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# Reflectiveness: The Missing Link between Digital Mindfulness and Mindful Use of Digital Technology

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# **Reflectiveness: The Missing Link between Digital Mindfulness and Mindful Use of Digital Technology**

*Complete Research*

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## **Abstract**

The unprecedented reliance on digital technology has its costs; while productivity overall is on the rise, so is digital fatigue. This study explores how digital mindfulness can help reduce digital fatigue and increase digital wellness without compromising productivity. After theorizing digital mindfulness, this study introduces reflectiveness as a mediating variable between digital mindfulness and mindful use of digital technology (mindful action). It is argued that mindfulness, in the absence of reflectiveness, only leads to a temporary state of mind (short-term alertness or awareness) without a maintainable effect on mindful actions. However, reflectiveness allows employees to effectively analyze their relationships with digital technology. This mental process can result in knowledge integration and developing new perspectives that are essential for mindful action over time. Therefore, we postulate that digital mindfulness when linked to self-initiated reflection on technology use can reduce digital fatigue and increase digital wellness and ultimately improve the productive use of technology through mindful action.

## **Keywords**

Digital Mindfulness, reflection, mindful use, employee, productivity, digital fatigue, digital wellness.

## **Introduction**

The COVID-19 pandemic transformed the nature and organization of work. Today, technology continues to drive productivity in the post-pandemic world. However, this unprecedented reliance on digital technology has its costs; while productivity overall is on the rise, so is digital fatigue. Digital fatigue occurs in the workplace and manifests itself through burnout—feeling emotionally exhausted, mentally detached from work, harboring a negative attitude toward work, and suffering inefficacy overall. Digital fatigue is influenced by both general job characteristics as well as the spillover of non-work demands, such as environmental distractions and decreases in sustained attention. As a result, digital fatigue affects organizational productivity and profitability (Bennett et al. 2021; Leitão et al. 2021) as their employees navigate many personal and professional challenges caused by this phenomenon.

After theorizing digital mindfulness, this study explores how digital mindfulness in combination with reflectiveness can help reduce digital fatigue and associated burnout without compromising productivity. Digital mindfulness is a state of mind where employees intentionally optimize technology use through evaluating contextual factors and reflecting on their performance. Prior studies documented that mindfulness in digital environments is crucial in maximizing technological potential and improving meaningful technology use (Dane 2011; Sun et al. 2016; Thatcher et al. 2018). However, the link between digital mindfulness (Bishop et al. 2004), and mindful action in a digitally enabled workplace is not yet well

explored (Thatcher et al. 2018). Prior research also fell short in examining how digital mindfulness can reduce digital fatigue without negatively affecting productivity (Shapiro et al. 2008).

This study introduces reflectiveness as a mediating variable between mindfulness and mindful action, in particular mindful use of digital technology. Mindful use of digital technology may include examples such as optimizing the use of communication tools such as enterprise social media, strategizing the use of digital assets such as data, safeguarding sensitive information, and exploring systems' new features and functionalities. Reflectiveness, the outcome of reflective thinking practices, involves a review of the experience and an analysis of the consequences of previous actions (Hetzner et al. 2015; Jordan et al. 2009). We argue that mindfulness without reflectiveness does not necessarily reduce digital fatigue or enhance digital wellness. More specifically, mindfulness in the absence of reflectiveness only leads to a temporary state of mind (short-term alertness or awareness) without a maintainable effect on mindful actions—for example, due to the frequency, continuity, visibility, and variety of digital stimuli (Dane 2011; Levinthal and Rerup 2006). Reflection, in organizational settings, allows employees to critically analyze their thoughts and feelings and their environment. This analysis can result in knowledge integration and developing new perspectives that are essential for mindful action over time. Reflectiveness on feedback or experience is also a crucial factor driving implementation intention toward managing one's environment and self-regulation (Meier et al. 2016; Moore-Russo and Wilsey 2014). Therefore, we postulate that mindfulness practices in digitally enabled workplaces can reduce digital fatigue and enhance digital wellness only if these practices are linked to self-initiated reflection on several aspects of technology use. This study captures this claim in form of a theoretical framework and six propositions and discusses the possible future research avenues.

