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Digital Detox Research: An Analysis of Applied Methods and Implications for Future Studies

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Research Paper

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Abstract. The development and increasing use of technology worldwide can lead to potential negative consequences for individuals' well-being and productivity. To counteract negative consequences, both scientific research and practice have shown increasing interest in digital detox research, a rising phenomenon of abstinence and temporary or complete disengagement from digital technologies. To lay a foundation for future research, we conducted a systemic literature review with a focus on the methodological aspects of the existing empirical digital detox studies. Our literature search process revealed a total of 65 studies. Our analyses of this literature basis revealed five different research fields (communication, education, tourism, well-being and health, work environment), and we analyzed the empirical studies in these fields regarding applied research approach, research method, and sample size. This review provides methodological insights to advance the scientific inquiry on digital detox research, a relatively nascent, yet increasingly relevant research topic.

Keywords: Digital Detox, Digital Detox Research Designs, Empirical Digital Detox Studies, Methodological Review

1 Introduction

Digital technologies are ubiquitous in today's business, management, and organizational context. The adoption and use of digital technologies enables numerous benefits. These include, among others, pervasive access to information, rapid communication, and increased productivity (Riedl *et al.*, 2012). Businesses can also benefit in terms of effectiveness and efficiency (Melville, Kraemer and Gurbaxani, 2004) by continuously evaluating and adapting their business infrastructure to take advantage of improvements in digital technologies (Bharadwaj *et al.*, 2013). The overuse of digital technologies, however, also entails both psychological and physiological risks. A recent review, for example, examined the scientific literature on the risk of Facebook use (Stangl *et al.*, 2023). The results indicated that excessive and uncontrolled

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use of Facebook, the most used social networking site in the world (Statista, 2022), may be associated with various negative psychological (e.g., perceived depression) and physiological effects (e.g., human brain alteration). As another example, evidence indicates that technostress, also referred to as digital stress, also constitutes a serious issue in both economy and society in general (e.g., Tarafdar, Tu and Ragu-Nathan, 2010; Ayyagari, Grover and Purvis, 2011; Riedl, 2013).

The use and role of new digital technologies and rapid pace of technological change, however, brings increasing complexity and makes academic research necessary in many ways to ensure beneficial interaction between humans and technology. Constant interruptions during task performance (Chen and Karahanna, 2018; Puranik, Koopman and Vough, 2020; Stangl and Riedl, 2023b, 2023c), continuous electronic performance monitoring (Smith *et al.*, 1992; Aiello and Kolb, 1995; Kalischko and Riedl, 2020, 2021), unstable systems and long response times (Emurian, 1991, 1993; Riedl *et al.*, 2012, 2013; Anderson *et al.*, 2016; Jenkins *et al.*, 2016; Riedl and Fischer, 2018; Kalischko, Fischer and Riedl, 2020) are just some of the triggers for worry, anxiety, and stress that individuals face in an increasingly digital world, which may referred to as the "dark side" of digital technologies (Tarafdar, Gupta and Turel, 2013). Also, an overuse of digital technologies can lead to higher stress levels and negative effects on performance and productivity (for a review, please see Fischer and Riedl, 2017). For example, the radical adoption and extensive use of videoconferencing systems such as Microsoft Teams or Zoom can lead to stress-related depletion of physiological and cognitive resources as a consequence of prolonged and inappropriate use of videoconferencing tools, which is referred to as videoconferencing fatigue or Zoom fatigue (Bailenson, 2021; Montag *et al.*, 2022; Riedl, 2022). Notably, well-being and health can have an influence on work performance and productivity (Riedl, 2013; Pflügner *et al.*, 2021). Additionally, long-term exposure to stress can have adverse effects on well-being and health (Riedl, 2013), further exacerbating the impact on work performance.

