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Digital Fatigue and Employee Engagement in Hybrid Work: A Multilevel Perspective

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Abstract

The hybrid work model, which blends remote and in-office modalities, has intensified reliance on digital tools and subsequently elevated risks of digital fatigue—mental exhaustion caused by prolonged digital engagement. This conceptual paper explores the impact of digital fatigue on employee engagement through a multilevel framework encompassing individual, team, and organizational dynamics. Grounded in the Job Demands–Resources (JD-R) model, Conservation of Resources (COR) theory, and Boundary Theory, the study conceptualizes digital fatigue as a job demand that depletes cognitive and emotional resources, reducing engagement if not counterbalanced by supportive mechanisms. At the individual level, digital autonomy is identified as a moderator, mitigating the adverse effects of fatigue. At the team level, digital norms and psychological safety influence how fatigue is experienced and its effect on engagement. At the organizational level, digital culture and leadership behaviors serve as systemic enablers or stressors. By synthesizing these theoretical perspectives, the paper presents a multilevel conceptual model that addresses the complexity of digital fatigue in hybrid work. It contributes to both theory and practice by highlighting how contextual factors across levels shape the digital fatigue–engagement relationship. Practical implications include fostering digital wellness policies, promoting autonomy, and redefining leadership roles in managing digital demands. The paper concludes by outlining avenues for empirical research to validate the model and adapt interventions to diverse organizational contexts.

Keywords*: Digital Fatigue, Employee Engagement, Hybrid Work, Multilevel Framework*

1: Introduction

1.1 Background and Motivation

The rise of hybrid work arrangements—where employees alternate between remote and in-office work—has significantly reshaped contemporary organizational dynamics (Wang et al., 2021). While this shift has enabled greater flexibility and autonomy, it has also introduced new psychological challenges, one of which is digital fatigue. Digital fatigue refers to the mental and emotional exhaustion that results from prolonged exposure to digital technologies, especially communication platforms like Zoom, Microsoft Teams, and Slack (Bennett et al., 2021). As digital interactions replace physical ones, the continuous cognitive load generated by digital tools has begun to impact employee well-being and productivity.

In parallel, employee engagement continues to be a central concern for organizational success. Defined as a positive, fulfilling, work-related state characterized by vigor, dedication, and absorption (Schaufeli et al., 2002), engagement has been linked to higher levels of performance, commitment, and innovation. However, the digitalization of work and the hybrid model have disrupted traditional engagement mechanisms. Employees now face challenges such as reduced social interactions, constant digital interruptions, and blurred boundaries between personal and professional life (Chen & Karahanna, 2018).

Despite growing interest in both digital fatigue and engagement, existing research largely treats them as separate constructs. Most studies also adopt a single-level perspective, focusing either on individual

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outcomes or organizational structures (Turel et al., 2011). This narrow focus limits the understanding of how digital fatigue and engagement interact across different levels of the organizational ecosystem, including individual behavior, team dynamics, and organizational culture. Addressing this gap requires a multilevel perspective that captures the interplay between psychological strain and motivational states across various contexts.

1.2 Research Purpose and Objectives

This paper aims to develop a multilevel conceptual framework explaining how digital fatigue influences employee engagement in hybrid work environments. Drawing on the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017), Conservation of Resources (COR) theory (Hobfoll, 2001), and Boundary Theory (Chen & Karahanna, 2018), the paper argues that digital fatigue acts as a job demand that depletes emotional and cognitive resources, thereby reducing engagement. Furthermore, the impact of digital fatigue is influenced by mediating and moderating factors at the team and organizational levels.

The specific objectives of this paper are:

1. To define and contextualize digital fatigue within hybrid work models.
2. To conceptualize the multilevel impact of digital fatigue on employee engagement.
3. To propose testable propositions connecting individual, team, and organizational factors.
4. To offer theoretical and practical insights for HR practices and organizational design.

1.3 Relevance and Contribution

This research contributes to the evolving discourse on the future of work by offering a comprehensive view of digital fatigue and engagement through a multilevel lens. Unlike existing studies that focus narrowly on individual-level experiences or organizational policies, this paper integrates multiple levels of analysis. By doing so, it enhances theoretical understanding and provides actionable strategies for organizations aiming to foster engagement while mitigating the adverse effects of digital fatigue (Wang et al., 2021).

