation of the cross-sectional design is that it does not allow for a definitive determination of time sequence and causality. Since all variables are measured simultaneously, it is not possible to determine in which direction the effect acts. This means that alternative explanations or the

influence of other factors that were not taken into account are theoretically possible. However, this limitation does not make the cross-sectional design unsuitable for this study.

The aim of the study is not to definitely prove causality, but to identify patterns of relationships between variables and to understand the mechanisms that may exist between them. The theoretical framework, which is based on many years of research in the field of occupational health, also supports the logic of the hypothesized directions. This allows cross-sectional data to make a valuable contribution to theoretical understanding. However, for conclusive causation, longitudinal studies or experimental studies are needed, and it appears that this is a promising area for future studies.

Accordingly, the quantitative cross-sectional design is appropriate for the study aims, foundations, and circumstances. It is possible to verify the mediation processes and make precise estimations regarding the several aspects of burnout and performance for technostress. Even though it is not possible to verify the causality, it is reliable and theoretically valid for demonstrating the relationship between technostress and burnout within the project management environment.

2.2 Research Strategy

Survey-based research designs can serve as an appropriate framework for understanding the complex relationships among organizational and psychological constructs within professional groups. Survey research design allows for a systematic collection of data from participants across the country without requiring that all participants be located in the same geographic area. This type of research design is particularly relevant for studying project managers who work across a number of member organizations and daily use largely digital collaboration tools.

Collecting responses to the same set of questions with consistent measurement scales facilitates cross-comparisons across participants and supports the needed statistical analysis to test both direct and indirect effects. Such standardized data collection is particularly important for the reliable measurement of latent psychological constructs, or, in other words, variables that are not observable directly, like emotional exhaustion or various types of technostress.

The survey approach also offers a well-suited framework for the assessment of medicinal hypotheses. In this respect, to test the hypothesized burnout-mediated influence of technostress on performance, all the relevant variables (predictors, mediators, outcomes, and relevant contextual factors) should be measured simultaneously. A well-designed questionnaire enables us to collect measures for such variables within a single instrument and allows us to estimate path coefficients and indirect effects precisely through regression-based analyses. The structured form of the survey data allows for the generation of numerical data that is suitable for the statistical procedures required for mediation models.

An additional advantage of the survey strategy for project managers is that it is appropriate for their work environment. Since this professional group typically works under high workloads, a flexible and time-saving online self-administered format is both practical and convenient.

Moreover, project managers have extensive experience with digital tools, which makes it even easier for them to complete the survey. The survey approach combines methodological rigor with practical accessibility and provides a suitable and valid way to investigate how technostress and burnout are shaped in project management contexts.

2.3 Data Collection Methods

The data was collected through the use of an online survey. This was administered using Google Forms and was circulated on various social platforms, along with the link to the survey. Before the survey took place, the participants were directed to an orientation, and it was specifically stated that the survey would be anonymous, would only include people aged 18 years and above, and would require the participant to have at least six months of experience as a project manager.

The survey was targeted for wider distribution to project managers through the publication of the link on project management groups on LinkedIn (e.g., Project Management Professionals (PMP) Network, Agile & Project Managers Group, Project Managers Global Community), Facebook groups (e.g., Project Management Community, PMP Exam Prep & Project Managers Forum), and Reddit communities (e.g., r/projectmanagement, r/projectmanagers) focused on the same topic. Snowball sampling method was utilized where the respondents were asked to share the link to the survey for their fellow project managers. In the sharing messages, the objectives of the study were briefly stated, and the estimated duration of the survey to complete took no more than 10 minutes. Through the above method, the total number of complete responses gathered was 156. There were no responses that were partially completed, as all the responses gathered were submitted for consideration.

The questionnaire consisted of five sections, each designed to measure specific constructs. The first section collected demographic information. Participants answered questions about their age, gender, education level, certificates, years of experience as a project manager, industry sector, team size, and project complexity.

The second section contained five scales that measured technostress types: techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and techno-insecurity. These technostress types were measured using the Technostress Creators Scale proposed by Ragu-Nathan et al. (2008), where the participants responded to the 17 statements using a seven-point scale ranging from “1 = Strongly Disagree” to “7 = Strongly Agree”.

The third section evaluated the four components of burnout. This stage of the survey evaluated emotional exhaustion, cynicism, personal efficacy, and intellectual impairment. Section had a total of 16 items. It used a five-point scale for the responses. It included scale choices ranging from “1 = Never” to “5=Always”.

The fourth scale assessed the level of job performance. Eight statements on the level of task performance and contextual performance were given. The participants responded to the statements using a five-point scale ranging from “1 = Rarely” to “5 = Always”.

The fifth section focused on the measurement of the perceived support of the organization digitally. The section used four statements. The section applied the seven-point likert scale again, that is, “1 = Strongly Disagree” and “7 = Strongly Agree”. Finally, the survey requested the place where the survey link was seen.

All scales used in the survey were taken from instruments that had been validated in previous studies. Very minor editorial adjustments were made to make the statements clear for international participants, but the basic meaning of all items was preserved. After the survey was completed, responses were automatically collected in the Google Form system and then exported to statistical programs for analysis.

2.4 Sample and Participants

The target group of this survey is project managers working in various industries and organizations. These individuals are professionals who have formal or primary responsibility for planning, coordinating, and controlling projects, and who regularly use digital technologies in their daily work processes.

A combination of convenience sampling and snowball sampling was used to recruit participants. The survey link was shared at project management networks on LinkedIn, project-oriented groups on Facebook, project work communities on Reddit, and through personal professional contacts who allowed respondents to forward the link to colleagues. Participation was completely voluntary, and no reward or additional incentives were offered.

Respondents were required to meet certain inclusion criteria. They had to be currently working as a project manager or had recently worked as a project manager or had a role with significant project management tasks. Participants were also required to be at least 18 years old and to regularly use digital technologies as part of their job. Incomplete responses were removed from the overall data set to preserve data quality.

Considering the geographical dispersion of project managers and time constraints, a practical and statistically sufficient sample size of approximately 156 participants was identified. This number

provides the required power of correlation analysis and multiple regression models and is consistent with realistic recruitment opportunities.

2.5 Data Analysis Methods

Data analysis was performed using JASP and IBM SPSS Statistics. JASP is used for descriptive statistics, reliability with Cronbach's alpha, normality, and correlation analyses. SPSS was used for multiple regression models and mediation analysis. Data were screened before analysis. Incomplete and highly missing responses were removed. Possible outliers were also considered. The cleaned data were then entered into JASP and SPSS.

Means, standard deviations, and observed ranges were calculated in JASP. Distributions were assessed using skewness, kurtosis, and visual graphs (histogram, Q-Q plot). The reliability of each scale was tested using Cronbach's alpha, and $\alpha \geq .70$ was used as an acceptable threshold. Initial relationships between variables were determined using Pearson correlation coefficients.

In SPSS, the effect of technostress measures on burnout measures was first examined. Then the effect of burnout on task and contextual performance was assessed. Mediation analysis was then conducted to test whether burnout mediated the relationship between technostress and performance. The significance of indirect effects was assessed with bootstrap samples.

Statistical assumptions were tested before regression. Linearity was assessed with residual plots, homoscedasticity with constant difference of residuals, and multicollinearity ith VIF indicators. Normality of residuals was checked with Q-Q plots. Likert-type items were treated as interval-level data, as is widely accepted in social sciences. All results were interpreted at a significance level of $\alpha = .50$.

2.6 Reliability and Validity

Reliability refers to the consistent results of the measurement. Validity refers to the fact that the instrument accurately reflects the concept it is actually intended to measure. Both concepts are important for the data to show real relationships. Internal consistency in Likert-type multi-item scales must be assessed. If the items do not fit well with each other, measurement errors increase. In this study, internal consistency was tested with Cronbach's alpha, and values of 0.70 and above were accepted.

Content validity was confirmed and ensured by selecting instruments that had been previously used in organizational research. Only minor wording changes were made for project managers, and the basic meaning of the items was preserved.

Construct validity was assessed based on the consistency with the theoretical framework. These scales measuring technostress, burnout, and performance have already been widely validated in the field of occupational health. This provides confidence that the instrument correctly measures the intended psychological concepts.

If the alpha value of any scale during the analysis was low, this would indicate a measurement problem, and those items would need to be revised. All procedures were conducted in accordance with accepted standards in quantitative research.

2.7 Research Limitations

Several points should be kept in mind when interpreting the findings. The cross-sectional design does not allow us to determine the temporal sequence between the variables. Theory suggests that technostress increases burnout, and this affects performance, but since all the data were collected at the same time, this direction cannot be fully confirmed. Different sequences and interactions are also possible.

Self-report data can introduce bias. Respondents may give socially determined answers, especially when assessing performance; their emotional state may also influence their responses. Anonymity reduces this risk, but does not eliminate it completely. Non-probability sampling limits the generalizability of the results. Respondents recruited via social media may differ from project managers who are not active on platforms such as LinkedIn or Reddit. This approach is more likely to involve digitally active professionals. Therefore, the results may not be fully applicable to all project managers.

Online recruitment only included those with internet access and English proficiency. Project managers working in environments with weaker technological infrastructure or in non-english speaking countries were not included in this sample. This creates an additional limitation in scope. Likert-type self-rating scales also have limitations. Each project manager will respond differently to the survey, and the results will not necessarily reflect their experiences. Also, correlation among variables could actually be the result of the measurement approach used.

The mediation relationships explored in the study do not wholly support the mechanisms of causality. They only serve as samples for statistical representation and, although they support the theory, they do not constitute evidence of causality. Nonetheless, the findings of the study offer initial data on the relationships between technostress, burnout, and performance of project managers.

2.8 Ethical Considerations

This study was carried out according to the ethical considerations of the European Union and the guidelines of the GDPR (General Data Protection Regulation) rules. Participation was completely voluntary. Before the survey, each participant was informed about the intention of the survey and the survey questions. This study did not require any personal details. The study did not ask participants for their name, email, and place of work. Google Forms technology was specifically developed for anonymous use, and the technology did not allow the recording of IP numbers. This made it possible for participants to take the survey comfortably and give their genuine responses about their work-related stress.