To mitigate the negative consequences of the use and ubiquity of digital technologies, strategies are needed that both enhance well-being (Stephanidis *et al.*, 2019) and enable to work effectively and efficiently (Tams *et al.*, 2020; Baham *et al.*, 2022). Due to the increasing use of digital technologies and acceleration of processes worldwide (Couffe and Michael, 2017) and the resulting potential negative consequences (Mirbabaie, Stieglitz and Marx, 2022), the phenomenon of abstinence and temporary disengagement from digital technologies, hereafter referred to as *digital detox*, has received growing interest in both scientific research and practice. Drawing on prior definitions by Mirbabaie, Stieglitz and Marx (2022) and Syvertsen and Enli (2020), and in line with previous research (Stangl and Riedl, 2023a, 2023d), we define digital detox as the temporary or complete disengagement from digital technologies (e.g., abstaining temporarily from social media platforms such as Facebook, Instagram, or Snapchat), while also considering strategies to reduce exposure to digital technologies (e.g., taking regular breaks from computer work). Note that temporarily abstaining from the use of digital technologies seems to be a promising strategy to mitigate the negative psychological and physiological effects that may be caused by excessive and uncontrolled use of digital technologies. Indeed, research has found that brief absti-

nence from Facebook can significantly increase perceived life satisfaction (Tromholt, 2016) and also lower cortisol levels as an indicator of physiological stress (Vanman, Baker and Tobin, 2018). Similarly, reducing the daily time spent on Facebook can also significantly reduce perceived depressive symptoms while significantly increasing perceived life satisfaction (Brailovskaia *et al.*, 2020). Research on digital detox could thus contribute to well-being and health, and to the preventive recovery of equanimity and balance when using digital technologies (Mirbabaie, Stieglitz and Marx, 2022).

Following the call for more research to explore the phenomenon of digital detox by Mirbabaie, Stieglitz and Marx (2022), this review aims to analyze the methodological aspects of the existing literature on digital detox. Such a methodological review can advance a research topic by providing perspectives on appropriate research methods and insights into the appropriate use of different methods (Pinsonneault and Kraemer, 1993; Chong and Reinders, 2021). To the best of our knowledge, a systematic review on the methodological design of digital detox research does not exist. Hence, as a companion to the publication by Mirbabaie, Stieglitz and Marx (2022) on the first conceptualization of digital detox in the information systems discipline, we address the following research question: **How were the existing empirical digital detox studies methodologically designed?** More specifically, our analyses highlight aspects related to applied research approach, research method, and sample size of empirical digital detox studies.

The remainder of this paper is structured as follows. Section 2 describes the methodology of our review. Results are presented in Section 3. Section 4 follows with a discussion of the contributions and implications along with limitations of our study. Finally, in Section 5, we make concluding remarks and address implications for future research.

2 Review Methodology

The starting point of our research was to obtain an initial comprehensive overview of the quantity of digital detox research and existing definitions. As Mirbabaie, Stieglitz and Marx (2022) noted, conceptualizations of digital detox are inconsistent and often vague. In our exploratory search process, we were indeed able to identify several synonyms for digital detox, including "digital abstinence" (Turel, Cavagnaro and Meshi, 2018), "digital detoxing" (e.g., Wysocki, 2019), "digital detoxification" (e.g., El-Khoury *et al.*, 2021), "digital disconnection" (Schwarzenegger and Lohmeier, 2021), "digital reversion" (e.g., Baumer *et al.*, 2015), and "technology non-use" (e.g., Hesselberth, 2018).