## **Background**

Employees experience burnout not only because of abusive supervisors and exploitative organizational rules; psycho-cognitive exhaustion due to *work fatigue* can also lead to burnout (Portoghese et al. 2020). Fatigue in organizational settings, in general, stems from professional, environmental, and personal challenges. For example, fatigue can arise from employees fighting to prove their worth to their employer and pushing themselves to perfection in their work tasks (Rice and Liu 2020). Work fatigue is also a result of an unhealthy work climate that promotes workaholism or allows workplace deviance (Portoghese et al. 2020). Facing new challenges at work also increases employee uncertainty (Hetzner et al. 2015; Leitão et al. 2021) and results in fatigue and ultimately burnout (Kerrissey et al. 2022). Moreover, personal stressors spill over into the work environment, such as physical or mental health or chronic family matters. Struggling to navigate work-life balance, especially during a challenging time like the recent pandemic, also intensifies work fatigue (Kerrissey et al. 2022).

### ***Digital Fatigue and Digital Wellness***

Among different causes of work fatigue, this study focuses on digital technologies and their unregulated use in modern workplaces. Working in digital environments can lead to digital fatigue when it requires additional preparation, complex resource appropriation, convoluted navigation, or sustained attention (Spartano, 2020). Digital fatigue can be defined as a state of cognitive or emotional exhaustion due to the overuse or misuse of digital tools and platforms. Digital fatigue can lead to the depletion of self-regulation in digitally enabled work practices or work environments (Bennett et al., 2021). Unlike typical work fatigue that can accumulate over time, digital fatigue can happen after just one event (a single episode of technology use such as trying to understand and use an analytical tool), not at the end of the workday or workweek. Employee fatigue can also change throughout the day in a nonlinear pattern, such that fatigue may decrease in the first few hours and then steadily increases (Bennett et al., 2021). Digital fatigue when remaining unaddressed negatively affects employees' digital wellness. In this study, we define digital wellness as the ability of employees to discern between the benefits and risks found in the use of digital technology and act responsibly to maximize the benefits and minimize the risks (self-regulated use of technology).

Previous research theorizes that mindfulness can improve wellness including digital wellness and address fatigue including digital fatigue since mindfulness practices are shown to improve individuals' reactions to stimuli including digital stimuli (Braun et al. 2020; Brown et al. 2007; Christopher et al. 2006; Shapiro et al. 2008). Mindfulness practices can also improve cognitive functioning in domains such as memory, sustained attention, and executive functioning. Thus, mindfulness practices may reduce digital fatigue and the negative effects of stress while helping manage cognitive and emotional demands (Braun et al. 2020;

Brown et al. 2007; Shapiro et al. 2008). Despite compelling evidence supporting the utility of mindfulness in reducing digital fatigue, digital mindfulness is yet to define.

**Mindfulness**

Mindfulness is an innate human metacognitive state that varies on an individual level, characterized by a focus on present-moment phenomena while perceptually aware of internal and external stimuli (Dane 2011). Mindfulness is defined as the 'awareness' that arises through intentionally paying attention in a judgment-free manner (Shapiro et al., 2006). Though many definitions of mindfulness exist (Table 1), previous research suggests mindfulness shapes how individuals interact with the environment (Dane 2011) through noticing detail in novel contexts, adapting expectations based on experience, and improving foresight (Rerup 2005). Mindful individuals are aware of internal psychological phenomena such as beliefs, thoughts, and values (Brown et al. 2007; Dernbecher and Beck 2017; Nyanaponika 1972). Moreover, mindful individuals orient their attention to the present and they tend to avoid productivity pitfalls such as mental preoccupations, stress, and other internal tensions that tax mental resources (Butler et al. 2006; Dane 2011; Thatcher et al. 2018). Mindfulness practice allows one to attend to present-moment stimuli, which allows those who practice how to inhibit attention toward future-oriented worries and past-oriented rumination by redirection attention to the present moment (Braun et al., 2020). Current mindfulness theory posits that the increased emotional control, self-regulation, and psychological adjustment allows for better decision-making across different contexts (Brown et al. 2007; Dane 2011; Sun et al. 2016).