1.4 Structure of the Paper

The remainder of the paper is organized as follows. Chapter 2 reviews the literature on digital fatigue, employee engagement, and the theoretical foundations supporting this study. Chapter 3 presents the conceptual model and outlines the proposed multilevel propositions. Chapter 4 discusses theoretical contributions and practical implications. Chapter 5 concludes with future research directions and limitations.

2: Theoretical Background

2.1 Understanding Digital Fatigue in the Hybrid Work Context

Digital fatigue refers to the mental and emotional exhaustion that arises from sustained and often excessive use of digital technologies, particularly for communication and collaboration (Wiederhold, 2020). Unlike general fatigue, which can stem from physical or emotional labor, digital fatigue is largely associated with screen time, fragmented attention, and the cognitive demands of navigating multiple platforms (e.g., Zoom, Microsoft Teams, Slack, etc.) (Lee et al., 2021).

In hybrid work environments, digital interactions are often the primary mode of collaboration. While these tools offer convenience and flexibility, their overuse can impair employees' concentration, increase irritability, and diminish motivation (Oakman et al., 2020). This fatigue is intensified by factors such as frequent virtual meetings, limited non-verbal cues, constant notifications, and blurred boundaries between work and personal time (Spataro, 2020). Importantly, digital fatigue is not merely a transient inconvenience—it has implications for job satisfaction, well-being, and productivity (Wang et al., 2021).

2.2 Defining Employee Engagement

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Employee engagement is commonly understood as a positive, fulfilling, and work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). Engaged employees demonstrate higher levels of energy, are deeply involved in their work, and exhibit persistence in the face of challenges. It is a key outcome variable in HR research because it predicts individual and organizational performance, innovation, and retention (Bakker & Demerouti, 2008).

Engagement is not static; it is sensitive to workplace context, leadership behavior, social support, and job design (Kahn, 1990). In hybrid work environments, sustaining engagement becomes more complex. The lack of physical proximity, reduced social interaction, and increased digital coordination can affect employees' emotional connection to their work and organization (Gartner, 2021).

2.3 Theoretical Foundations

2.3.1 Job Demands–Resources (JD-R) Model

The JD-R model provides a flexible framework for understanding how job characteristics influence employee well-being and performance (Demerouti et al., 2001). According to this model, job demands (e.g., work pressure, emotional strain) lead to burnout when not balanced by job resources (e.g., autonomy, support, feedback). Digital fatigue can be conceptualized as a demand—a psychological burden that drains energy—while engagement is an outcome influenced by the availability of compensating resources (Bakker & Demerouti, 2007).

In hybrid work settings, digital overload becomes a unique form of demand. Frequent online interactions, back-to-back virtual meetings, and digital multitasking can reduce cognitive bandwidth (Czeisler et al., 2020). Resources such as digital autonomy (freedom to choose when/how to use digital tools), supportive leadership, and team norms around digital communication can act as buffers (Sonnentag & Fritz, 2007).

2.3.2 Conservation of Resources (COR) Theory

COR theory (Hobfoll, 1989) posits that individuals strive to obtain, retain, and protect valued resources. When these resources are threatened or lost—such as energy, time, or attention—stress occurs. Digital fatigue reflects a resource loss spiral, where the overuse of technology leads to cognitive depletion, which in turn reduces motivation and engagement (Hobfoll et al., 2018).

This theory emphasizes that stress is not only a response to overload, but also a reaction to the inability to recover. Hybrid work may hinder recovery due to always-on cultures and lack of clear work-life boundaries (Derks & Bakker, 2014). Organizational efforts to preserve and restore resources—like setting digital boundaries or implementing "no meeting" windows—can mitigate fatigue and help sustain engagement (Ten Brummelhuis & Bakker, 2012).

2.3.3 Boundary Theory

Boundary Theory explores how individuals manage the lines between work and non-work domains (Ashforth et al., 2000). In hybrid work contexts, digital tools blur these boundaries, making it difficult for employees to disconnect. When employees are expected to respond to messages after hours or attend early-morning virtual meetings across time zones, the permeability of work-life boundaries increases. This leads to role conflict, digital fatigue, and disengagement (Allen et al., 2014).

Conversely, when organizations support boundary management—by respecting off-hours, allowing schedule flexibility, or promoting asynchronous communication—employees are more likely to maintain work-life balance and remain engaged (Clark, 2000).

2.4 Gaps in Existing Literature

Although research on digital fatigue and employee engagement is growing, several limitations persist:

- Most studies treat these constructs separately rather than examining how digital fatigue impacts engagement (Wang et al., 2020).