Note that due to the conceptual ambiguity in current digital detox research (Mirbabaie, Stieglitz and Marx, 2022), we also had to iteratively expand our search term syntax and used specific search terms, namely "digital free tourism" (e.g., Cai and McKenna, 2023), "offline tourism" (e.g., Syvertsen, 2022), "unplugged tourism" (e.g., Pawłowska-Legwand and Matoga, 2021), and "digital nudge" (e.g., Purohit, Barclay and Holzer, 2020) to capture the characteristics of the different research

fields. In our literature search process, however, we then considered variations and alternative terms to the identified synonyms of digital detox. As an example, we used "internet detox" or "online detox" as different terms for digital detox, which we have therefore asterisked to generalize the term for search when it can have multiple meanings (i.e., *detox* includes "digital detox(ing)", "internet detox(ing)", or "online detox(ing)" and other terms that include "detox"). Overall, the keywords derived from this exploratory search process provided a methodologically sound foundation for the search of empirical digital detox studies.[1] Additionally, this overview can serve as foundation for a common language for researchers and prevent the further proliferation of synonyms (Barki, Rivard and Talbot, 1988).

To determine the scope and range of existing empirical digital detox studies and the methodological designs addressed therein, we conducted a mapping review (Paré, Trudel, Jaana, & Kitsiou, 2015; Schryen et al., 2017; Schryen, Wagner, Benlian, & Paré, 2020) and considered peer-reviewed journals and conference publications in German and English with no publication year restriction. Also, the review process was based on existing recommendations for conducting literature searches (Webster and Watson, 2002; vom Brocke *et al.*, 2009).

To be included in this review, we focused exclusively on peer-reviewed papers that empirically examined digital detox. The literature search process was conducted in eight literature databases. We searched ACM Digital Library, Association for Information Systems eLibrary, Emerald Group Publishing, EBSCO Information Services, IEEE Xplore, Science Direct, Scopus, and Web of Science with our keywords, ensuring a broad and valid consideration of empirical digital detox studies. After searching the databases, we screened all articles and removed duplicates and unrelated papers based on title and abstract, which left us 74 unique papers out of 325 papers originally found in the databases. The remaining papers were then analyzed in-depth based on the full text to ensure that keywords were not superficial and that the article contained content relevant to our research goal (i.e., methodological design of empirical digital detox studies). During this process, we excluded, for example, the paper by Mirbabaie, Stieglitz and Marx (2022) because this work was conceptual and not empirical in nature. Following this filtering strategy, 48 unique papers remained for further analysis. When reviewing a paper in full text, we also conducted a backward search (i.e., searching the references) and forward search (i.e., citation tracking) as final step to identify additional relevant literature, resulting in a total of 17 additional unique papers. As a consequence, the literature base of our analyses comprises 65 empirical digital detox studies published before and in June 2022, including 57 journal papers (88%) and 8 conference proceedings papers (12%).

[1] Thus, for our literature search process, we used several synonyms for digital detox (Digital Abstinence, Digital Detoxification, Digital Detoxing, Digital Disconnection, Digital Reversion, Technology Non-Use), specific search terms to capture characteristics of the different research fields (Digital Free Tourism, Digital Nudge, Offline Tourism, Unplugged Tourism), and variations and alternative terms to the identified synonyms for digital detox (Internet Detox, Online Detox), where we asterisked the term 'digital detox' to generalize the term for search when it can have multiple meanings (Internet Detox*, Online Detox*).

3 Review Results

In this section, we present the main findings of our literature review. Our literature search process revealed a total of 65 empirical digital detox studies. Our analyses revealed five different research fields (communication, education, tourism, well-being and health, work environment), which are described below with respect to applied research approach, research method, and sample size of empirical digital detox studies. We will also describe one study in more detail as an example. Overall, our review shows that most empirical studies on digital detox used an experimental research approach (34%) as research approach, followed by a qualitative (32%) or a quantitative research approach (26%), and only a small proportion used a mixed-methods (5%) or multimethod research approach (3%).