Mindfulness in organizational contexts can be defined by employees' quality of attention and conserving attention—discriminating what to spend mental energy on (Rerup 2005). Although mindfulness is typically associated with a judgment-free state of mind, previous research shows that successful mindful states consequently manifest themselves by actively differentiating and refining previous experience through making cortical judgments (Langer 1989; Rerup 2005). This consequential judgment process can include experiences (or states of mind) that inform future actions. However, mindful application of prior experience alone is not always a guarantee for mindful action because mindful mental states unravel, as they are difficult to maintain and build (Rerup 2005).

**Table 1. Definitions of Mindfulness**

DOMAIN	DEFINITION	REFERENCE
Psychology	An inherent state of consciousness that involves consciously attending to one's moment-to-moment experience.	(Shapiro et al., 2008)
Psychology	Receptive attention to and awareness of present events and experiences.	(Brown et al., 2007)
Psychology	An approach for increasing awareness and responding skillfully to mental processes that contribute to emotional distress and maladaptive behavior.	(Bishop et al., 2004)
Management	An individual learning process characterized by a heightened awareness of the specific circumstances in a given situation.	(Jordan et al., 2009)
Management	The quality of collective attention that enables individuals to minimize errors, remain vigilant and respond effectively to unexpected events.	(Rerup, 2005)
Management	A state of consciousness in which attention is focused on present-moment phenomena occurring both externally and internally.	(Dane, 2011)
Organizational Science	Attentiveness to one's context and the capacity to respond to anticipated cues or signals from one's context.	(Levinthal & Rerup, 2006)
Information Systems	A focus on the present, attention to operational detail, and willingness to consider alternative perspectives.	(Butler et al., 2006)
Information Systems	Focuses on the present, pays attention to detail, exhibits a willingness to consider other perspectives, and expresses genuine interest in investigating options.	(Thatcher et al., 2018)
Information Systems	A cognitive process of alertness and dynamic awareness that invokes an increased state of involvement and wakefulness.	(Dernbecher & Beck, 2017)
Information Systems	A state of alertness and lively awareness that helps make optimal decisions and achieve high goals.	(Sun et al., 2016)

## **Digital Mindfulness**

Digital mindfulness is rooted in IT mindfulness, mindful use, or mindful interaction with information systems. Current research on IT mindfulness asserts two modes of post-adoptive information systems use, *intentional* and *automatic* (Dane 2011). Active users reflect on their experience and modify technology use as necessary. Active use requires the user to engage the technology by evaluating its potential and setting a goal to improve their productivity. On the contrary, habitual users deliberately use a system without evaluation—like driving a car on autopilot (Thatcher et al. 2018). Much of information systems development involves creating routines or automating processes (e.g. to eliminate errors) (Butler et al. 2006). Consequently, this type of development encourages mindlessness or automatic user behavior—which can be problematic when the system strips users of the ability to properly analyze new data and predict outcomes, affecting reliability and overall performance. Automatic post-adoptive user behavior works well in static environments, those where conditions rarely change but this type of behavior hinders productivity and reliable performance in dynamic task environments.