The study involved participants who could withdraw their participation at any time prior to the completion of the survey. The study involved minimal risk, and the components of the study were only relevant to the usual affairs of the participants. The study did not ask for any sensitive data. No financial incentives were used. The data collected will only constitute for academic purposes. Additionally, prior to completing the survey, the objective of the study had been clearly explained, along with the survey.

CHAPTER 3. PRESENTATION OF THE RESULTS

3.1 Descriptive Statistics and Reliability Analyses

This section introduces an overview of the study's participants and assesses the quality of the data that had been utilized for testing of the hypotheses. This section focuses on the profile description of the respondents, and it provides the descriptive statistics and the reliability coefficients of the measurement scales.

A total of 156 project managers participated in this study (N=156). The demographic characteristics of the participants (gender, age, education level and work experiences) are shown in Table 3.

Table 3. Demographic profile of Respondents

Characteristics	**Category**	**Frequency (n)**	**Percentage (%)**
Gender	Male	79	50.6
	Female	73	46.8
	Non-binary/ Other	3	1.9
	Prefer not to say	1	0.6
Age Group	18-24	25	16.0
	25-34	47	30.1
	35-44	52	33.3
	45-54	32	20.5
Education Level	High School	4	2.6
	Bachelor's	55	35.3
	Master's	75	48.1
	Doctorate	22	14.1

Table 3 continued

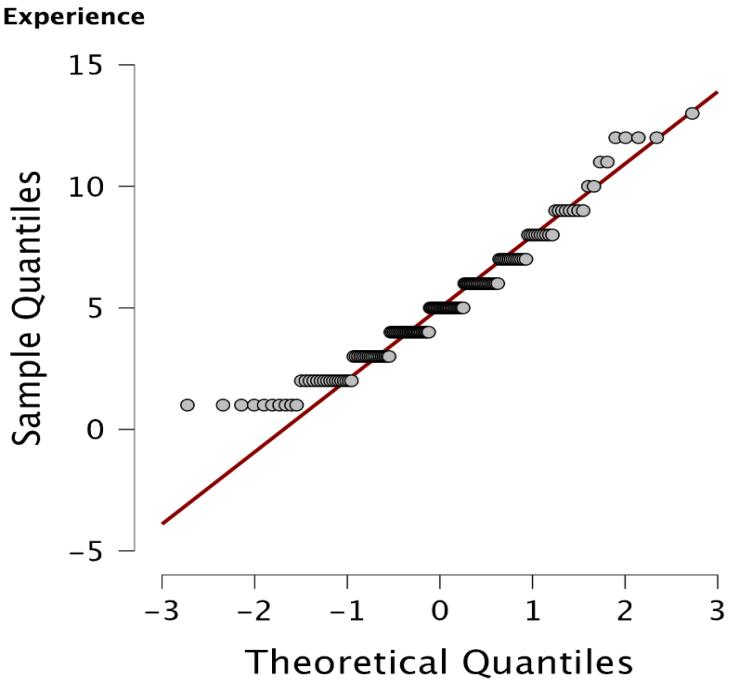
Source	LinkedIn	61	39.1
	Facebook	34	21.8
	Reddit	32	20.5
	Other	29	18.6

The gender representation displays a well-trimmed sample composition percentage of 50.6% male and 46.8% female, which represents project management demographics in a contemporary way and removes confounding variables concerning gender response to technostress. Although representation for those who align with non-binary and other genders, as well as those who prefer not to say, lags well behind with 1.9% and 0.6%, respectively, it does not affect validity. Age analysis shows that this sample composition consists of a professional group in their middle career years, with 63.4% of respondents between 25-44 years of age. This representation has theoretical value, in that middle career group project managers are most vulnerable to technological pressures and pressures of performance result, which in itself exemplifies stressful conditions attendant upon technostress and pressures from performance realization. 20.5% of respondents belong to 45-54-year-old group project managers, which provides insight into technology-related stress management among those with career experience, providing a possibly effective adaptation strategy for longer-term career individuals.

The educational background also ensures that it meets the professionalization needs of project management, with 48.1% of respondents in possession of a master's degree, followed by 35.3% with a bachelor's degree. This 83.4% total percentage of respondents with a graduate and undergraduate degree also suggests a very educated sample, which has tremendous analytic and interpretation implications. A higher level of education translates to superior cognitive abilities and learning potential, which, in turn, can protect against certain technostress factors but also increase expectations of technology use. Further, 14.1% of respondents with a doctorate also support that this sample represents intellectually superior respondents, which may not correspond to project management personnel in general. The professional experience metric (M=5.10, SD=2.65, range=1-13) reflects a relatively homogeneous distribution with moderate variability. This range has practical significance in that subjects with experience of 1-3 years are in the early stages of adjusting to technology with direct application to project management, whereas those with experience of 10+ years have lived through various technology paradigm shifts.

The distribution of experience data from a near-normal Q-Q plot (Figure 3) confirms that parametric statistical analysis methodologies are applicable, and experience follows a distribution similar to that of a normal population. An average of five years suggests that this group of project managers represents a point of vulnerability in their development, having gained sufficient experience to develop professional identities but being early along in their career cycles to be disrupted by technology.

Figure 3. Normal Q-Q Plot of Respondents' Professional Experience



The reliability tests provide a complex set of findings concerning measurement instrument quality. The technostress scales showed a greatly differentiated set of internal consistencies. Techno-Complexity has exceptional internal consistency with an alpha of .937, and Techno-Overload has a nearly as exceptional alpha of .924, which exceeds the high standard of .90 that would otherwise be expected in a high-stakes measurement situation. These high values indicate that both of these constructs are measuring a remarkably homogeneous set of stress experiences. This finding fits theoretical expectations, as techno-complexity represents a homogeneous experience of technology difficulty and complexity, and a homogeneous experience of techno-overload represents a homogeneous experience of overload from technology.

Techno-Invasion (α= .875) showed high internal consistency, almost reaching .90. This value indicates that the four items covering technology intrusion into personal timing and spacefaring a good construct. Although it reached a value slightly lower than overload and complexity, it can nevertheless be seen as a reflection of the construct's natural multidimensionality, as individuals perceive technology infringement in various ways in different situations (technology use in work

communications, obligation to be on call and reply when not working, etc.). Relatively low values were shown by Techno-Uncertainty (α= .861) and Techno-Insecurity (α= .790), categorizing in "Acceptable to Good." The value of .861 for techno-uncertainty has been particularly interesting, as, per definition, a value of five, for example, has a certain amount of variation in it. Also, a value of .790 for techno-insecurity, while being above .70, shows a slight increase in internal item differences. Perhaps this finding reflects that individuals are threatened in different ways concerning technological obsolescence and employment automation, through different channels (technology obsolescence, personal competence, automation, respectively), somewhat undermining internal consistencies.

Turning to burnout factor reliabilities, while those for Emotional Exhaustion and Professional Efficacy were sufficiently high, with alpha values of .842 and .916, respectively, it is noted that professional efficacy has a particularly high alpha value, suggesting that these four items describe an exceptionally homogeneous factor, in which respondents' perceptions of their capabilities in effectively directing their work using technology are very closely related. On the other hand, values for Cynicism and Cognitive Impairment factor reliabilities were relatively low, with alpha values of .602 and .604, respectively, that were even below .70, which in conventional terms, suggests that a certain lack of homogeneity, as measured by these scales, in their respective groups of items, that consist of either those associated with a lack of alienation, lack of commitment, and lack of professional efficacy, or those for cognitive impairment such as lack of concentration, lack of energy, question their construct validity.

Nonetheless, in spite of this, it has been decided to use both of them, in accordance with both their established validity in other studies, and in line with that pursued in this, qua preliminary investigation. Both job performance dimensions Task Performance (α = .856) and Contextual Performance (α = .853) exhibited good and highly consistent internal reliability, which signaled that volunteers were answering questions related to their self-evaluation of their personal capabilities to effectively complete job tasks and also contribute to their organizational culture with a sufficient degree of precision. The extremely high internal reliability of Organizational Digital Support as a construct (α = .970) stands out.

This value reflects a remarkably tight construct when using a four-item measure of volunteers' perceptions of how much their organizations are investing in their technology-related training and support. This suggests that organizations are either doing it all rather well, or all rather badly, without many fissures in their approaches to providing volunteer digital support. High reliability enhances our confidence in tests of moderation analyses for this factor.

Table 4. Descriptive Statistics and Reliability Coefficients for Study Variables

Variable	Items	Mean (M)	Std. Dev. (SD)	Cronbach's alpha
Technostress Creators				
Techno-Overload	4	5.27	1.12	.924
Techno-Invasion	4	4.52	0.73	.875
Techno-Complexity	3	3.79	0.85	.937
Techno-Uncertainty	3	4.77	0.86	.861
Techno-Insecurity	3	3.62	0.63	.790
Burnout				
Emotional Exhaustion	4	4.09	0.63	.842
Cynicism	4	3.11	0.40	.602
Cognitive Impairment	4	3.23	0.40	.604
Professional Efficacy	4	4.17	0.67	.916
Job Performance				
Task Performance	4	3.79	0.67	.853
Job performance	4	3.83	0.63	.856
Moderator				
Organizational Digital Support	4	4.32	0.92	.970

3.2 Correlation Analysis

In this study, Pearson correlation analysis was conducted on the main instruments. They are technostress, burnout dimensions, organizational digital support, and job performance. The full matrix of results is presented in Table 5. The analyses yielded several statistical significance.

The very high correlation between Overall Technostress and Emotional Exhaustion ($r = .835$, $p < .001$) is arguably one of the most congruent findings in this research from a theoretical perspective. A correlation of .835 means that 69.7% of the variance in emotional exhaustion is common with overall technostress ($r^2 = .697$). This correlation is much higher than those usually found in cross-dimensional correlations in stress studies, highlighting that technostress has a major phenomenological conduit to exhaustion for project managers. With a JD-R perspective, this correlation confirms that technological stress, defined as job demands in JD-R, has a direct conducting role in depleting emotional and energetic resources. The present correlation between technostress and emotional exhaustion also suggests that technostress has a major role in burnout's emotional experience, which has practical implications: it indicates that a technostress-reducing strategy would also proportionally affect a decrease in Emotional Exhaustion.

On the other hand, a remarkably different theoretical perspective is offered by the correlation between Technostress and Cynicism with a correlation coefficient of $r = .065$, which is statistically nonsignificant with a p value of .423. This near-Zero correlation between technostress and overall detachment and dismissal of work-related issues reflects that overall technostress has no linearity with work-related distance and dismissal. Counterintuitive to expectations, this result suggests that distance and dismissal in terms of cynicism does not relate to a technologically enabled event in this sample.