3.1 Digital Detox Studies in the Research Field of Communication

Three empirical digital detox studies were found. These 3 studies included 2 studies with an experimental research approach and 1 study with a quantitative research approach. These digital detox studies have examined the effects of environmental intervention on social interactions (Cesareo *et al.*, 2021), the effects of digital detox on communication capability (Anashkina, Shmatko and Tkachenko, 2020), and the effects of digital technology use on communication load and the relationship with perceived stress and psychological stress (Reinecke *et al.*, 2017). As an example, the research by Anashkina, Shmatko and Tkachenko (2020) investigated whether digital detoxing can improve communication skills and promote responsible media use. Before the experiment began, diagnostic methods were used to determine the level of involvement in media communication activities. Thereby, the participants were divided into three groups according to their level of involvement: high, medium, and low. Participants then took part in the digital detox camp "Offliner," where they completely abstained from digital devices and technologies for two days. Instead, they had to practice interpersonal communication techniques or offline activities (e.g., public relations). In this way, communication potential and responsible use of digital media could be determined. Finally, the diagnostic procedures were performed again. All three groups were found to have developed positive communication skills and greater control over their use of digital technologies. The second group (i.e., group with average level of involvement in media communication activities) made the greatest progress. An overview of the methodological design of the three studies that examined digital detox in the research field of communication can be found in **Table 1**.

Table 1. Digital Detox Studies in the Research Field of Communication

Reference	Research Method	Sample Size
Anashkina *et al.* (2020)	Longitudinal quasi-experimental study	36
Cesareo *et al.* (2021)	Case-control experimental study	74
Reinecke *et al.* (2017)	Cross-sectional survey study	1,557

3.2 Digital Detox Studies in the Research Field of Education

Two empirical digital detox studies were found. These 2 studies included 1 study with an experimental research approach and 1 study with a quantitative research approach. These digital detox studies have examined the digital technology consumption behaviors (Wood and Muñoz, 2021) and the effects of digital technologies on social interactions (Ugur and Koc, 2015). As an example, Ugur and Koc (2015) conducted a cross-sectional study to examine distraction by technology in the classroom. All 349 respondents reported owning a smartphone, with nearly 99% of them texting daily, and 98% also texting while waiting for class to start and using their smartphone intensively once or twice per class to engage with their smartphone. The smartphone is used during class to check the time or data (about 77%), use calculators (about 54%), check WhatsApp messages (about 60%), send messages (about 41%), surf the Internet (about 33%), or use Facebook (about 22%). According to the study, students are not willing to refrain from smartphone use without strict guidelines. These results also show that the need for digital detox measures in education is increasing. An overview of the methodological design of the three studies that examined digital detox in the research field of education can be found in **Table 2**.

Table 2. Digital Detox Studies in the Research Field of Education

Reference	Research Method	Sample Size
Ugur and Koc (2015)	Cross-sectional survey study	349
Wood and Muñoz (2021)	Experimental study with a time-series design	66

3.3 Digital Detox Studies in the Research Field of Tourism

Seventeen empirical digital detox studies were found. These 17 studies included 14 studies with a qualitative research approach, 2 studies with a mixed-methods research approach, and 1 study with a quantitative research approach. These digital detox studies have examined digital detox offerings (Amato, Rovai and Andreoli, 2019; Pawłowska-Legwand and Matoga, 2021; Schwarzenegger and Lohmeier, 2021), motives, motivation or tensions for or during digital detox vacations (Pearce and Gretzel, 2012; Paris *et al.*, 2015; Dickinson, Hibbert and Filimonau, 2016; Fan, Buhalis and Lin, 2019; Egger, Lei and Wassler, 2020; Díaz-Meneses and Estupinán-Ojeda, 2022; Zhang and Zhang, 2022; Hassan, Salem and Saleh, 2022; Jiang and Balaji, 2022; Syvertsen, 2022; Cai and McKenna, 2023), and the effects of digital detox vacation on the character (Karlsen, 2020; Li, Pearce and Oktadiana, 2020). As an example, Schwarzenegger and Lohmeier (2021) focused on analyzing digital detox offers by analyzing the online representation (i.e., websites and Instagram profiles) of tourism agencies, hotels, and other accommodation facilities. They also conducted nine interviews with executives in tourism marketing and hotel managers. The results allowed them to identify three main themes for promoting digital detox: (1) nature and authenticity, (2) (re)connecting with the self, finding balance, and (3) connecting with family/friends/locals. An overview of the methodological design of the seventeen studies that examined digital detox in the research field of tourism can be found in **Table 3**.