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- Research often adopts a single-level perspective, focusing either on individuals or organizations, without addressing how team dynamics and culture influence outcomes (Bakker et al., 2006).
- The hybrid work context is under-theorized, with limited conceptual models capturing its unique structural and psychological demands (Waizenegger et al., 2020).

These gaps underscore the need for a multilevel conceptual framework that considers the complex interplay between individual experiences (e.g., fatigue), team norms (e.g., communication expectations), and organizational systems (e.g., technology-use policies) in shaping employee engagement.

3: Conceptual Framework

3.1 Overview of the Framework

This chapter introduces a conceptual model that elucidates how digital fatigue impacts employee engagement within hybrid work environments. Drawing on the **Job Demands–Resources (JD-R) model** (Bakker & Demerouti, 2007), **Conservation of Resources (COR) theory** (Hobfoll, 1989), and **Boundary Theory** (Ashforth et al., 2000), the framework posits that digital fatigue arises from excessive cognitive and emotional demands associated with digital work tools and practices. In the absence of sufficient mitigating resources, this fatigue undermines employee engagement (Molino et al., 2020).

The model adopts a **multilevel perspective**, recognizing that employee experiences are shaped not only by individual-level factors but also by team-level dynamics and organizational-level systems (Kozlowski & Klein, 2000). This layered perspective enables a holistic understanding of the development of digital fatigue and the mechanisms by which its negative effects can be buffered or amplified.

3.2 Key Constructs and Definitions

- **Digital Fatigue:** A state of mental exhaustion and cognitive overload resulting from prolonged or intensive use of digital tools for communication and collaboration (Wang et al., 2020).
- **Employee Engagement:** A positive, fulfilling, and work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli et al., 2002).
- **Hybrid Work:** A flexible work arrangement in which employees alternate between remote and on-site work environments (Spataro, 2021).
- **Digital Communication Overload:** The experience of being overwhelmed by excessive digital communications, such as emails, instant messages, and virtual meetings (Barley et al., 2011; Kalman & Ravid, 2015).
- **Digital Autonomy:** The extent to which employees have control over how and when they engage with digital communication tools (Mazmanian et al., 2013).
- **Team Digital Norms:** Shared team-level expectations regarding digital responsiveness, meeting frequency, and availability outside working hours (Ten Brummelhuis et al., 2012).
- **Organizational Digital Culture:** The formal and informal practices, policies, and leadership behaviors that govern the use and regulation of digital technologies in the workplace (Orlikowski, 2007).

3.3 Conceptual Model and Propositions

The proposed model is structured across three levels: **individual**, **team**, and **organizational**.

3.3.1 Individual Level

At the individual level, digital fatigue is conceptualized as a psychological job demand that drains cognitive and emotional resources, leading to disengagement (Sonnentag et al., 2017).

- **Proposition 1:** Digital fatigue negatively influences employee engagement in hybrid work settings.

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ES (2025) 21(1), 795-803| ISSN:1505-4683

- **Proposition 2:** Digital autonomy moderates the relationship between digital fatigue and employee engagement, such that the negative effect of fatigue is attenuated when digital autonomy is high (Derks et al., 2014).

3.3.2 Team Level

Team norms shape how employees interpret and cope with digital fatigue. High-pressure norms (e.g., always-on expectations) can exacerbate fatigue, whereas psychologically safe team environments can mitigate its effects (Edmondson, 1999; van Zoonen et al., 2021).

- **Proposition 3:** Team digital norms moderate the relationship between digital fatigue and employee engagement. The negative impact of digital fatigue is stronger in teams with high-pressure digital norms.
- **Proposition 4:** A psychologically safe team climate mediates the relationship between team digital norms and employee engagement.

3.3.3 Organizational Level

At the organizational level, digital culture and leadership behavior significantly influence digital demands and recovery processes (Rockmann & Northcraft, 2018; Barber & Santuzzi, 2015).

- **Proposition 5:** Organizational digital culture moderates the relationship between digital fatigue and employee engagement, such that a supportive digital culture buffers the negative effects of fatigue.
- **Proposition 6:** Leadership modeling of digital wellness behaviors is positively associated with employee engagement, mediated by reduced perceived digital fatigue (Stich et al., 2019).