Mindful individuals combine new information with task expertise to achieve higher productivity and reliable performance in dynamic task environments—those requiring the user to operate in competitive or rapidly changing conditions (Dane 2011). Therefore, current mindfulness-based approaches to IT promote highly situated human cognition as an answer to the reliable productivity issues in the automatic post-system adoption (Butler et al. 2006; Dernbecher and Beck 2017) with four states, alertness to distinction, awareness of multiple perspectives, openness to novelty and orientation in the present (Thatcher et al. 2018). Accordingly, we define digital mindfulness as a situated state of mind with four qualities: awareness of options, alertness to digital stimuli, openness to novelty, and presentness in moment-by-moment interactions in digitally enabled environments such as social media sites, virtual reality environments, and virtual collaboration platforms. Previous research indicates that mindfulness with these qualities can be improved and produces enduring behavioral change (Thatcher et al. 2018); however, they fell short of offering a process-oriented view of ‘how’. Awareness, alertness, openness, and presentness are four states of mind that collectively create a cognitive capacity for more mindful actions or reactions (Dernbecher & Beck, 2017). These mindful mental states, however, tend to be temporary because they use a lot of mental resources. Hence, behavior change is the potential of this psycho-cognitive capacity only if it is maintained over time. This suggests mindfulness cannot directly be translated to mindful action unless it changes how individuals cognitively process their environments and their experiences. Accordingly, we can argue digital mindfulness alone does not necessarily lead to the mindful use of digital technologies and therefore (Sun et al., 2016), it is not enough to alleviate the effects of digital fatigue or guarantee digital wellness. We postulate that digital mindfulness can become a viable long-term solution to digital fatigue only when it is combined with reflection practices.

## **Reflection Practices**

At its core, reflection is descriptive of a mental process that involves analysis of past experiences and that can drive future action in multiple ways (Table 2). By ‘past experiences’, we mainly refer to past events and individual reactions to them. Previous research discussed the importance of reflection in different contexts, such as the authentic learning process (Herrington et al. 2014), team performance (Açikgöz et al. 2021; Jiang and Cameron 2020), and professional practice (Hetzner et al. 2015). These studies defined reflection as a future-oriented, yet the retrospective process that allows a critical review of experience and its consequences (Hetzner et al. 2015). These studies emphasized that while reflection is an intentional cognitive process, it can be emotionally triggered, directed, or received (Hetzner et al. 2015). Regardless of the motivation, reflection, through self-awareness to critically analyze experience, can integrate new knowledge and develop new perspectives thereby influencing future behavior. In this study, we define *reflectiveness* in a digital context as a quality of mind reflecting on previous interactions with digital technology and their outcomes. Accordingly, we conceptualize reflection practices as a psycho-cognitively-motivated judgment of the past to envision action scenarios, especially alternative scenarios, to achieve desirable goals (Açikgöz & Latham, 2021). We argue that digital mindfulness does not necessarily include reflectiveness since qualities such as alertness, awareness, openness, and presentness are free of judgment. However, self-judgment is the crux of reflectiveness that allows employees to evaluate their past and recent interactions with the technology while considering alternative scenarios.

**Table 2. Definitions of Reflection**

DOMAIN	DEFINITION	REFERENCE
Psychology	A future-oriented and retrospective cognitive-affective process of experiences, along with a critical analysis of their causes and effects that leads to new understandings, appreciations, and conclusions to guide future action and behavior.	(Hetzner, 2015)
Education	A purposeful, deliberate act of inquiry into one’s thoughts and actions.	(Moore-Russo & Wilsey, 2014)
Education	An active, dynamic and intentional process that profoundly influences one’s experiences.	(Herrington et al., 2014)
Business	A review of the experience and an analysis of previous actions with the changes in the context.	(Açikgöz et al., 2021)

Reflectiveness in organizational settings can occur in three ways: reflection-in-action, reflection-on-action, and reflection-for-action (Jordan et al., 2009). *Reflection-in-action* refers to the employees’ cognitive capacity to reflect or think about what is occurring while it occurs. This is an immediate reflective awareness that characterizes the active and dynamic process of critically analyzing routines (Moore-Russo and Wilsey 2014)—for example, when they are enabled or facilitated by digital technology. This type of reflection occurs as an employee acknowledges how their technology use impacts their situational outcomes and overall performance. Conversely, *reflection-on-action* refers to reflecting or thinking about what has already occurred (Jordan et al. 2009) Reflecting on the past is central to any learning process, including employees’ learning and professional development in a digital context. In addition, previous research states that reflection-on-action nurtures future-oriented reflections (Moore-Russo and Wilsey 2014). *Reflection-for-action* is the process of intentionally reflecting on past actions or decisions to guide future decisions (Moore-Russo and Wilsey 2014). Employees who are integrating past experiences into present situations are more likely to avoid mistakes or improve future interactions with technology. This approach to guide mindful action allows employees to avoid mindfulness practices limitations in behavior change such as its temporality and limited actionability.