Table 3. Digital Detox Studies in the Research Field of Tourism

Reference	Research Method	Sample Size
Amato *et al*. (2019)	Content analysis of accommodations	6
Cai and McKenna (2023)	Longitudinal autoethnographic study	2
Díaz-Meneses and Estupinán-Ojeda (2022)	Cross-sectional survey study	346
Dickinson *et al.* (2016)	Content analysis of interviews	48
	Cross-sectional survey study	339
Egger *et al.* (2020)	Content analysis of interviews	17
Fan *et al.* (2019)	Content analysis of interviews	51
Floros *et al.* (2021)	Content analysis of interviews	17
Hassan *et al.* (2022)	Content analysis of interviews	20
Jiang and Balaji (2022)	Content analysis of interviews	20
	Cross-sectional survey study	460
	Cross-sectional survey study	368
Karlsen (2020)	Informal dialogues with participants	30
	Content analysis of interviews	4
Li *et al.* (2020)	Content analysis of interviews	65
Pawłowska-Legwand and Matoga (2021)	Content analysis of websites	270
Paris *et al.* (2015)	Content analysis of responses	25
Pearce and Gretzel (2012)	Content analysis of focus group discussions	37
Schwarzenegger and Lohmeier (2021)	Content analysis of online representations	N/A
	Content analysis of interviews	9
Syvertsen (2022)	Observations at offline sites	3
	Content analysis of dialogues	30
Zhang and Zhang (2022)	Content analysis of user-generated contents	22
	Content analysis of interviews	16

3.4 Digital Detox Studies in the Research Field of Well-Being and Health

Thirty-eight empirical digital detox studies were found. These 38 studies included 19 studies with an experimental research approach, 11 studies with a quantitative research approach, 6 studies with a qualitative research approach, 1 study with a multi-method research approach, and 1 study with a mixed-methods research approach. These digital detox studies have examined problematic digital technology use (Sheldon, Abad and Hinsch, 2011; Skierkowski and Wood, 2012; Hinsch and Sheldon, 2013; Turel and Cavagnaro, 2019; Handa and Ahuja, 2020; Fryman and Romine, 2021; Keller *et al.*, 2021; Phillips and Shipps, 2022), reasons for digital detox (Helsper and Reisdorf, 2013; Jorge, 2019; Muench *et al.*, 2020; Matthes *et al.*, 2022), reasons for returning to social media reversion after digital detox (Baumer *et al.*, 2015), the effects of digital detox on well-being during the COVID-19 pandemic (Liu *et al.*, 2021), the effects of environmental intervention on digital technology use (Tromholt, 2016; Stieger and Lewetz, 2018; van Wezel, Abrahamse and Vanden

Abeele, 2021; Olson *et al.*, 2022), the effects of environmental intervention on social interactions (Sutton, 2020), the effects of involuntary digital detox (Liao and Sundar, 2022), the effects of self-tracking technologies (Ko *et al.*, 2015; Kent, 2020), the general effects of digital detox on well-being (Anrijs *et al.*, 2018; Vanman, Baker and Tobin, 2018; Eide *et al.*, 2018; Hunt *et al.*, 2018; Turel, Cavagnaro and Meshi, 2018; Vally and D'Souza, 2019; Wilcockson, Osborne and Ellis, 2019; Hanley, Watt and Coventry, 2019; Brown and Kuss, 2020; Fioravanti, Prostamo and Casale, 2020; El-Khoury *et al.*, 2021; Hall *et al.*, 2021; Mutsvairo, Ragnedda and Mabvundwi, 2022) and performance (Dunican *et al.*, 2017), and the perception of digital detox applications (Nguyen, 2022). As an example, Hunt *et al.* (2018) conducted an longitudinal experimental study with a with randomized controlled trial (RCT) design with 143 participants to examine social media use in relation to well-being. Smartphone use was continued regularly at the beginning of the experiment. After one week, subjects were randomly divided into an experimental group (limiting media use to ten minutes per day) and a control group (not limiting media use). The restriction of social media use led to a significant decrease in perceived loneliness and depression in the experimental group compared to the control group after three weeks. Also, participants were generally more aware of their social media consumption, which was due to digital detox. However, the results did not show no significant differences between the two groups in terms of fear of missing out, perceived anxiety, perceived self-esteem, perceived social support, and psychological well-being. An overview of the methodological design of the thirty-eight studies that examined digital detox in the research field of well-being and health can be found in **Table 4**.