3.4 Integrated Multilevel Model

The framework integrates individual, team, and organizational levels to offer a comprehensive perspective. While digital fatigue is experienced individually, its trajectory and outcomes are shaped by team interactions and organizational structures. Resources at all three levels can either buffer or intensify the impact of fatigue on engagement (Bakker & Demerouti, 2017; Hobfoll et al., 2018).

3.5 Theoretical Integration

- **JD-R Model:** Frames digital fatigue as a job demand that diminishes engagement unless counterbalanced by adequate resources (Bakker & Demerouti, 2007).
- **COR Theory:** Conceptualizes digital fatigue as a loss of cognitive and emotional resources, leading to disengagement unless resource recovery mechanisms are present (Hobfoll, 1989, 2011).
- **Boundary Theory:** Explains how blurred boundaries in hybrid work can foster digital fatigue. Organizational support for boundary management enhances employee capacity to maintain engagement (Ashforth et al., 2000; Kreiner, 2006).

Economic Sciences
https://economic-sciences.com
ES (2025) 21(1), 795-803| ISSN:1505-4683

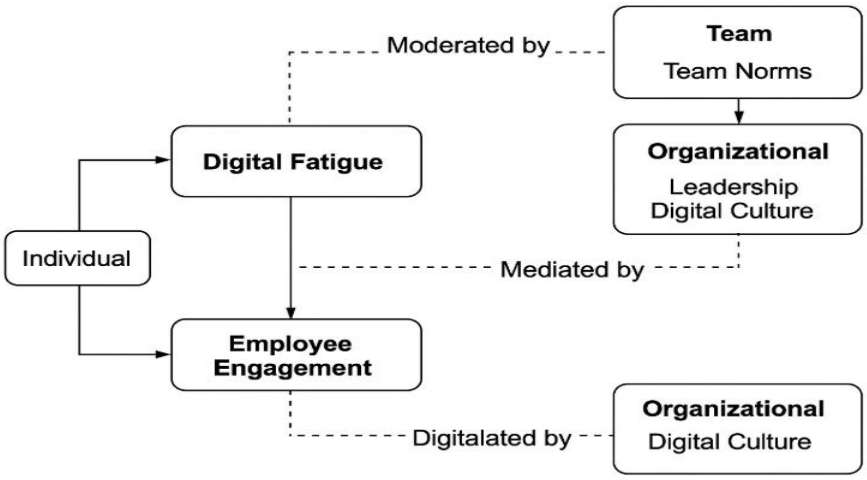

Figure 1: A Multilevel Conceptual Framework Linking Digital Fatigue and Employee Engagement in Hybrid Work

This figure illustrates how digital fatigue at the individual level influences employee engagement, and how this relationship is shaped by team digital norms and organizational digital culture. The model integrates constructs across three levels—individual, team, and organizational—using the JD-R, COR, and Boundary theories as foundational lenses.

4: Theoretical Contributions and Practical Implications

4.1 Theoretical Contributions

This conceptual framework contributes to the academic discourse on hybrid work by offering several novel theoretical insights:

1. **Integrating Isolated Research Areas:** Although digital fatigue and employee engagement have been widely studied, they are often treated as independent constructs. By linking them within the context of hybrid work, this model addresses a significant gap and offers a comprehensive lens on modern work-related stress and motivation (Molino et al., 2020; Wang et al., 2021).
2. **Introducing a Multilevel Approach:** The inclusion of individual, team, and organizational levels aligns with recent calls for multilevel theorizing in organizational behavior (Kozlowski & Klein, 2000). This framework demonstrates how digital fatigue is not solely an individual issue but also socially and structurally embedded.
3. **Synthesizing Multiple Theories:** The integration of the **Job Demands–Resources model** (Bakker & Demerouti, 2007), **Conservation of Resources theory** (Hobfoll, 1989), and **Boundary Theory** (Ashforth et al., 2000) provides a layered understanding of how digital fatigue develops and affects engagement. This theoretical synthesis enables a more robust interpretation of resource depletion, stress spillover, and boundary violations in hybrid work.
4. **Laying Groundwork for Empirical Exploration:** The proposed propositions create opportunities for hypothesis testing and further exploration using both qualitative and quantitative methods. This model offers a foundation for future studies that examine the antecedents, mechanisms, and moderators of digital fatigue and engagement (Bakker & Albrecht, 2018; Ten Brummelhuis & Bakker, 2012).