There are a number of potential reasons for this result, including that: in professional, work-related situations, rather than in technologically enabled situations, organizational issues such as management quality, organizational justice, and career development, rather than technologically-related issues, are of a great significance; in order to adapt to their professional conditions, experienced, technologically educated individuals such as project managers, develop a form of psychological detachment in terms of cynicism that has no relation with technologically related issues; or, technostress and cynicism are related in terms of a pathway model related to Exhaustion. The correlation between Technostress-Professional Efficacy, with a correlation coefficient of $r = .204$, and a p-value of .011, represents a small, yet statistically significant, relationship. While this small positive correlation suggests that a person with a high technostress experience also perceives a slightly higher rather than a lower level of professional efficacy—that is, a counterintuitive result that must be noted with caution—there are a number of potential interpretations for this finding, including: project managers with high technostress experiences possibly find themselves with a deepened technological know-how

due to necessity; this cross-sectional study taps into a dynamic, challenge-competence-perfecting, adaptation process whereby technostress as a challenge instigates a development in technological competency; or, alternatively, this aggregated measure of technostress conceals a certain technostressor, which reduces professional efficacy, along with other technostressers with which increased efficacy can be associated.

The correlation with a strong negative value between Emotional Exhaustion and Job Performance ($r = .698$, $p < .001$) reflects the most evident manifestation of burnout as a performance-reducing factor in this study. This correlation also suggests that 48.7% of performance variance overlaps with that of emotional exhaustion. Worth noting in this particular correlation in the correlation matrix, however, is that its negative sign requires qualified interpretations in that, for instance, this correlation coefficient of .698 signifies a correlation analyses value where emotional exhaustion negatively correlates with performance, such that as a matter of correlation, performance declines as and when/depending upon a corresponding increase in emotional exhaustion, among project managers.

The relationship between Cynicism-Performance, $r = .505$, $p < .001$, is of moderate strength, illustrating that disengagement and lack of commitment are related to performance decrement. Being of slightly lower strength than the relationship found with emotional exhaustion, $r = .698$, it would appear that a lack of emotional resources has a performance-impinging function over psychological disengagement. Such a theoretical distinction is important as it follows that while emotional exhaustion reflects a depletion of resources related to effort endurance, cynicism reflects a motivational disengagement.

Relationship between Professional Efficacy-Performance: This correlation is small in size and negatively related, ($.= -.268$, $p < .001$), showing that higher efficacy expectations are linked with enhanced performances, which seems a reasonable finding for providing construct validity. While negativity in this correlation reveals that enhanced performances are found with higher efficacy, it also seems small in size as it only explains 7.2% of performance differences, $r^2= .072$, showing that professional efficacy, though important, does not play a major role in determining performance but plays a relatively minor role compared to other variables like emotional exhaustion and disaffection.

This extremely high correlation between Task Performance and Contextual Performance ($.791$, $p < .001$) has a number of theoretical and practical implications. This correlation suggests that 62.6% of shared variation ($r^2 = .626$) as it were, project managers who are effective in doing their assigned tasks are also likely to be effective in their role as agents of organizational culture, in being a help to their co-workers, and in promoting a positive working environment. This finding throws into question the traditional conceptualization of task and contextual performance as separate and distinct entities, and suggests that in project management, successful execution of tasks, and successful extra-job behavior are potentially different manifestations of a common underlying motive construct. From a procedural

perspective, this extremely high correlation explains a number of observations related to model performance.

Table 5. Pearson Correlation Matrix of study Variables

Variable	1	2	3	4	5	6	7
1.Technostress	-						
2. Emotional Exhaustion	.835**	-					
3. Cynicism	.065	.189*	-				
4. Professional Efficacy	.204*	.088	-.317***	-			
5. Task Performance	.437***	.570***	.507***	-.210**	-		
6. Contextual Performance	.601***	.756***	.447***	-.301***	.791***	-	
7. Job Performance (Total)	.546***	.698***	.505***	-.268***	.950***	.943***	-

Note. N=156 *p < .05, **p < .01, ***p < .001

3.3 Visual Representation of Technostress-Outcome Relationships

In order to complement the correlation and regression analysis described in Table 5, a scatterplot with a regression line for each of the bivariate correlations described in Table 5 has been developed. These are described in detail in the following sections.

Figure 4 represents a scatter plot correlation between Technostress (TS_TOTAL) and Emotional exhaustion (EE_MEAN) with a regression line. This plot aptly displays a very strong positive linear correlation with a value of r = .835, r^2 = .697, and significance, p < .001. The sharp and positive-linear relation along with a substantial clustering of data points around the regression line clearly point towards technostress being a significant factor in determining nearly 70% of variance in emotional exhaustion. A nearly perfect linear relation between technostress and emotional exhaustion, as evident from this scatter plot, aptly reflects a direct and proportional relation whereupon a direct proportionality between technostress and corresponding increase in emotional exhaustion in the sample group becomes quite evident. A value of B = .923 in the regression analysis clearly reflects that a unit increase in technostress corresponds to a substantial increase of 0.92 units in emotional exhaustion.

Figure 4. Relationship between Technostress and Emotional Exhaustion

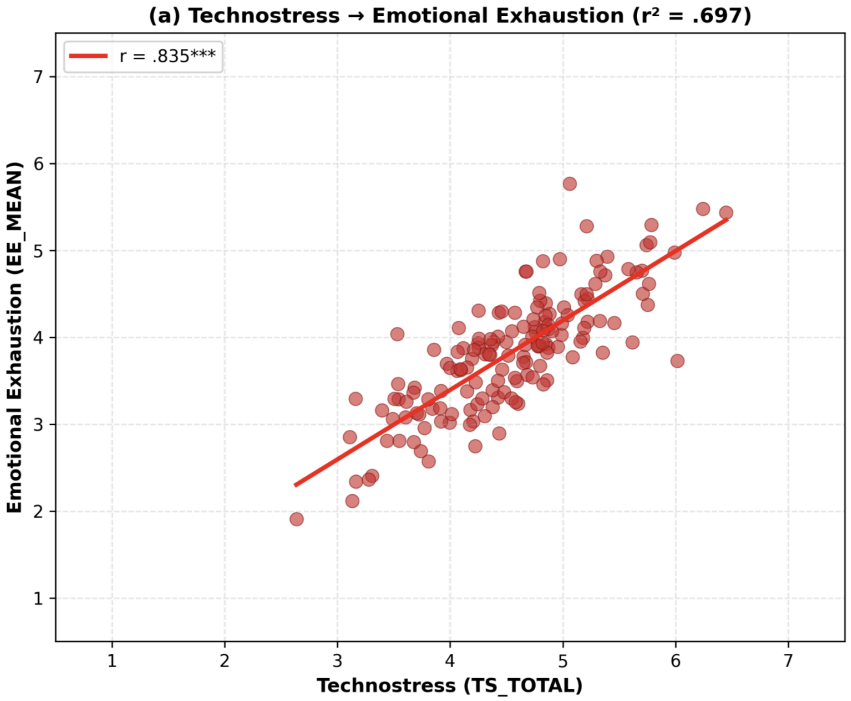


Figure 5 above shows the relationship between Technostress (TS_TOTAL) and Cynicism (CYN_MEAN). This scatterplot shows a dramatically different result from Figure 4, with a correlation nearest zero (r = .065, r^2 = .004, p = .423). The regression line and data points showing little to no correlation suggest that technostress has insignificant predictive validity for cynical distance. A lack of linearity in this correlation suggests that psychological retreat and cynical distance from work are unrelated in etiological explanation to technology-mediated pressures. This graph interpretation lends visual validity to the result of the mediation analysis that cynicism is not a meaningful mediator of the relationship between technostress and performance in test H2. This trivial result for practical purposes

(r^2 = .004) shows that fewer than a half percent of variance in cynicism can be accounted for by technostress, showing that these variables are fundamentally independent.

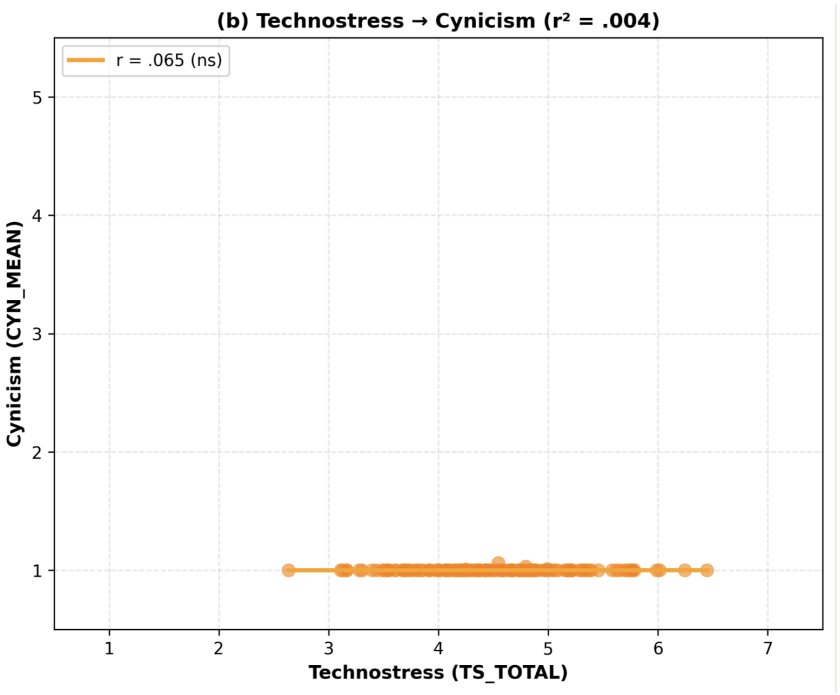


Figure 5. Relationship between Technostress and Cynicism

Figure 6 shows the correlation between Technostress (TS_TOTAL) and Professional Efficacy (PE_MEAN). This scatter plot shows a weak positive correlation with a correlation coefficient of .204, a squared correlation of .042, and a significance of .011. The weak positive correlation with a low squared value of .042 indicates that a small increase in technostress is associated with a small increase in effectiveness, which seems counterintuitive. This can be explained using the results of the regression analysis above, where when the total aggregate technostress is analyzed, a small increase in aggregate effectiveness is found, but when individual technostress components, especially technosecurity, are found to have a negative correlation with effectiveness. This suggests that technostress has some relationship with effectiveness when additional variables reveal the relationship between technostress and effectiveness.