Table 4. Digital Detox Studies in the Research Field of Well-Being and Health

Reference	Research Method	Sample Size
Anrijs *et al.* (2018)	Longitudinal quasi-experimental study	10
Baumer *et al.* (2015)	Longitudinal panel survey study	3,539 (t_1)
	Content analysis of survey responses	3,539 (t_1)
Brown and Kuss (2020)	Longitudinal quasi-experimental study	61
	Content analysis of survey responses	61
Dunican *et al.* (2017)	Longitudinal quasi-experimental study	18
Eide *et al.* (2018)	Longitudinal experimental study with RCT design	127
El-Khoury *et al.* (2021)	Cross-sectional survey study	68
Fioravanti *et al.* (2020)	Longitudinal experimental study with RCT design	80
Fryman and Romine (2021)	Cross-sectional survey study	159
Hall *et al.* (2021)	Longitudinal experimental study with RCT design	130
Handa and Ahuja (2020)	Cross-sectional survey study	240
Hanley *et al.* (2019)	Longitudinal experimental study with RCT design	78
Helsper and Reisdorf (2013)	Cross-sectional survey study	559
Hinsch and Sheldon (2013)	Longitudinal panel survey study	114
	Longitudinal panel survey study	104
Hunt *et al.* (2018)	Longitudinal experimental study with RCT design	143
Jorge (2019)	Content analysis of online contents	N/A

Keller *et al.* (2021)	Longitudinal experimental study with RCT design	232
Kent (2020)	Longitudinal ethnographic study	14
Ko *et al.* (2015)	Longitudinal quasi-experimental study	62
Liao and Sundar (2022)	Content analysis of online contents	223,815
Liu *et al.* (2021)	Cross-sectional survey study	322
Matthes *et al.* (2022)	Cross-sectional survey study	453
	Longitudinal panel survey study	833 (t_1)
	Cross-sectional survey study	760
	Cross-sectional survey study	672
Muench *et al.* (2020)	Longitudinal panel survey study	120
Mutsvairo *et al.* (2022)	Content analysis of interviews	10
Nguyen (2022)	Cross-sectional survey study	263
Olson *et al.* (2022)	Longitudinal experimental study with interventional design	51
	Longitudinal experimental study with RCT design	70
Phillips and Shipps (2022)	Cross-sectional survey study	475
Sheldon *et al.* (2011)	Cross-sectional survey study	1,002
	Cross-sectional survey study	96
	Longitudinal panel survey study	98 (t_1)
	Longitudinal panel survey study	78
Skierkowski and Wood (2012)	Longitudinal experimental study with RCT design	23
Stieger and Lewetz (2018)	Longitudinal experimental study with interventional design	152
Sutton (2020)	Longitudinal ethnographic study	~ 1,000
Tromholt (2016)	Longitudinal experimental study with RCT design	888
Turel *et al.* (2018)	Longitudinal experimental study with RCT design	555
Turel and Cavagnaro (2019)	Longitudinal experimental study with RCT design	415
Vally and D'Souza (2019)	Longitudinal experimental study with RCT design	78
van Wezel *et al.* (2021)	Longitudinal experimental study with RCT design	76
Vanman *et al.* (2018)	Longitudinal experimental study with RCT design	123
Widdicks *et al.* (2022)	Content analysis of workshop discussions	13
Wilcockson *et al.* (2019)	Longitudinal experimental study with interventional design	36