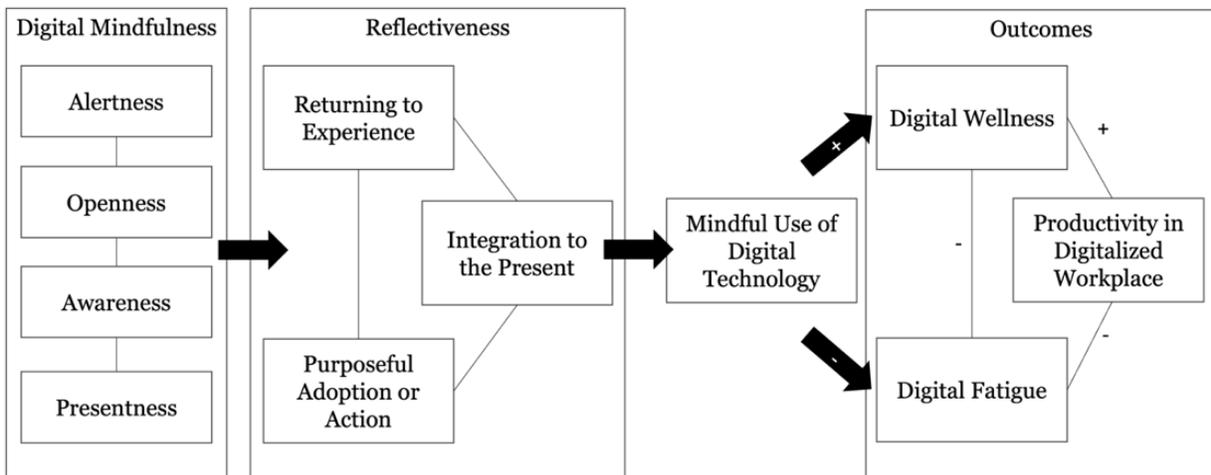
Reflectiveness on technology use can enhance both individual (Herrington et al. 2014; Jiang and Cameron 2020; Moore-Russo and Wilsey 2014) and team productivity (Açikgöz et al. 2021). However, reflection practices are less likely to influence the habitual use of technology (Hetzner et al. 2015). Therefore, mindfulness practices are necessary to change the users’ state of mind to cognitive alertness. This alertness is necessary to recognize past events (e.g., errors) (Hetzner et al. 2015) and draw in contextual factors (Herrington et al. 2014; Jordan et al. 2009). Hence, we argue that mindfulness and reflectiveness complement each other as mindfulness attends to the present moment to develop awareness (e.g., feelings about an event), and reflectiveness use that awareness to conscientiously analyze the past to inform future mindful behavior (Meier et al. 2016). This suggests reflectiveness mediates the relationship between mindfulness and mindful action. In the next section, we discuss how this dynamic can help employees navigate digital fatigue.

## Theoretical Model

Employees’ ability to optimize the use of digital technology depends on how they act or react to the technology affordances. Therefore, the chance to change or improve employees’ behaviors depends on whether they can change their perspectives (Butler & Gray, 2006). Prior studies noted that mindfulness when combined with reflectiveness can cause a fundamental shift in perspective and leads to positive outcomes through self-regulation, values clarification, and mindset shift (Bishop et al. 2004; Brown et al. 2007; Shapiro, S., Carlson, L., Astin, J., Freedman 2006). These changes lead to productive and self-regulated use of technology—referred to as *digital wellness* in this paper—and ultimately improve employee productivity. We argue that digital mindfulness alone is not sufficient to increase employee productivity or overall performance because these constructs depend on how well employees apply what they have (resources) and why they know (knowledge) (Rerup 2005b). While digital mindfulness creates a condition for the change in perspective or habitual use of technology, reflectiveness offers a mechanism to create a new frame of reference to make better decisions. Reflectiveness also allows employees to question the

efficacy of their everyday routines and reevaluate expectations in socio-professional and socio-technical settings (Jordan et al. 2009).