Figure 6. Relationship between Technostress and Professional Efficacy

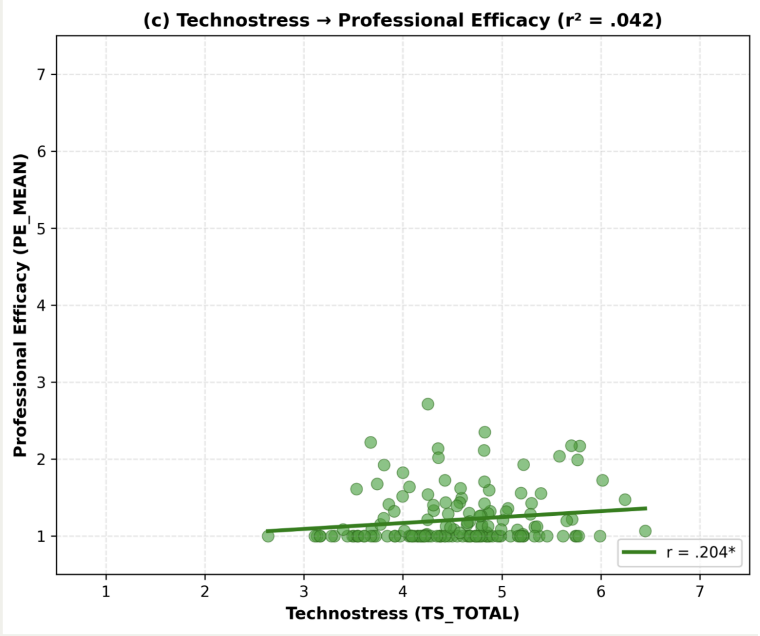
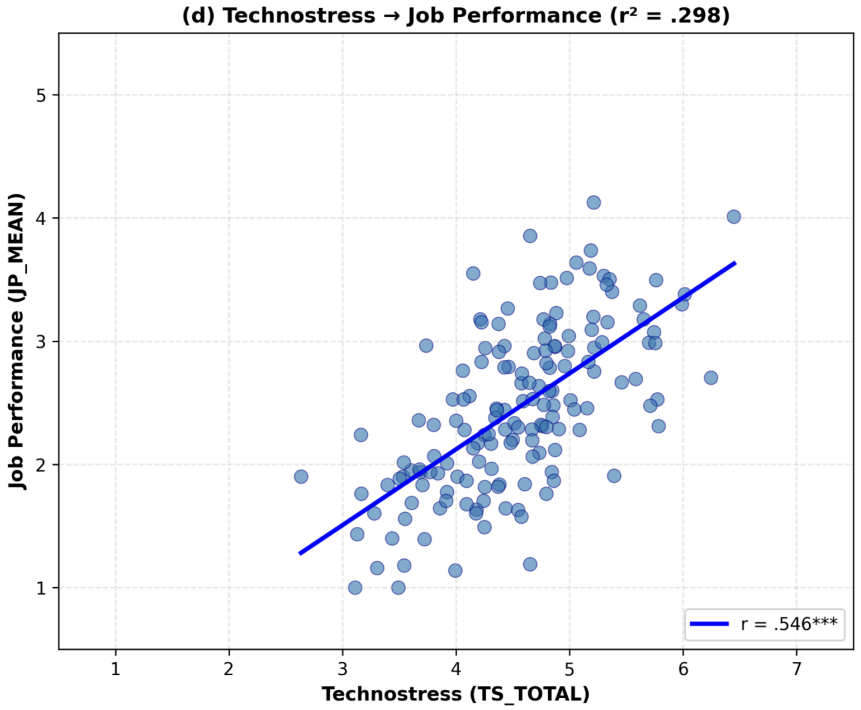


Figure 7 shows the relationship between Technostress (TS_TOTAL) and Job Performance (JP_MEAN). This scatter plot shows a moderate and positive relationship with a correlation of r = .546, r^2 = .298, and p < .001. This moderate and positive technostress-job performance correlation contradicts the theoretical interpretation of burnout and stress research, which suggests that stress negatively affects performance. However, this correlation does not describe a true form of causality. As indicated in Hypothesis 1, after a thorough analysis, this positive correlation simply describes a suppression relationship in which the positive technostress-job performance correlation is completely suppressed by the mediating role of emotional exhaustion and negatively affects performance. Nevertheless, as shown in the multivariate analysis, this direct effect of technostress performance becomes insignificant with values of B = -.133, p .241, as this positive correlation merely suppressed the true negative relationship.

Figure 7. Relationship between Technostress and Job Performance



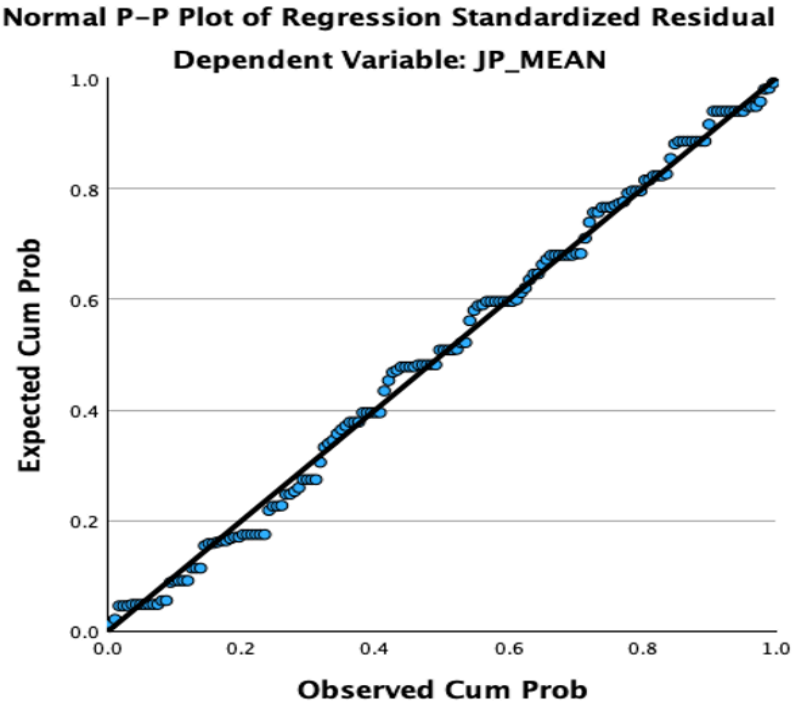
Overall, these four figures provide a visual representation of the different ways in which technostress affects burnout dimensions as well as performance outcomes, and provide a visual representation of the theoretical explanations outlined in the Job Demands-Resources Model. The striking visual representation of the steeper and more concentrated regression line representing the burnout dimension of Emotional Exhaustion in Figure 4 and the flatter and more scattered image representing the burnout dimension of Cynicism in Figure 5 graphically demonstrates that burnout dimensions do not respond equally to technostress.

3.4 Verification of Statistical Assumptions

Before testing hypotheses, preliminary analyses were conducted to test the data against the required criteria for directional regression. It is important to ensure that this step is efficient and generalizable. The analysis assessed four key assumptions. These are normality of residuals, relationship to the origin, constant variances of the residuals (homoscedasticity), and absence of multicollinearity.

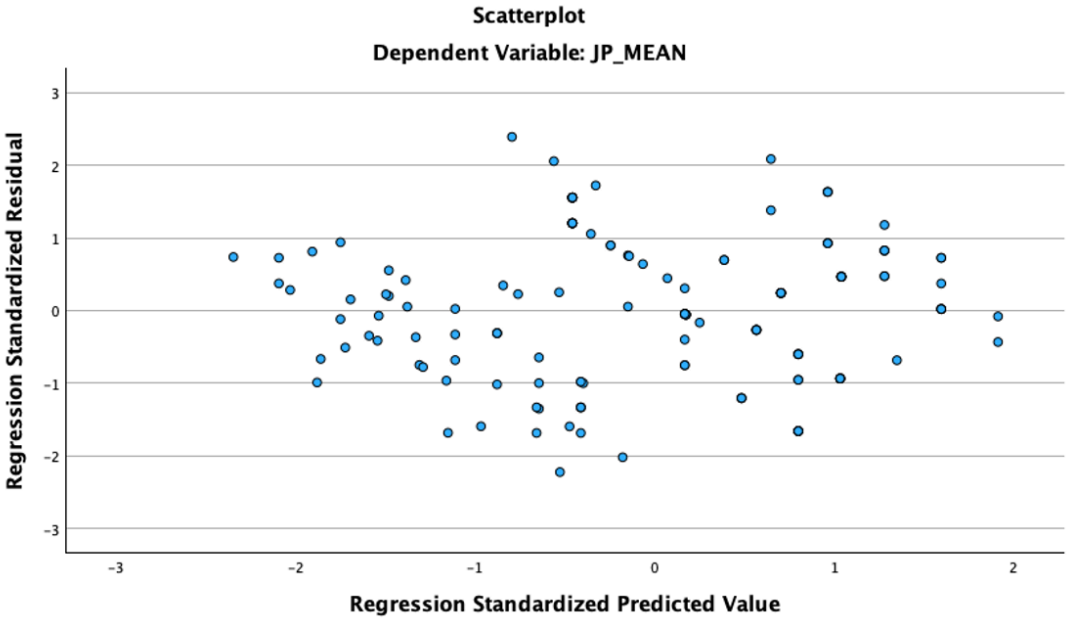
The normality assumption was tested by examining the distribution of the standardized residuals of the regression. Histograms and Normal Probability (P-P) plots showed that the date points were closely spaced around the diagonal line. This indicated that the residuals followed a normal distribution.

Figure 8. Normal P-P Plot of Regression Standardized Residuals



Homoscedasticity was assessed by plotting the standardized residuals against the predicted values. As we can see in Figure 9, the points are randomly distributed along the zero line and do not show any discernible shape or consistent pattern. This confirms that the error variance is constant across all values and that the assumption of homoscedasticity is met.