3.5 Digital Detox Studies in the Research Field of Work Environment

Five empirical digital detox studies were found. These 5 studies included 3 studies with a quantitative research approach, 1 study with a qualitative research approach, and 1 study with a multimethod research approach. These digital detox studies have examined the effect of digital detox on work performance (Basu, 2019; Umasankar *et al.*, 2022) or on focused work performance (Karlsen and Ytre-Arne, 2022) or during the COVID-19 pandemic (Schmitt, Breuer and Wulf, 2021), as well as the effect of digital detox on perceived social connectedness of remote workers (Mirbabaie *et al.*, 2020). As an example, the research by Basu (2019) focused on the effects of digital

detox on individuals' work performance. Indeed, there are some opportunities in the workplace to integrate digital detox. These include regular screen breaks, relaxing classes such as yoga, and technology-free meetings. A survey of 70 employees who had already undergone digital detox was used to test the hypothesis of whether digital detoxing affects individual worker performance. According to the study, digital detox leads to better work performance among employees. The participants also confirmed that digital detox helped them to identify more with their work and increase their motivation to work. An overview of the methodological design of the five studies that examined digital detox in the research field of work environment can be found in **Table 5**.

Table 5. Digital Detox Studies in the Research Field of Work Environment

Reference	Research Method(s)	Sample Size
Basu (2019)	Cross-sectional survey study	70
Karlsen and Ytre-Arne (2022)	Content analysis of interviews	22
Mirbabaie *et al.* (2020)	Experimental study with RCT design	36
	Content analysis of interviews	12
Schmitt *et al.* (2021)	Cross-sectional survey study	403
Umasankar *et al.*(2022)	Cross-sectional survey study	463

4 Review Discussion

The review results provide a valuable foundation for future research activities on digital detox research. Based on our results, in the following we describe contributions and implications along with limitations that could provide opportunities for future research on this relatively nascent and highly relevant research topic.

4.1 Implications and Contributions

We contribute to research by providing a perspective on the methodological design of empirical digital detox studies. Overall, our review shows that most empirical studies on digital detox used surveys (34%) as research method, followed by a content analysis (30%) or experiments (30%), and only a small proportion used ethnography (4%), informal dialogues (1%) or observations (1%). Notably, this distribution varied by research field. For example, in the research field "Tourism" content analyses (71 %) are predominantly used, whereas in the research field "Well-Being and Health", experiments (44 %) or surveys (40 %) are predominantly used. The sample sizes of empirical digital detox studies ranged from 2 to 223,815 (mean [±SD]: 3,051 ± 24,843; median 78). Notably, this distribution varied by research method. For example, the sample size for surveys ranged from 68 to 3,539 (mean [±SD]: 495 ± 734; median 293), while for experiments it ranged from 10 to 888 (mean [±SD]: 157 ± 209; median 78).

As main implication, our review revealed that research on digital detox constitutes a nurturing ground for the application of measurement pluralism rather than focusing

on a particular research approach. Based on the analysis of applied research approaches, we can draw two major implications for empirical digital detox studies. *First*, one possible research approach could be qualitative research combined with elements and benefits of quantitative research approaches in a mixed-methods approach (Venkatesh, Brown and Bala, 2013; Venkatesh, Brown and Sullivan, 2016). Indeed, the sequential collection and analysis of qualitative and quantitative data contribute to gaining deeper insights into the perception of digital detox and expanding our current knowledge. As an example, Dickinson, Hibbert and Filimonau (2016) used a qualitative research approach to explore digital detox in depth in a tourism context before then examining it in quantitative research to understand patterns in a broader context.