The reflection process is enabled by three interrelated mechanisms, *returning to the experience*, *integration into the present*, and *adaptation/action*. Returning to the experience refers to pulling information from memory and recollecting experience to make judgments about past actions. Employees also need to pull information from the present moment and use that added information to shape new perspectives on their interactions with technology. Integration into the present refers to reinterpreting details of prior experience in a new context as each situation is different. Returning to the experience and integration into the present work in tandem to help employees process information necessary to craft well-informed decisions on purposeful technology adoption or post-adoption use. Developing such intentionality helps employees to change their behavior to suit their goals and prevent repeated mistakes by adapting information from experience and present moment stimuli. These three mechanisms respectively allow employees to recognize past experiences, compare/contrast that experiences with the present moment, and make decisions on how to act/react accordingly. We capture this logic in a theoretical framework below (Figure 1) and six propositions that render the relationships between Digital Mindfulness, Reflectiveness, Mindful Actions, and their outcomes.



**Figure 1.** Mindful Use of Digital Technology in Organizational Settings, Antecedents, and Outcomes

Digital mindfulness includes the state of alertness that allows employees to observe their interactions with the technology and recognize the bright and dark sides of its use. Alertness support reflective behavior by allowing the employees to conscientiously recode their experiences with the technology rather than habitually engage with it. These mental images in turn enable employees to bring past experiences into the present moment along with any available feedback (returning to experience). Awareness of multiple perspectives also allows employees to identify novel scenarios regarding technology use and recognize new potential applications (Thatcher et al., 2018). A state of awareness is necessary to surpass the intended applications of technology when better options are available. Awareness feeds reflection practices by allowing employees to integrate alternative perspectives (e.g., different technology use cases).

Mindfulness is also characterized by a focus on the present moment, while still being aware of internal and external stimuli. Presentness occurs as employees give their full attention to technology use. While alertness is a state of readiness, presentness emphasizes engagement. Alertness and awareness both require presentness to unfold. This present state of mind helps employees fully engage with the technology and therefore, understand the effects of their actions within the context (integration to present). Moreover, digital mindfulness in terms of openness renders employees' propensity to actively pursue new ways of using and getting involved with technology. When an employee is more open to new experiences, they are more prone to finding different uses of technology to fit their situations or needs. When employees are curious and flexible in interactions with technology, they can more proactively and effectively reflect on

alternative use scenarios (purposeful adoption or action). Therefore, considering the role of awareness, alternates, presentness, and openness in feeding reflective thinking, we expect:

**Proposition 1.** *The higher the employee's Digital Mindfulness, the higher the employee's reflectiveness.*

We argue mindful use of technology can be triggered when employees process the cognitive and emotional inputs they collected during the mindfulness practices (Dane 2011). Employees can rethink their relationship with digital technology only when they reflect on when, why, and how the technology did or did not work in the past. Mindfulness cannot accomplish this on its own because mindfulness only seeks to acknowledge events rather than judge them. Reflection is necessary to process past events and their results. The outcome of such a process can supplement employees' existing decision-making framework. This may change how employees will use technology in the future even when they face a new but similar technology. This is rooted in the link between self-monitoring in digital environments and decision-making (Abhari et al. 2021) which suggests mindful action is an informed action that is primed by past experience, current needs, and future options (different action scenarios). Reflectiveness also aids employees in more effectively reacting to changes in their needs and adapting their technology use for new tasks (Moore-Russo and Wilsey 2014). Moreover, reflectiveness drives mindful action by helping employees pass sound judgments on different technological options and consciously develop intentions before choosing one technology over another. Therefore, accounting for the mediating role of reflectiveness, we expect:

**Proposition 2.** *The higher the employee's reflectiveness, the more mindful the use of digital technologies.*

Mindful action is a prerequisite to minimizing digital fatigue and maximizing digital wellness (Braun et al. 2020; Brown et al. 2007; Christopher et al. 2006; Shapiro et al. 2008). Employees who are taking mindful actions are in fact accounting for the benefits and risks of technology use and integrating that additional information into their decisions. Mindful action can be interpreted as choosing the right technology for the task, being open-minded to experimentation with new technology, and awareness of how these factors influence productivity. Researchers argued that mindful action can also help employees to self-regulate their technology use (Moore-Russo and Wilsey 2014; Shapiro, S., Carlson, L., Astin, J., Freedman 2006) which can help them to act responsibly to minimize the risks of overusing or misusing technology. In such conditions, employees can also better optimize the use of features and affordances for their intentional task by accounting for past experiences (with the same or similar technology). For example, an employee can adjust their technology use by turning off unwanted notifications to prevent distractions and maintain productivity. This can contribute to digital wellness as employees willingly and voluntarily challenge their assumptions, avoid repeating mistakes, and question the efficacy of routines. Therefore, we expect:

**Proposition 3.** *The more mindful the use of digital technology, the higher the employee's digital wellness.*

**Proposition 4.** *The more mindful the use of digital technology, the lower the employee's digital fatigue.*

We also expect self-regulated use of technology associated with lower digital fatigue and higher digital wellness provides employees with greater productivity. Mindful use of technology involves the use of the right technology or selective use of technology features. This can directly reduce digital fatigue and in turn, enhance employees' productive use of digital technology. Also, mindful use of technology can optimize the use of technology (e.g., optimize the allotted time) and consequently enhance the users' overall productivity (Abhari and Vaghefi 2022). More so, employees can avoid productivity pitfalls such as preoccupation and other distracting factors when mindfully using a technology. It is important since we know productivity depletes by the interruptions or obligations that come with inessential technology use (Montag & Walla, 2016). Furthermore, productivity does not only rely on how well employees apply what they know but also on how well they are situated to complete the task. This state of readiness and responsiveness developed by digital can lead to productive use of digital technology in the absence of digital fatigue. Therefore, we expect:

**Proposition 5.** *The higher digital wellness, the higher the employee's productive use of digital technology.*

**Proposition 6.** *The lower the employee's digital fatigue, the higher the employee's productive use of digital technology.*

## **Discussion**

While digital technology is redefining today's work practices, its overuse or misuse puts unsustainable stress on the employee, both personally and professionally. This form of technostress manifests itself in the form

of digital fatigue. Digital fatigue is also a threat to digital wellness. The combination of job demands, and job control has a significant impact on wellbeing/health and learning outcomes (Portoghese et al., 2020). When digital wellness deteriorates, productivity begins to decline. In this study, we examine how IT mindfulness practices in presence of reflectiveness can address this productivity challenge. We discussed that reflection is needed to re-examine the goals, methods, and strategies from the previous performance with ongoing environmental changes (Açikgöz & Latham, 2021). Through reflection, success and failure are evaluated to improve decisions and actions. Digital mindfulness only in the presence of reflectiveness can define the difference between mindless and mindful use of technology. We also noted that the lack of reflection may lead to more habitual than critical use of technology, which may push employees to use the system less mindfully. These employees may miss the opportunity to rethink the use of technology--neglects their capacity to reflect on their past and current actions.

Moreover, we theorize that mindfulness-driven reflection can indirectly reduce digital fatigue by provoking mindful actions. Mindful action is not about controlling employees' technology use but rather allowing them to make thoughtful decisions rather than following certain routines habitually. We emphasize the optimum use of technology—not minimizing the use—can reduce fatigue by shifting the employees' attention to the only necessary technology applications. Hence, mindfulness-based interventions may be able to reduce the effects of digital fatigue, which in turn can enhance digital wellness and promote productivity.