Figure 9. Scatterplot of Standardized Residuals vs Standardized Predicted Values



To avoid multicollinearity, the regression models were checked for excessive correlation between predictor variables. For this purpose, Tolerance and Variance Inflation Factor (VIF) indicators were calculated for each variable. According to the statistically accepted threshold, a VIF of less than 10.0 indicates that multicollinearity does not pose a problem (Mason and Perreault (1991). As shown in Table 6, these collinearity values display a comforting trend, showing that multicollinearity does not affect the validity of regression models. These VIF values for all variables range from 1.00 to 2.12, which in no way approaches 10.0, a point beyond which multicollinearity becomes a problem, as per conventional wisdom, and even 5.0 as suggested by stricter methodologies. These are:

1. For the predictors in the model of Emotional Exhaustion, VIF values for both Techno-Overload and Techno-Invasion are 2.113. This means that about 53% of variance in both predictors can be accounted for by the other, but there is still sufficient independent variance to allow for unbiased estimates of the contribution of both predictors.

2. For the Cynicism model predictors (Techno-Insecurity and Techno-Uncertainty), VIF=1.021 for both, which means that there is near-zero collinearity. The small VIF values for these two technostress constructs that are related to insecurity indicate that in this sample, these factors are near-orthogonal, which means that their effects can be measured with high precision.

3. In relation to the moderation test variables (Technostress, Organizational Digital Support): VIF = 1.186. This indicates low levels of, and no problem with, collinearity. This also suggests that there are no issues with validity in the framework of testing for interaction.

These figures, taken together, suggest that it is possible to draw inferences about all regression models concerning their regression coefficients and standard error estimates.

Table 6. Collinearity Statistics for Independent Variables

Model Predictors	Tolerance	VIF	Conclusion
DV: Emotional Exhaustion			
Techno-Overload	.473	2.113	No Multicollinearity
Techno-Invasion	.473	2.113	No Multicollinearity

Table 6 continued

DV: Cynicism			
Techno-Insecurity	.980	1.021	No Multicollinearity
Techno-Uncertainty	.980	1.021	No Multicollinearity
Moderation Analysis Variables			
Technostress Total	.843	1.186	No Multicollinearity
Organizational Digital Support	.843	1.186	No Multicollinearity

3.5 Hypotheses Testing

Once all hypotheses tested with statistical analysis were confirmed as accurate, the next step was to evaluate each hypothesis individually. Evaluation consisted of three stages, with direct effects being examined first using linear regression, followed by mediation effects identified using the PROCESS Macro (Model 4), and the final stage was hierarchical regression to evaluate moderation effects.

To determine the effects of technostressors on burnout measures, purposive regression analyses were conducted and are summarized in Table 7. The regression equation for Emotional Exhaustion, as a function of Techno-Overload and Techno-Invasion, was statistically significant, $F(2, 153) = 71.822$, $p < .001$. This equation accounted for 48.4% of the variation in emotional exhaustion, with $R^2 = .484$, adjusted $R^2 = .477$. The large value of R^2 suggests that Techno-Overload and Techno-Invasion combine to explain nearly half of the variation in emotional exhaustion. This finding provides robust support for the theoretical significance of both technostress concepts in relation to emotional exhaustion.

Techno-invasion was found to be a dramatically strong predictor ($B = .697$, $\beta = .807$, $t = 9.564$, $p < .001$). A value of .807 for the standardized coefficient means that for every standard deviation increase in techno-invasion, there would be an increase of .807 standard deviations in EE. This would be interpreted as a large effect size in psychology studies. The unstandardized coefficient $B = .697$ means that for every point increase in technology boundary violations, there would be a corresponding increase of about 0.70 points in EE. This finding fits well with theoretical explanations, since work technology invading one's personal time and space would lead to a psychological experience of boundaries being violated with lack of psychological distance from work, which in turn would affect work-related recovery processes.

The regression equation for Cynicism as a result of Techno-Insecurity and Techno-Uncertainty was also significant ($F(2,153) = 11.962$, $p < .001$), but it only accounted for a relatively small proportion of variation in Cynicism (13.5%, $R^2 = .135$, adjusted $R^2 = .124$). Again, this R^2 value is a good reminder that while insecurity and uncertainty related to technostress are important predictors, their influences are even more significant for emotional exhaustion than for cynical distancing. This finding suggests that rather than a technology-related phenomena, Cynicism may be a result of other issues related to working in an organization.

Techno-Insecurity was a significant predictor ($B = .230$, $\beta = .359$, $t = 4.720$, $p < .001$). With a standardized coefficient of .359, this reflects a moderate effect size. Because this correlation was positive, it suggests that technologically related fears of obsolescence, substitution by new technology, and adequacy of related skills correlate with cynical distancing. This finding appears consistent with theoretical expectations, since those who feel their own technical skills are being threatened by the pace of technological change may psychologically distance themselves from technology by developing a technologically related relationship skepticism as a form of psychological protection for themselves from the threat of obsolescence.

Techno-Uncertainty showed a non-significant correlation with Cynicism ($B = -.021$, $\beta = -.045$, $t = -.595$, $p = .552$). The coefficient is negative, small in magnitude, and statistically no different from zero. This result runs counter to the theoretical prediction that a lack of effective technology usage, coupled with a tendency for help-seeking behaviors, would lead to cynical disengagement. A number of possible explanations exist: a lack of effective technology usage could lead people to seek help rather than experience cynical disengagement; for example, the effects of technostress on Cynicism may be mediated by emotional exhaustion, whereby technostress influences exhaustion, which in turn influences Cynicism; or, alternatively, project managers with a substantial professional identity are unlikely to perceive a lack of effective technology usage as a challenge rather than a potential threat that would necessitate cynical disengagement. This result has theoretical implications, in that it appears that not all technostress components make similar, equivalent contributions to cynical disengagement. o hypothesis H5 was partially rejected.

The regression equation for Professional Efficacy on Techno-Insecurity was statistically significant, $F(1,154) = 50.265$, $p < .001$, and accounted for 24.6% of efficacy variance, $R^2 = .246$, adjusted $R^2 = .241$. Techno-Insecurity was a powerful predictor of decreased professional efficacy, $B = -.496$, $\beta = -.496$, $t = -7.090$, $p < .001$. The standard regression coefficient of -.496 reflects a very large effect size, suggesting that a standard deviation increase in insecurity predicts a standard deviation decrease in professional efficacy of .496. The raw regression coefficient of -.496 suggests that a one-unit increase in technology insecurity will result in a corresponding decrease of about half a point on the efficacy dimension. This finding offers powerful confirmation for a fundamental JD-R mechanism, namely, that

technology threats lead to a depletion of psychological resources, which in turn manifests in performance dysfunction. This result also offers substantial support for H6, conceding that meaningful efficacy gains would be predicted in practices aimed at insecurity.

The regression model predicting Job Performance from Emotional Exhaustion was significant, with $F(1, 154) = 146.10$ and $p < .001$. This regression equation accounted for 48.7% of job performance variation, with $R^2 = .487$ and adjusted $R^2 = .484$. The standardized regression coefficient of .698 was a large effect size, among the largest in this study. The raw regression coefficient of .680 showed that for every point increase in exhaustion, there was a corresponding .680 point decrease in overall job performance. This substantial correlation offered perhaps the most compelling evidence in this study that the emotional part of burnout severely impacts, and directly affects, job performance. The R^2 of nearly 50% shared variation, especially in a regression equation involving only this burnout factor, has profound implications for this research, namely, that a substantial increase in job performance would result from a decrease in this factor. H7 was strongly supported.

Table 7. Summary of Linear Regression Analyses for Direct Effects

Hypothesis	Predictor	Dependent Variable	B	SE	β	t	p	r^2	Result
H4	Techno-Overload	Emotional Exhaustion	-.094	.048	-.166	-1.97	.051	.028	Not Supported
	Techno-Invasion	Emotional Exhaustion	.697	.073	.807	9.56	<.001	.651	Supported
H5	Techno-Insecurity	Cynicism	.230	.049	.359	4.72	<.001	.129	Supported
	Techno-Uncertainty	Cynicism	-.021	.035	-.045	-.59	.552	.002	Not Supported
H6	Techno-Insecurity	Professional Efficacy	-.496	.070	-.496	-7.09	<.001	.246	Supported
H7	Emotional Exhaustion	Job Performance	.680	.056	.698	12.09	<.001	.487	Supported

(N=156. B= Unstandardized coefficient; SE= Standard Error; β = Standardized coefficient. P values < .05 are considered statistically significant.)

To assess the mediation mechanisms in the relationship between Technostress and Job Performance, 5000 bootstrap samples were used with Hayes PROCESS (Model 4). Detailed results are given in Table 8.

The direct effect of Technostress on Emotional Exhaustion was large and positive (B= .923, p < .001), showing that a unit increase in technostress predicts .923 unit increase in emotional exhaustion, that is, nearly a direct relation. This value corresponds to the former correlation value of r = .835, confirming that technostress primarily contributes to this form of exhaustion.

The Effect of Emotional Exhaustion on Job Performance was also large in size (B = .780, p < .001), as established in H7. Further, it is important to note that as the model incorporated Emotional Exhaustion, the direct effect of technostress became insignificant (B = -.133, p = .241). A transition from the partially mediated relationship, where technostress predicts performance, to a complete attenuation of the direct relationship as a result of including the mediator, confirms that it follows a complete mediation model.

The indirect effect was large and significant (Indirect effect = .721; 95% CI [.565, .900]). The non-overlapping confidence interval (fully above zero) clearly offers very robust support for a reliable indirect effect. The size of the indirect effect (.721) suggests that 72.1% of the originally postulated technostress-performance relationship is mediated by EE. This result offers a very strong support for H1 and a range of theoretical implications: technostress undermines performance not as a consequence of direct performance-damaging effects, but essentially due to the different form of technological-related stress experience, namely, as a consequence of their generation of technologically-related emotional exhaustion.

The model of complete mediation proposes a sequential causal order: 1. Technological Demands 2. Emotional Resource Depletion 3. Performance Decrement. Also, it appears that in a complete mediation, if emotional exhaustion can be prevented or regulated, then it would eliminate the impact of technostress on performance. This outcome unequivocally recommends exhaustion management as a strategy for insulating performance from high technologically related demands.

The analysis of mediation showed a relatively different result from H1. There was no significant prediction of Cynicism by technostress (B = .045, p = .423), as seen in Table 7. The lack of a relationship between the predictor and mediator would be, from a theoretical perspective, dispositive—there would be no mediation when the former pathway is disrupted.