Second, to extend previous research findings, research could also incorporate neurophysiological measures as part of a multimethod research approach (Brewer and Hunter, 1989; Johnson, Onwuegbuzie and Turner, 2007) to complement self-report or behavioral measures in research designs to draw more definitive conclusions about effects (e.g., Léger *et al.*, 2014). Indeed, neuroscientific and neurophysiological tools and measurements play a vital role in advancing various research fields (e.g., interruption science; Stangl and Riedl, 2023e) and could be used to better understand human cognition, emotions, and behavior, along with their consequences, in the context of the development, adoption, and use of digital technologies (Riedl *et al.*, 2010, 2017; Dimoka *et al.*, 2012; Riedl, Davis and Hevner, 2014; Riedl and Léger, 2016) (for a detailed discussion of methods used in cognitive neuroscience, please see Senior, Russell and Gazzaniga, 2009; for an overview of neurophysiological tools with a discussion of the strengths and weaknesses of each measurement method per research setting, please see Riedl and Léger, 2016 pp. 47-72). Among other neurophysiological measurements, heart rate and heart rate variability, for example, can be used as physiological indicators of autonomic nervous system activity for various measurement purposes, such as arousal or perceived stress (Stangl and Riedl, 2022b). In particular, advancing technology has enabled various methods to track and monitor physiological parameters, including smart clothing or other wearable devices, which could be used as a potential early warning system to detect stress in the workplace in real time (Stangl and Riedl, 2022a, 2022c). Notably, we also identified three studies (i.e., Dunican *et al.*, 2017; Anrijs *et al.*, 2018; Vanman, Baker and Tobin, 2018) that used neurophysiological measurements in their research. For example, Vanman, Baker and Tobin (2018) measured participants' salivary cortisol, which is considered an objective indicator of stress (Rohleder *et al.*, 2006; Pearlmutter *et al.*, 2020). Hence, conducting studies with neuroscientific and neurophysiological measurements (e.g., salivary cortisol before and after digital detox intervention) seems promising to advance digital detox research (for a review on digital detoxing from a neurophysiological measurement perspective, please see Stangl and Riedl, 2023d). Overall, a combination of different research approaches offers promising opportunities for future research to explore and systematically examine digital detox.

4.2 Limitations

Our work is not free of limitations. First, a limitation of our review is the language restriction, as we only included studies in German or English. Therefore, the results cannot be generalized and excluded studies in other languages. As an example, we identified a study in Turkish (Sunar, Gökçe and Cihangir, 2018), which we were unable to include in this review. Second, the number of search terms and search strings used is another limitation. Due to the conceptual ambiguity in digital detox research (Mirbabaie, Stieglitz and Marx, 2022), it is possible that some empirical research was overlooked and not included in the literature review. To the best of our knowledge, however, this review is the most comprehensive review of peer-reviewed empirical digital detox studies currently available, as other reviews were able to identify a much smaller number of studies despite the inclusion of non-peer-reviewed papers. For example, the review by Özdemir and Goktas (2021) identified 20 studies and the review by Radtke *et al.* (2022) identified 21 studies. Future research addressing the above limitations could therefore provide further insights into digital detox research.

5 Concluding Remark

Digital detox seems promising to enable a conscious, temporary break from the digital world. Indeed, research has shown that various digital detox measures help to reduce stress, strengthen social bonds, and escape from the daily hustle. Especially in recent years, the number of scientific publications on digital detox has increased steadily. Therefore, to survey and analyze the previous research and the methodological design of the empirical digital detox studies, a systematic literature review was conducted, which also provides researchers with an important overview of the different methodological designs to investigate digital detox. We conclude that research on digital detox is still in a relatively nascent stage. However, we expect an increasing number of further publications on this highly relevant research topic in the coming years. Hence, it will be rewarding to see what insights future research will reveal on digital detox.

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