### ***Contributions***

Although the literature acknowledges the predictive power of mindfulness, the process of realizing mindful action, through mindfulness practices has yet to be explained (Thatcher et al. 2018). This study paves the way to introduce a theory of Digital Mindfulness that incorporates and emphasizes the role of reflection in driving mindful actions. This theorization potentially can solve an important concern regarding the inconclusive results on the role of mindfulness reported by prior studies. We argue the impact of reflection can partly explain the differences observed by these studies. This view of digital mindfulness in organizational settings integrates the benefits of mindfulness practices (awareness, openness, presentness, and alertness) as a state of mind with the action-generating nature of reflection, as a cognitive capacity, to explain the mindful use of digital technologies. Accordingly, we recognize two qualities of the mindful users of technology in an organization: digital mindfulness and reflectiveness. These qualities help employees to use their mindful observations of the past to recognize better use of a particular technology or its features in the future even when they challenge with a new task or new context.

Our study has practical implications for system design and process implementation. Reflectiveness practices, if introduced properly, can motivate employees to critically reflect on technology use and thus exert productivity to the task at hand. Mindful action should also be facilitated by design and carefully encouraged during the technology implementation. This approach to design would allow employees to record their interactions with the systems for future reference (e.g., when the technology or what features of the technologies work best for the intended task). Access to this information helps the employees to adjust and improve their relationship with the technologies, prevent digital fatigue and ultimately maintain productivity. Management teams can also plan targeted interventions to encourage employees to not only practice digital mindfulness but systematically reflect on their experiences and, when possible, share their reflections with their colleagues.

### ***Future Research***

More research is indeed needed to explore the relationships between digital mindfulness, and individual and organizational outcomes. By hypothesizing reflectiveness as a mediator between digital mindfulness and mindful action, future research can empirically investigate the importance of reflection in complementing mindfulness practices. Future research can also explore the relationship between digital mindfulness and productivity as well as the maintainability of digital mindfulness over time. The effect of digital mindfulness and reflectiveness on employees' reactions to the frequency, continuity, visibility, and variety of digital stimuli can also open new avenues for research. Empirical examinations of how digital mindfulness influences mindful technology use or adoption are also deemed necessary. Furthermore, future research should explore how to design technology with digital mindfulness in mind—technology focused on users generating solutions instead of automated processes and using guidelines instead of rigid routines. For example, measuring how dimensions of mindfulness relate to each other would help to create new

systems supporting mindful actions (Thatcher et al. 2018). Having a better understanding of how the dimensions of mindfulness grow, covary and change over time is also a topic of interest.

From an organizational science perspective, research on reflectiveness can better explain the relationships between the mindful use of digital technology and organizational roles, practices, routines, and power relations (Jordan et al., 2009). For example, it is not clear whether and how digital mindfulness can help employees to find problem-based solutions rather than getting stuck amid rigid processes and automated technology. Likewise, at an individual level, more research is needed to analyze the role of digital mindfulness in self-regulation and managing employees' virtual or hybrid work environments. In addition, future research can empirically explore the relationship between digital mindfulness and employees' wellness, including digital wellness. Longitudinal studies could also help understand how digital mindfulness would contribute to employees' sense of perspective to improve their working conditions over time, promoting long-term digital wellness. Lastly, future research is necessary to further explore the impact of digital mindfulness and reflectiveness on the cognitive, relational, emotional, behavioral, and temporal aspects of technology use and use governance.

## Conclusion

As technology continues to integrate into our work practices, all organizations need to understand how to enhance digital wellness and reduce digital fatigue to enhance their employee experience and productivity. Digital mindfulness offers a new framework for understanding how metacognition influences how employees interact with technology—employees' propensity to actively pursue mindful ways of digital technology. Contributing to this end, our study offers a new perspective on the role of reflectiveness as a mediating function carrying the effect of mindfulness on mindful actions in digital spaces.

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