Therefore, the indirect relationship with Cynicism was not significant. (Indirect effect = .033; 95% CI [-.052, .111]). Since the confidence interval encompasses zero, it represents no significant indirect relationship. H2 fails to be supported. This result has important theoretical implications, as it can be

stated that technostress has a relationship with job performance through a mechanism of emotional exhaustion (full mediation in H1), but it does not affect it in a manner related to Cynicism. The discrepancy between a high degree of mediation by emotional exhaustion and lack of mediation in Cynicism seems to imply that psychological distance and cynicism are not technologically mediated in this sample. Perhaps this is due to the idea that Cynicism arises from other sources than technology-related workload.

The mediation analysis showed a theoretically interesting result for partial mediation. There was a significant prediction from technostress to Professional Efficacy ($B = .240$, $p < .001$), though it was a small effect size. The positive value of this relationship means that technostress has a negative correlation with efficacy, in that it correlates with a slightly lower sense of efficacy. This small correlation likely has a lot to do with the idea that Professional Efficacy has multiple determinates, with technological demands being only one of those.

Professional Efficacy was a significant predictor of Job Performance ($B = -.363$, $p < .001$) in the predicted negative direction; that is, low professional efficacy attitudes are related to low performance. However, in a multiple mediator analysis, the direct path from Technostress to Performance remains substantial and significant ($B = .675$, $p < .001$), which means that technostress's performance impact is not completely mediated by decreased efficacy.

The indirect effect associated with Professional Efficacy was significant but negative in nature (Indirect Effect = -.087; 95% CI [-.148, -.035]). A negative indirect effect suggests that this mediation model has a reversed relationship with the direct effect, whereby technostress affects efficacy in a positive manner (.240), but low efficacy affects performance in a negative fashion (.363), causing a net negative indirect effect. Importantly, a large direct effect of .675 and a moderate indirect effect of -.087 provide evidence that this represents a classic example of partial mediation, also known as Partial Suppression Mediation.

This result indicates a more complex model than H1, which proposes complete mediation with direct and reduced efficacy paths. The direct path would conceptualize emotional exhaustion and related performance-dampening effects of technostress, whereas the indirect path would conceptualize efficacy-related paths. H3, proposing partial mediation, is supported.

Table 8. Summary of Mediation Analysis Results

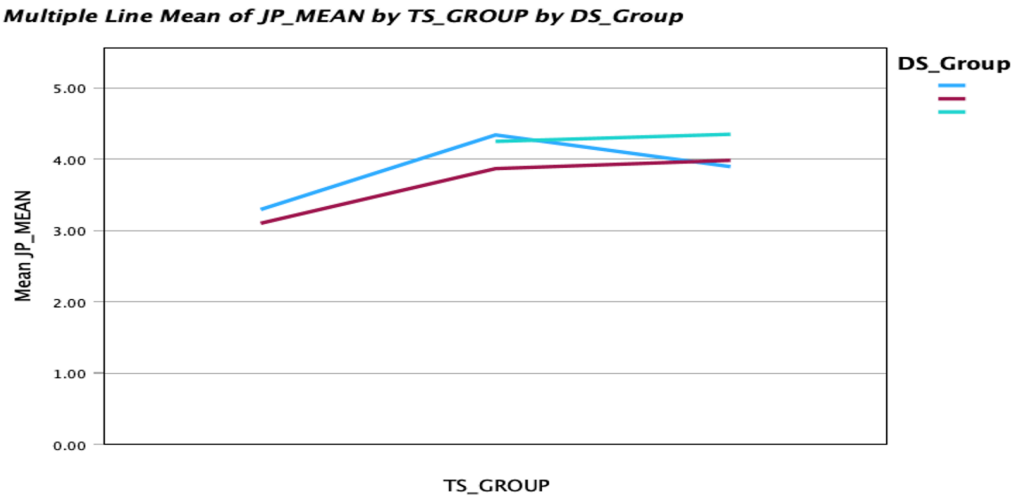
Hypothesis	Mediator Variable	Direct effect (c)	Indirect effect (ab)	BootLLCI	BootULCI	Conclusion
H1	Emotional Exhaustion	-.133	.721	.565	.900	Full Mediation
H2	Cynicism	.555***	.033	-.052	.111	No Mediation
H3	Professional Efficacy	.675***	-.087	-.148	-.035	Partial Mediation

(BootLLCI = Lower Limit Confidence Interval; BootULCI = Upper Limit Confidence Interval.)

Hypothesis 8 tests the moderating role of organizational digital support. For this, hierarchical regression was conducted. In the first stage, when Technostress and Digital Support were included as main predictors, the model became significant ($R^2 = .700$, $p < .001$). In the second stage, the interaction term (Technostress × Digital Support) was added.

The analysis showed that the interaction did not add significant additional explanatory power to the model (delta $R^2 < .001$, $p>.05$). The interaction coefficient was also not statistically significant. The almost parallel slopes in Figure 10 are a visual indication of this. These results indicate that organizational digital support does not attenuate the effect of Technostress on Job Performance. In other words, Hypothesis 8 is not supported.

Figure 10. Interaction Plot of Technostress (TS_GROUP) and Organizational Digital Support (DS_Group) on Job Performance (JP_MEAN)



3.6 Summary of Hypothesis Testing Results

The regression and mediation analyses conducted provide a broad and clear picture of the relationship between technostress, burnout, and job performance. The results of all hypotheses are summarized in Table 9. Overall, four of the eight hypotheses were fully supported, two were partially supported, and two were not supported.

Table 9. Consolidated Summary of Hypothesis Decisions

Hypothesis	Relationship	Decision
H1	Mediation: Technostress to Emotional Exhaustion to Performance	Supported (Full)
H2	Mediation: Technostress to Cynicism to Performance	Not Supported
H3	Mediation: Technostress to Professional Efficacy to Emotional Exhaustion	Supported (Partial)
H4	Direct: Techno-Overload/ Invasion to Emotional Exhaustion	Supported (Partial)
H5	Direct: Techno-Insecurity/Uncertainty to Cynicism	Supported (Partial)

Table 9 continued

H6	Direct: Techno-Insecurity to Professional Efficacy	Supported
H7	Direct: Emotional Exhaustion to Job Performance	Supported
H8	Moderation: Organizational Digital Support on Technostress-Performance link	Not Supported

Central to this study were questions of how technostress affects performance, and which variables would emerge as key mediation effects. Thirty-six hypotheses were tested. The findings indicate that there is a consistent set of technostress effects on performance that are mediated by burnout. Four hypotheses were completely supported (H1, H6, H7, and part of H4), showing that both emotional exhaustion and professional efficacy are as theorized. Two hypotheses were partially supported (H3, H5), showing that the suggested paths are complex, with some, but not all, of the predictors working. Two hypotheses were not supported (H2, H8), showing that either cynicism is not a mediator of technostress effects, or that performance buffers are ineffective in moderating technostress.

The largest supported associations were those between Techno-Invasion and Emotional Exhaustion ($\beta = .807$, $r^2 = .651$), technostress full mediation by Emotional Exhaustion (indirect effect = .721), and between Emotional Exhaustion and Job Performance ($\beta = .698$, $r^2 = .487$). Such large values of β reveal that it is emotional depletion that has been playing a major part in undermining performance as a consequence of technology. Table 10 shows more clearly statistical outcomes for the hypotheses.

Table 10. Statistical outcome related to Hypotheses

Hypothesis	**Statistical Outcome**
H1	Full mediation; Indirect effect = .721 [.565, .900]
H2	No first pathway (B = .045, ns); Indirect effect = .033 [-.052, .111]
H3	Partial mediation; Indirect effect = -.087 [-.148, -.035]
H5	Techno-Insecurity supported ($\beta = .359$, $r^2 = .129$); Techno-Uncertainty not supported ($p = .552$, $r^2 = .002$)

Table 10 continued

H6	Supported (B = -.496, β = -.496, r^2 = .246, p < .001)
H7	Supported (B = .680, β = .698, r^2 = .487, p < .001)
H8	Interaction not significant (ΔR^2 < .001, p > .05); Main effects model R^2 = .700

CHAPTER 4. DISCUSSION

4.1 Overview and Interpretation of Main Findings

The research has considered the relationships between technostress, burnout, and job performance amongst project managers in particular terms of how the different burnout factors may mediate the relationships. The findings offer insight into the complex processes of how stress caused by technology may translate into psychological distress in terms of overall effects on the particular type of jobs that rely heavily on the support of technology.

One of the key contributions of the present research to the existing body of knowledge is the insight that the effect of technostress on job performance was found to be fully mediated by emotional exhaustion. This finding is consistent with the health impairment process of the JD-R model (Demerouti et al., 2001), which posits that continuous digital work demands deplete workers' mental and physical energy reserves. Project managers who become victims of high technostress caused by techno-invasion and techno-overload become deprived of the emotional resources required to maintain the standards of their performance.

Professional efficacy was a partial mediator, showing that technostress affects a diminished professional efficacy. This suggests that other mediator paths exist. A partial mediator also suggests that technology-mediated insecurity affects decreased self-confidence in professional efficacy when faced with a lack of skills to maintain a role in relation to technology development. This aligns with findings from a study by Tarafdar et al (2019).

Interestingly, cynicism was not a mediator in the relationship between technostress and job performance. Even if technostress generating constructs such as techno-insecurity correlated well with cynicism, the cynical sentiment was not translated into reduced performance. A possible explanation for that may be that the nature of being a project manager may allow the PM to contain their cynical ideas without allowing them to influence the execution of their tasks. Such resilience in the profession may reflect professional norms in the field of being a project manager.

One of the more surprising findings was the positive association between emotional exhaustion and job performance. Such a result seems challenging to interpret without a detailed analysis in the context of the challenge versus hindrance stressor conceptual framework (Lepine et al., 2005). Maybe the stressful conditions of a high workload and deadlines to complete high number of tasks that build up to the point of exhaustion for the employees in a particular construction project in a country in the OECD (Organisation for Economic Co-operation and Development) south-eastern periphery are viewed by the project managers more in terms of ‘challenges’ and ‘hindrances’. This would imply that the overlying exhaustion of the workers may be compensated by their higher levels of worker engagement in a

manner where high worker exhaustion may occur simultaneously with high worker performance (Webster et al., 2011).

