

## Stress-inducing or performance-enhancing? Safety measure or cause of mistrust? The paradox of digital surveillance in the workplace



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### ABSTRACT

The advent of digital technology has inevitably changed the modern workplace. While digital transformation has been beneficial for companies in terms of added productivity and efficiency—it has simultaneously unveiled several grey areas that are worth investigating, such as the topics of digital surveillance and its implications for technostress, performance and trust. While academic research has kept pace with rising industry interest, especially in the wake of the COVID-19 pandemic, the literature on digital surveillance has only recently gained traction compared to the rest of the digital transformation literature. In an effort to synthesize extant academic production on digital surveillance and provide guidance for future research directions on the topic, the present study utilizes a critical systematic literature review (SLR) to analyze literature published on the topic of digital surveillance. Making use of a clearly defined search protocol, we examined the content of 57 distinct studies. Subsequently, three main thematic areas of research are identified through the use of content analysis: the implications of digital surveillance on technostress, the correlation between digital surveillance and performance, and the ways in which digital surveillance can affect trust and acceptance. Additionally, several gaps are identified in the extant literature, and subsequent paths for further research are proposed. The study offers both theoretical and practical implications. From a theoretical perspective, the present SLR contributes to the literature stream of digital surveillance by critically reviewing and synthesizing extant scientific production and compiling a research agenda for future studies. From a practical perspective, this study provides valuable insights to support current efforts by practitioners seeking to effectively implement digital surveillance in the workplace.

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### Introduction

Information and communication technologies (ICT) have disrupted not only the market but also the foundations of organizational culture and the daily work life of most companies (Montealegre & Cascio, 2017). While academics and practitioners have generally praised ICT for its positive impact on the productivity, efficiency, and effectiveness of organizations (Bresciani et al., 2022; Kraus et al., 2022a), the constant use of digital technologies has also raised a series of ethical, pragmatic and cultural issues that unveil the dark side of the so-called future of work (Marsh et al., 2022). Aspects such as work overload, cyberslacking, work–home conflict, and the invasion of privacy have all blurred the lines between the beneficial and detrimental use of technology at work. Additionally, knowledge work will increasingly be performed virtually, and the adoption of

technology will intensify over the years (Chatterjee et al., 2022); hence, companies need to react quickly to the changes and adapt to new technological scenarios (Bhatti et al., 2022), especially in the dawn of COVID-19 (Bertello et al., 2022). Among these new technology-powered practices, digital surveillance (also referred to as digital monitoring) subsumes the observation, inspection, and recording of employees' performance and behavior in the workplace (Tweedie, 2013). While the physical surveillance of subordinates by supervisors still exists, its digital counterpart has gained much more traction in recent years, especially since the COVID-19 pandemic began (Bentotahewa et al., 2021; Payne, 2018).

Consequently, digital surveillance has recently become a point of contention, drawing attention from academics and practitioners (Bertello et al., 2021; Stark et al., 2020; Svantesson, 2012). As pointed out by the study of Frith and Saker (2020), digital surveillance falls within the conceptual boundaries of rushed innovation. By definition, rushed innovation lacks pre-meditation and sparks from improvisation, consistent with the abrupt cultural shift companies have

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experienced during the pandemic (Hermosilla, 2021). In other words, the intensified use of digital surveillance during the pandemic was more likely justified by functionality and usability over other concerns (Frith & Saker, 2020; Newlands et al., 2020). The debate between academics and policymakers around rushed and responsible innovation is now more relevant than ever as we venture towards a post-pandemic world still somewhat shaped by the lessons learned during the COVID-19 crisis (Samuel et al., 2021).