Economic Sciences
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ES (2025) 21(1), 795-803| ISSN:1505-4683

4.2 Practical Implications for Human Resource Management and Organizations

The framework also offers actionable strategies for improving employee well-being and engagement in hybrid work environments:

1. **Shaping Digital Well-being Initiatives:** Organizations can implement structured policies such as "no-meeting" days, enforced offline hours, and buffer times between meetings to reduce cognitive overload (Barley et al., 2011; Stich et al., 2019). Promoting digital hygiene helps prevent chronic fatigue.
2. **Promoting Employee Control Over Technology Use:** Granting employees autonomy in managing digital communication—such as choosing when and how to respond—can reduce psychological strain and enhance motivation (Mazmanian et al., 2013; Derks et al., 2014). Flexible, asynchronous communication strategies are especially beneficial.
3. **Reinforcing Positive Team Dynamics:** Leaders should cultivate team norms that discourage after-hours communication and prioritize task relevance in digital interactions. Psychological safety within teams, encouraged by supportive norms, reduces the emotional impact of digital fatigue (Edmondson, 1999; van Zoonen et al., 2021).
4. **Fostering an Empathetic Digital Culture:** A healthy digital culture starts with leadership. When senior leaders model responsible digital behavior (e.g., avoiding non-essential emails outside working hours), it creates a trickle-down effect that supports digital boundary-setting throughout the organization (Rockmann & Northcraft, 2018; Kreiner, 2006).
5. **Informing Leadership and Managerial Training:** Leadership development programs should address topics such as managing digital overload, understanding the impact of hybrid work on well-being, and fostering inclusivity in virtual spaces. Well-trained leaders are key to maintaining employee engagement in remote and hybrid settings (Stich et al., 2019; Wang et al., 2020).

5: Conclusion and Future Research Directions

5.1 Conclusion

The transition to hybrid work environments has introduced unprecedented challenges and opportunities for organizations. Among these, the rising prevalence of **digital fatigue** stands out as a subtle yet significant factor influencing employee **engagement** and well-being (Bennett et al., 2021). This paper develops a multilevel conceptual framework that links digital fatigue to engagement outcomes through the lenses of the **Job Demands-Resources (JD-R) model** (Bakker & Demerouti, 2017), **Conservation of Resources (COR) theory** (Hobfoll, 2001), and **Boundary Theory** (Chen & Karahanna, 2018).

By examining how digital fatigue functions across **individual**, **team**, and **organizational** layers, the framework offers a richer understanding of how psychological strain emerges in hybrid settings and how it may be alleviated. Key resources—such as digital autonomy (Mazmanian et al., 2013), supportive team norms (Mulki et al., 2009), and responsible leadership (Wang et al., 2021)—are positioned as critical buffers in sustaining engagement. In doing so, this paper not only contributes to theory development but also offers actionable insights for practitioners seeking to build healthier, digitally balanced workplaces.

5.2 Future Research Directions

While this paper presents a comprehensive conceptual model, it also opens up several avenues for empirical validation and extension:

1. Empirical Testing of the Propositions: Future researchers should operationalize the proposed constructs and relationships to test them using **quantitative survey methods**, **multilevel modeling**, or **longitudinal designs**. Such studies can help establish causal pathways and clarify the strength of

moderating and mediating effects (Wright et al., 2007; Bakker & Demerouti, 2017).

2. Exploring Sectoral and Cultural Variations: The experience of digital fatigue may vary across industries (e.g., tech vs. healthcare) and cultural contexts (e.g., collectivist vs. individualist societies). Comparative studies can uncover how different organizational and societal norms influence the manifestation and outcomes of digital fatigue (Turel et al., 2011; Chen & Karahanna, 2018).

3. Integrating Personality and Individual Differences: Future work could examine how **personality traits**, **digital literacy**, and **coping styles** shape one's susceptibility to fatigue and engagement decline. Such insights would enhance the framework's predictive validity and help tailor interventions to diverse employee needs (Sonnentag & Fritz, 2015).

4. Investigating Post-Pandemic Shifts: As organizations transition into more stable hybrid arrangements post-COVID-19, longitudinal research can explore whether digital fatigue levels decline, stabilize, or intensify over time, and how engagement trajectories evolve in response (Wang et al., 2021).

5. Examining the Role of Emerging Technologies: The introduction of AI-based productivity tools, virtual reality platforms, and digital well-being apps may significantly alter how employees experience digital fatigue. Future studies should assess how such technologies mediate or moderate the fatigue–engagement relationship (Bennett et al., 2021; Turel et al., 2011).

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