The research also explored the effect of organizational digital support in playing a buffering role in reducing the negative impact of technostress on performance. But the moderation hypothesis was not supported. The result of the effect was close to zero, even the graphical representation revealed that the relationship between technostress and performance was relatively constant at different levels of digital support. This goes contrary to the expectations given the previously documented support of strain in the form of organizational resources. There may be no variation in the support at the initial stages of the research or the support measure may not have matched the need stemming from different technostress generators (Ayyagari et al., 2011).

Taken together, these findings illustrate the complexity of the technology and work interface to reveal how technostress contributes to a depletion-building path in the context of COR Theory in the form of specific health impairment paths in the JD-R Model.

Though the JD-R model supplied the major theoretical framework underpinning the explanation of how digital job demands relate to burnout and performance outcomes, there has been the incorporation of some theoretical tenets under the Conservation of Resources (COR) Theory to supplement the explanation of the resource loss processes.

4.2 Comparison with Previous Studies

The current research validates and further develops the existing body of knowledge in the realms of technostress and burnout. The classification of the techno-invasion factor and techno-overload factor as antecedents of technostress serves to support some of the existing foundations of research underpinned by the pioneering research of Ayyagari et al. in 2011. The evidence suggests that both of these factors continue to have a pertinent influence in the existing context of project management.

The complete mediation effect existing for the mediator of emotional exhaustion aligns well with the overall body of research on burnout. Indeed, the central dimension of the burnout construct has been classified as exhaustion (Maslach & Jackson, 1981). This further underscores the generalization of the applicability of the Job Demands Resource (JD-R) model (Demerouti et al., 2001) to highly technology-intensive environments in which the electronic demands act in a manner analogous to the stressors of traditional employment. This specific research thus further validates the generalization of traditional stress theories into the electronic environment.

Despite the above similarities, the current research departs in significant ways from existing studies. For example, although Tarafdar et al. (2010) established the negative effects of technostress on end-user satisfaction and performance, evidence from the current research proposes a more complex

scenario in which technostress indirectly leads to be generation of proposes a more complex scenario in which technostress indirectly leads to the generation of high-performance effects (through exhaustion) even while draining resources. Such a phenomenon brings a degree of intricacy to the comprehension of highly demanding professionals dealing with digital-related stress.

There was no mediation effect present for cynicism. This goes against the ideas presented by Salanova et al. (2013) in the sense that cynicism can occur as a way of coping in order to induce a form of distancing from stressful technology demands. Within our sample, there was no direct effect of the distancing having a negative influence on performance. This may be a result of the project managers being trained to maintain a professional level of service delivery regardless of their emotions. Contrary to service-oriented jobs where the immediate effect of a decrease in quality was present when cynicism occurred (Salanova et al., 2013).

Regarding the moderation of organizational support, the result of no moderation goes against research that suggests stress can be compensated for by the presence of resources (Bakker & Demerouti, 2017). Such a discrepancy indicates that support is beneficial in different ways based on the type of outcome being considered. Support can act to shield one's well-being but may be less significant in more autonomous tasks such as the managing of projects. Furthermore, a point made in Ayyagari et al. (2011) regarding stress and support would relate to their possible match.

A general support for digital workers may strike the wrong target. To conclude, the past body of research demonstrates a non-uniform effect for all parts of burnout and also highlights the lack of potency of general support.

4.3 Practical Implications

There are a number of essential implications from the research results for any given organization wishing to cope effectively with technostress while simultaneously supporting their workers' well-being. Firstly, since the results have shown that there was a complete mediation of the influence of technostress on worker performance by emotional exhaustion in the manner discussed in the research hypothesis, interventions need to target the prevention of emotional exhaustion instead of trying to restrict worker interactions with technology. This may be achieved in organizations by providing workers with the opportunity to recover from stress by having breaks in technology-induced communications. Workers also need to switch off the technology at the end of the day to prevent the buildup of stress.

Second, courses for employee retraining should focus not merely on the enhancement of technical skills but also on building professional efficacy. Inasmuch as technostress lessens the workers; sense of their own competence, the need for professional retraining to keep up-to-date with the latest

technological developments cannot be overemphasized. With great particularity, a more positive approach to training for technological competence may thrive by reframing the process in terms of empowerment rather than need fulfillment.

Thirdly, the negative but unexpectedly positive association between exhaustion and performance cautions managers to be aware of the warning of false positives in their own performance metrics. High-performing individuals may have underlying exhaustion issues that may develop into burnout or turnover in the long run. Managers need to be trained to look out for the subtle indicators of stress despite the high performance of the employees.

Fourthly, the lack of a buffering effect for general support for digital technology suggests that general support in the context of the organization needs to be more strategic. Instead of generic help desks, more targeted support centered around particular pain points (such as software training to alleviate techno-complexity or communication guidelines to alleviate techno-invasion) may be more helpful. A needs assessment can determine how support resources need to be focused on particular worker stressors.

Finally, there should be a proactive approach to the implementation of technology in organizations. Prior to the implementation of new technology in the business environment, there ought to be an analysis of stressors that can occur. End-users participating in the selection and implementation of technology in the business environment helps in gaining acceptance. This reduces techno-complexity and techno-uncertainty in the business environment (Tarafdar et al., 2019). This helps in ensuring high levels of performance without hastening the burnout of the workforce.

4.4 Theoretical Contributions

This research has a number of essential implications for our theories regarding the effects of technostress. Firstly, this study lends empirical verification for the roles of burnout dimensions as mediators for influences in the association between technostress and performance. These findings support the JD-R model of health impairment for technostress. This current study succeeds in supporting a theory that certain dimensions of burnout- more specifically, emotional exhaustion and personal efficacy can be considered indicators for a strained condition generated by a high level of job demand in a technology environment.

Furthermore, with this finding that emotional exhaustion fully mediates, there appears to be a challenge to the JD-R model supposition that technostress negatively influences performance. This particular finding instead points towards emotional exhaustion being a precursor to poor performance and thus reiterates the JD-R model idea that emotional exhaustion is a harmonic centre for a demand force performance nexus.

Within high-pressure projects, technostress can act both as a hindrance stressor (resource draining) and a challenge stressor (effort promoter) in complex fashion. A complex stressor approach may be required to accurately reflect the nature of stressors present in the digital world.

Also, the present research refines the Job Demands-Resources model (Demerouti et al., 2001) in the sense that the results show that not all indicators of strain have the same mediation effect on the performance outcome. On the one hand, cynicism was not a path to a positive outcome. On the other hand, both professional efficacy and emotional exhaustion acted as paths.

The lack of evidence for moderation by the null hypothesis for organizational digital support goes against the assumption that resources serve a buffering function universally. Rather, the finding suggests a possible dependency on the specificity of the stressor-resource combination or the strength of the effect of resources for more proximal versus distal strains.

Finally, in emphasizing the case of project managers who have high autonomy but high dependence on technology, the research expands the usually traditional boundaries of the field of technostress studies to add greater generalizability to the existing body of theoretical knowledge.

4.5 Limitations

Notwithstanding the contributions made by the research, the present investigation also has a number of limitations. First, the research was cross-sectional. Even if the mediated relationships appear to be unidirectional in nature, the measures of the variables under consideration have been taken simultaneously. As a result, one cannot determine the nature of precedence among technostress, burnout and performance.

The sample size (N=156) and demographic profile of the sample participants, who skewed heavily toward highly educated professionals, may also affect the generalization of the research findings. The demographic profile of the sample participants in the given research may not accurately reflect the profile of new workers or workers in the blue-collar industry for whom the adoption of technology patterns vary significantly.

All the scales used in the research are self-administered. This poses the risk of common method variance. Even when assuming that the anonymity remedy was in place, the availability of supervisor ratings or objective measures would allow the results to be triangulated for the future studies. The reliability of the cynicism measures was below acceptable levels, perhaps weakening the relationships for the cynicism construct. Despite the exploratory retention of the analysis being necessary, the lower reliability suggests that the measures may not have fully operationalized the construct in the sample.

Individual characteristics like personality (resilience and neuroticism) that may moderate the relationships between technostress, burnout, and performance have not been taken into account. Including personality in the research would give a broader insight into the effects of technostress.
The operationalization of the degree of organizational digital support was general. A more nuanced way of distinguishing between technical support, emotional support, and instrumental support may have revealed some moderation effects that are masked in the general measure.

4.6. Recommendations for Future Research

On the basis of the current state of literature, several possible avenues for future studies appear. Firstly, longitudinal studies would be highly necessary to determine the order of events in the relationships between technostress, burnout, and performance. A repeated measures design may allow the longitudinal measures of the effects of technostress to determine the points of transition between burnout and reduced performance.

Second, there may be a need to explore the positive link between exhaustion and performance more extensively in the context of the challenge–hindrance framework. Research may also explore the cognitive appraisal of technostresses to determine the moderating effect of appraisal orientation on the link between technostresses and performance (Webster et al., 2011).

Thirdly, to overcome common method variance issues in the forthcoming studies, the research should utilize multiple sources of information. These may include both subjective measures of productivity and physiological measures of stress.

Fourth, a cross-cultural approach would be necessary to establish the extent to which the norms of different cultures in terms of the level of work activity and the application of technology affect the technostress-performance relationship.

Fifth, there needs to be research on the degree to which particular forms of support in the organization correspond to the profiles of particular technostressors. For instance, technical skills development may selectively buffer techno-complexity stressors but not techno-invasion. Such matched interactions would need to be evaluated.

In conclusion, in the context of summarizing the present analysis of the subject of technostress, the importance of the mediator factors of emotional exhaustion and professional efficacy in the process of the effect of technostress on performance has been pointed out. Technostress may appear to be a significant challenge to the well-being of individuals in the profession. At the same time, the effect of technostress on performance can be complex. With the consideration of the different paths of the effect of stress in mind, the challenge of technostress may be addressed.

CONCLUSIONS

This research has sought to explain how technostress impacts the job performance of project managers, focusing on how dimensions of burnout mediate this association and if organizational digital support can buffer it. Informed by data from 156 professionals, here are the key findings.

First regarding technostress and burnout: high technostress scores clearly go hand in hand with more pronounced symptoms of burnout. Specifically, techno-invasion and techno-insecurity prove to be strong predictors of emotional exhaustion and cynicism, and of lower professional efficacy. This confirms the notion that technostress generators are important digital work demands that initiate a process of health impairment by employees. Consequently, most of the hypotheses on the negative psychological outcomes related to technostress are supported.