More specifically, digital surveillance is designed to enable the continuous monitoring of the actions and behaviors of employees (Stark et al., 2020; Svantesson, 2012), thus stimulating an organizational culture focused on productivity and merit (Cordella & Cordella, 2017). However, technological intrusions into workers' personal spaces impact employee performance negatively (Zuboff, 2015), as they can cause technostress (Ayyagari et al., 2011; Camarena & Fusi, 2022). Technostress was first defined by Brod (1984) as the "modern disease of adaptation caused by an inability to cope with the new computer technologies healthily." In today's era, technostress has been shown to cause burnout, loss of motivation, fatigue, and decreased employee productivity (Newlands, 2021; Stark et al., 2020). The above dynamic creates a paradoxical situation in which the antecedents and the outcomes of digital surveillance are contradictory (Hessari & Nategh, 2022). Further paradoxes are to be found when examining the outcomes of digital surveillance on the trust and acceptance of new technologies (Doberstein et al., 2022; Holland et al., 2015). While digital surveillance can be presented as an essential part of the employer's duty of care in terms of occupational safety and health (Newlands, 2021), conflicts may arise in the workplace when employees face fears of total surveillance and the loss of privacy and freedom at work (McParland & Connolly, 2020). This creates a domino effect in which technologies meant to guarantee, among other things, safety in the workplace instead generate forms of workplace resistance, such as data obfuscation (Sarpong & Rees, 2014).

Over the past two decades, scientific production has begun to approach digital surveillance with a critical perspective to determine its effect on employee productivity (Martin et al., 2009). The need for a structured research agenda on digital surveillance was echoed by Marsh et al. (2022), who noted the already extensive literature on the topic and urged researchers to investigate this specific literature stream. Similarly, Fusi & Feeney (2018) suggested that despite its relevance in today's workplace, digital surveillance remains an understudied aspect of technology use. The last attempt at reviewing the topic of digital surveillance was made by Stanton (2000). However, a more recent article authored by Ravid et al. (2020) systematically reviews the topic of performance monitoring, yet it does so by focusing primarily on contributions published between 2000 and 2010. Hence, the need for a more updated research agenda remains, especially in the dawn of COVID-19. This gap is particularly pressing due to how rapidly the digital transformation literature has grown in recent years (Chatterjee et al., 2022; Kraus et al., 2022b) and the need for researchers to uncover the dark side of the digital workplace (Marsh et al., 2022), in parallel with the positive attention digital transformation has had on contributions to the fields of business and social science (Bresciani et al., 2021). Our review attempts to address the above gap by consolidating, synthesising the body of literature on digital surveillance, and unveiling a more comprehensive and nuanced look at its paradoxes. Thus, to the best of our knowledge, no attempt has been made to synthesise scientific production specifically surrounding the topic of digital surveillance and provide a comprehensive understanding of the phenomenon. Hence, the present SLR intends to address the following research questions:

RQ1: What is the research profile of the relevant extant literature on digital surveillance?

RQ2: To what key research themes and important related issues has the academic discourse revolved around in recent years?

RQ3: What are the gaps and limitations of extant studies on digital surveillance and possible avenues for future research?

RQ4: How can research in the domain of digital surveillance be advanced based on extant literature gaps?

To address the above research queries, the following steps have been taken. We initially employed a robust research protocol, validated by several prior studies and meant to identify and extract a consistent amount of published works to be analysed (Kaur et al., 2022; Rohwer et al., 2022; Ravid et al., 2020). For RQ1, several descriptive statistics were generated, and we highlighted indicators such as annual scientific production, most cited sources, and country-specific production. As to RQ2, qualitative sample analysis was performed around emerging themes and trends found in the sample (Kaur et al., 2022; Rohwer et al., 2022). Through qualitative content analysis, the authors organised and structured the content found in the digital surveillance literature stream. Subsequently, the qualitative analysis RQ3 was addressed by identifying several research gaps and potential research questions specific to each of the themes that had been previously identified (Schneider, 2018). Identifying potential avenues for future research was followed by a proposed framework that could provide researchers with a valuable tool for conceptual and empirical work in this area. Finally, the framework answers RQ4, as it is intended to be used as a blueprint for future research on digital surveillance (Kaur et al., 2022).

Both practical and theoretical contributions are found in this paper. From a theoretical perspective, the contributions are twofold. First, we provide a theoretical framework to help academic researchers and practitioners develop a more comprehensive and nuanced understanding of digital surveillance. Second, this study strives to contribute to the literature stream of digital surveillance by depicting several research gaps and providing future research directions to expand upon areas that have yet to be fully understood. From a practical perspective, this SLR aims to provide practitioners and policymakers with a deep understanding of the phenomenon of digital surveillance, with a specific focus on the factors that contribute to the creation of digital surveillance, along with how it can be avoided or mitigated.