Second, on mediation: burnout dimensions are important channels through which technostress influences performance. Emotional exhaustion completely mediates the techno-performance relationship (H1), meaning technostress diminishes performance by sapping emotional energy rather than directly. Professional efficacy also partially mediates the effect (H3): technostress reduces confidence, which in turn reduces work output. However, cynicism was not an effective mediator of this relation in the present sample (H2 not supported). Curiously, exhaustion and performance had a positive association, which may indicate some compensatory effort by project managers under heavy demands.

Organizational resources as a buffer: there was no evidence that organizational digital support moderates the technostresss-performance relationship (H8 not supported). Such a result would mean that general digital support measures within organizations may not be sufficient to alter how digital stressors affect performance for this group.

Theoretically, the model substantiates the phenomenon of technostress in the JD-R model by conceptualizing it as a job demand initiating the process of health impairment and depleting personal resources. This model demonstrates that in a high-demand digital job, the conservation of emotional personal resources is an important prerequisite for effective job performance.

In sum, technostress is almost an unavoidable feature among project managers in digital intense settings. Its impact on performance is, however, a large psychological matter. Maintaining performance in the digital era depends on the emotional and professional well-being of the employee.

RECOMMENDATIONS

Based on the empirical findings of the current study, specifically the key mediating roles of emotional exhaustion and professional efficacy in the technostress antecedents sequence, the following evidence-based recommendations have been developed.

1. **Organizational practices.** To counter depletion of resources caused by techno-invasion and overload, the need for the demarcation of digital boundaries in organizations cannot be overemphasized. There should be implementation of the "right to disconnect" approach to demarcate the boundaries of the non-working hours in order to support the replenishment of the reserve of affective resources. Additionally, the revelation of the ineffectiveness of general digital support in stress moderation underlines the requirement for more targeted interventions. In place of general support services by the information technology desks in the organizations, there should be the execution of periodic stress audits to demarcate stress triggers (e.g., the complexity of tasks performed) for the application of targeted support strategies.

2. **Training and Capability Building.** Given the partial mediating effect of professional efficacy in the technostress process, a stress-revention approach for organizations would target competence-building to offset the effect of diminished professional self-efficacy. Instead of limiting the scope of professional training to mere basic skills instruction in the use of technology, a more comprehensive approach to "digital mastery" would encourage workers to feel more in control of their tools. Based on the pivotal position of the construct of exhaustion in the stress-performance nexus, stress management techniques would also be a critical component of the professional skills-building program to sensitize the project managers to warning signs of professional exhaustion.

3. **Project Manager Actions.** At the personal level, project managers can benefit from the need for proactive personal boundary management. The habits of "notification batching" in the sense of consolidating the check of all emails at fixed times and devoting specific times for deep thinking without digital distractions can greatly decrease the mental load of techno-invasion. To combat techno-insecurity, there needs to be a personal orientation of the mind in terms of continuous skill renewal in the sense of perceiving technological advancements not as a risk to the continuity of employment but as a development opportunity.

Implementation of such best practices helps to build a healthier work environment by reducing demands and increasing personal resources, thereby fitting into the basic tenets of the JD-R model. By aligning the demands in the organization with the supportive elements, digital transformation will improve and will not undermine employee performance.

SUMMARY

Summary in English

Technological improvement and increased use of technology through electronic tools and software have increased pressures in relation to technostress, especially among project managers working in challenging technological environments. This investigation examines how technostress affects job performance, taking into consideration the role of burnout components as a mediator and organizational support for technology as a moderator, using the Job Demands and Resources Model. A quantitative cross-sectional design with a sample population of 156 project managers has been employed in this research.

Findings suggest that techno-invasion and techno-insecurity are significant predictors of burnout. There is a full mediation of technostress and job performance by emotional exhaustion, with professional efficacy as a mediator but not cynicism. Organizational support for technology use does not moderate technostress, burnout, and performance.

These results highlight the role of emotional exhaustion as a key mediator for how digital distress negatively affects performance and highlight the significance of protecting employees' emotional resources in digital working contexts.

Summary in Lithuanian

Technologijų tobulėjimas ir didėjantis elektroninių įrankių bei programinės įrangos naudojimas padidino su technostresu susijusį spaudimą, ypač projektų vadovams, dirbantiems sudėtingose technologinėse aplinkose. Šiame tyrime analizuojama, kaip technostresas veikia darbo rezultatus, atsižvelgiant į perdegimo komponentų mediacinį vaidmenį ir organizacijos teikiamos technologinės paramos moderacinį poveikį, remiantis Darbo reikalavimų ir išteklių (JD-R) modeliu. Tyrime taikytas kiekybinis, skerspjūvio dizainas, o imtį sudarė 156 projektų vadovai.

Tyrimo rezultatai rodo, kad technoinvazija ir technoneužtikrintumas yra reikšmingi perdegimo pranašautojai. Emocinis išsekimas visiškai mediavo technostreso ir darbo rezultatų ryšį, o profesinis efektyvumas veikė kaip dalinis mediatorius, tačiau cinizmas nebuvo reikšmingas mediacinis veiksnys. Organizacijos teikiama technologinė parama nemoderavo technostreso, perdegimo ir darbo rezultatų ryšių.

Gauti rezultatai pabrėžia emocinio išsekimo vaidmenį kaip pagrindinį mediatorių, paaiškinantį, kaip skaitmeninis stresas neigiamai veikia darbo rezultatus, ir išryškina darbuotojų emocinių išteklių apsaugos svarbą skaitmeniniuose darbo kontekstuose.

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ANNEXES

ANNEX 1. The survey Questionnaire

Note to Participants

Thank you for helping with my **Master's thesis**! I'm researching how technology impacts project managers' stress, well-being, and performance. This 10-minute survey is anonymous and voluntary. It is intended for participants ***who are 18+ and have at least 6 months of experience as a project manager***. Your insights are vital and much appreciated. To receive a summary of findings, email me at ayahmadova@stud.mruni.eu

Let's get started!

Section 1 Name: Demographics and Background

Description: Please provide some basic information about yourself and your work. This helps us understand different perspectives and ensures our research represents diverse project management experiences. All responses are completely anonymous.

1.What is your age?*

18-24

25-34

35-44

45-54

55 +

2.What is your gender?*

Male

Female

Non-binary

Prefer not to say

Other

3.How many years of project management experience do you have?

4.In which industry do you primarily work?*

Information Technology

Construction

Healthcare

Finance

Manufacturing

Other

5.What is the average team size you manage?

6.How would you rate your typical project complexity

Very low

Low

Neutral

High

Very High

7.What is your highest education level?

High School

Bachelor's

Master's

Doctorate

Other

8.Which project management certifications do you hold?

PMP

PRINCE2

Scrum Master

Agile Certified Practitioner

None

Other:

Section 2 Name: Technology and Work Stress

Description: The following questions ask about your experiences with technology at work. Think about the various technologies you use daily (email, project management software, communication

tools, etc.) and how they affect your work experience. Please rate how much you agree with each statement.

Techno-overload

9.Because of technology, I end up with more work than I can manage.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

10.Technology makes me work at a much faster pace.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

11.My workload has increased significantly due to technological advancements.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

12.I often feel the need to respond immediately when I receive requests via technology.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

Techno-invasion

12.This technology feels like it's taking over my personal life.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

13.Because of technology, I feel like I'm always on call.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

14.Technology makes it hard for me to switch off from work.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

15.It's tough to keep work and personal life separate with all this technology.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

Techno-complexity

16.It takes me a long time to learn new technologies.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

17.I do not have adequate skills to use the new technologies required for my work.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

18.It's stressful to learn new systems for me.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

Techno-uncertainty

19.The frequent updates and changes to work technology make me feel uncertain about my ability to keep up.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

20.System changes happen so rapidly that I struggle to adjust my work processes.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

21.I worry that new technological changes will require skills I don't currently possess.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

Techno-insecurity

22.I feel anxious that technological advancement could make my role as a project manager less relevant.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

23.I worry that I lack the technical skills needed to remain competitive in my job.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

24.The pace of technological change makes me feel insecure about my job security.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree 7 = Strongly Agree

Section 3 Name: Work-Related Feelings

Description: This section explores how you feel about your work and your energy levels. These questions help us understand workplace well-being among project managers. Please indicate how often you experience each feeling or situation.

Exhaustion

25.I feel emotionally worn out from working.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

26.I feel physically tired while working.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

27.I feel exhausted when I get home from work.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

28.I feel mentally drained from work.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Cynicism/Mental Distance

29.I am less happy at my job.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

30.I question the value of what I do.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

31.I disconnect during performance at work.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

32.I've grown more skeptical of the work I do.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Professional Efficacy

33.I feel capable of performing work tasks.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

34.I accomplish great things at the workplace.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

35.I do well in work responsibility.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

36.I am confident in work.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Cognitive Impairment

37.I have difficulty concentrating on my work tasks due to stress or fatigue.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

38.I notice that my memory has become less reliable due to work demands.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

39.I find it hard to make clear decisions at work because of mental exhaustion.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

40.I struggle to organize my thoughts when managing multiple projects simultaneously.

1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Section 4 Name: Work Performance

Description: We'd like to understand how you perform in your role as a project manager. Please think about your typical work performance over the past few months and rate how often each statement applies to you.

Task Performance

41.I finish my work on time.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

42.I do my work accurately.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

43.I perform all the requirements of my job.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

44.I am able to organize my work in an efficient manner.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Contextual Performance

45.I have a good quality of work.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

46.I exceed expectations in my work.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

47.I assist others with work-related issues.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

48.I adapt well to changes at work.

1 = Seldom, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always

Section 5 Name: Organizational Support

Description: This section asks about the extent to which your organization provides support for using digital tools and managing technology-related demands at work. Please indicate how strongly you agree with each statement.

Perceived Digital Support

49.My organization provides adequate technical support when I encounter technology problems.

1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

50.My organization invests in training to help me use work technology effectively.
1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

51.My organization recognizes the digital skills required for my role and supports my professional development.
1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

52.I feel supported by my organization in managing the technological demands of my job.
1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree, 6 = Agree
7 = Strongly Agree

53.Where did you see the survey?
LinkedIn
Facebook
Reddit
Other