The paper is structured as follows: Section 2 provides a brief description of the conceptual boundaries of the study, which will be helpful in adequately setting the research protocol for the SLR. Section 3 features a comprehensive look at the methodology being used in the study and the research profile of the extant literature. Section 4 presents the results of the qualitative coding and the four emerging themes identified for the review. Section 5 outlines a critical review of the research gaps found in the sample to highlight future research avenues. Section 6 presents a comprehensive theoretical framework that serves both as a synthesis of extant knowledge and theoretical underpinnings for future research. Finally, the study concludes with the implications for theory and practice in Section 7, and conclusions are drawn in Section 8.

### Scope of the review

We must focus on the theoretical definitions of the keywords used for the review to draw the conceptual boundaries necessary for the search protocol. Starting from digital surveillance, we find that the regulation of work performance through monitoring historically dates back to the 'laboratories' founded through Taylorism (1911). The goal of employee surveillance originally was to guarantee productivity and efficiency at all times (Cicchetti, 2011). In recent times, Lyon defined *surveillance* as "any collection and processing of personal data, whether identifiable or not, to influence or manage those whose data have been garnered" (2001). Expanding upon the above definition, Graham & Wood (2003) distinguished between analogue and digital surveillance, further implying the more pervasive nature

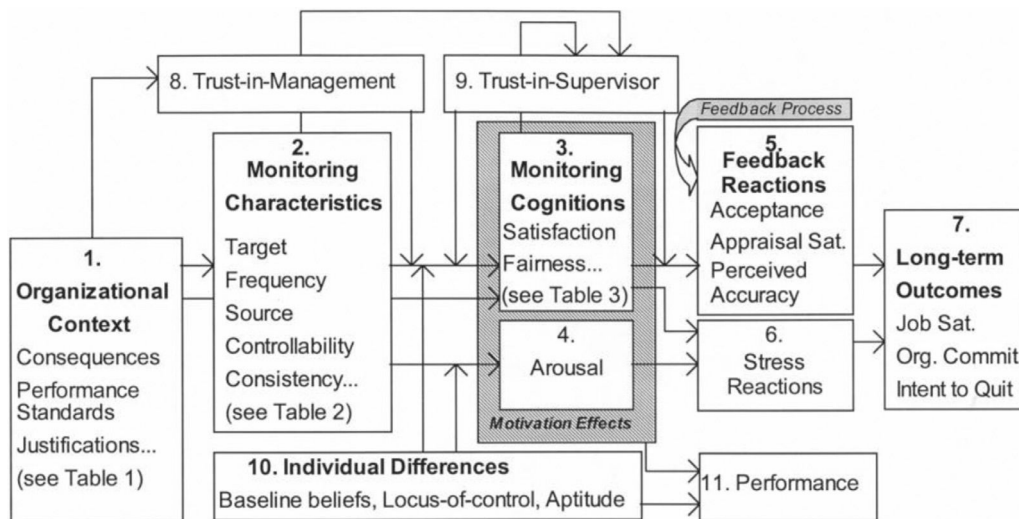


Fig. 1. Stanton's Conceptual Framework (2000: 89).

of electronic surveillance. Subsequently, [Introna and Wood \(2002\)](#) analyzed the different characteristics of digital surveillance and how it allows for data storage, transmission, and computation. Over time, digital surveillance has progressively replaced physical surveillance ([Ball, 2010](#)). Consequently, the scope of digital surveillance has shifted ([Fuchs, 2013](#)), as it now encompasses a wide range of perspectives.

A significant contribution to electronic workplace surveillance was provided by [Stanton \(2000\)](#), who unveiled the complex and multifaceted nature of monitoring technologies. Their framework, featured in [Fig. 1](#), has been extensively used in research over the 2000–2010 decade, making their contribution one of the most cited in the field. The framework was initially developed to organize a literature review on the topic and presents a comprehensive overview of the electronic workplace by incorporating both attitudinal and motivational effects of performance monitoring on monitored employees.

Nowadays, issues related to digital surveillance are rampant, and they have been further amplified by the recent COVID-19 outbreak ([Kraus et al., 2021](#)), which has paved the way for Industry 5.0 and a much more intensified use of technology in the workplace ([Bresciani et al., 2021](#)). For instance, companies might want to monitor employees to combat nonproductive behavior such as cyberloafing, a process defined by excessive private internet use at the workplace ([Bhave et al., 2020](#); [Ravid et al., 2020](#)). Digital surveillance has, however, several questionable effects on employees' well-being and ethical and data protection concerns ([West & Bowman, 2016](#)). According to technostress literature, digital surveillance acts as a stress-inducing factor that leads to decreased performance and job satisfaction ([Backhaus, 2019](#); [Carlson et al., 2017](#)).

With the above in mind, our study interprets digital surveillance as monitoring employees via modern technology ([Backhaus, 2019](#)). For this review, we include studies focusing on surveillance via any source that could be called digital. This includes monitoring emails or web activities, tracking via GPS, body-worn cameras, and any technology that allows real-time employee performance tracking ([Moore & Piwek, 2017](#)). On the other hand, the study does not include contributions to the 'dark side' of technology in the workplace. Instead, we exclude records that did not specifically investigate digital surveillance or workplace monitoring-related concerns that fit the above thematic boundaries.

## Methodology

The SLR approach allows for an in-depth analysis of prior literature meant to highlight and detail the antecedents of digital

surveillance, its effects on technostress, and the consequences of the phenomenon ([Saunila, 2020](#)). SLR is a popular research method that has been extensively implemented in business and social science research over the years ([López Maciel et al., 2017](#)). SLRs require a rigorous protocol for assessing and identifying studies relevant to the proposed research questions ([Ravid et al., 2020](#)). In other words, through a rigorous set of inclusion and exclusion criteria, researchers adopting the SLR methodology can filter out contributions that do not fit the conceptual boundaries of the study. The sections below will be used to depict and illustrate the steps taken for the review, including the criteria set to evaluate the contributions of the sample.

### Research objectives and search protocol

The first step is to clearly define the objectives of the review, and the initial goal is to profile extant research on digital surveillance ([Ravid et al., 2020](#)). By 'research profile,' we refer to a series of descriptive statistics of the chosen sample, including annual scientific production, most cited sources, and country-specific output ([López Maciel et al., 2017](#)). By profiling the extant research, we can estimate the current scientific consensus and obtain a clear-cut idea of how this specific literature stream has developed in recent years. The second objective is to delineate emerging research themes. The above is achieved via qualitative sample content analysis and through multiple rounds of qualitative coding and discussion among the authors. The third objective is to unveil extant research gaps in the literature; this is achieved through an in-depth analysis of the sample, both from a theoretical and a methodological perspective. The fourth and final objective is to develop a conceptual framework that can synthesize the data found in the review and act as a basis for further research on the topic. Once the objectives have been set, we look to recently published SLRs to reference the methodological steps.

The relevant keywords used in our search were defined based on the conceptual boundaries set and discussed in Section 2. The initial keywords were 'Digital,' 'Virtual,' 'Monitoring,' 'Surveillance,' and 'Technostress.' We used these keywords for an initial search through Google Scholar to test their validity and reliability, as suggested by the work of [Kaur et al. \(2022\)](#). We then sorted the results by relevance and analysed the first 100 articles provided by the search engine. This preliminary search allowed us to attain a more comprehensive look at the keywords currently used by authors and expand our search syntax accordingly to avoid leaving valid contributions out of the review. Concurrently, still inspired by the methodological protocol proposed by [Kaur et al. \(2022\)](#), we searched the exact keywords in top journals that have published research on digital

transformation and innovation, namely the Journal of Business Ethics, Technological Forecasting and Social Change, the Journal of Business Research and the Journal of Engineering and Technology Management. By cross-referencing the list of keywords gathered from both analyzes, we updated the initial list accordingly. Finally, we consulted an external team of academics and practitioners with backgrounds in digital transformation, human resources management, and organisation. The final string was set as follows:

((TITLE-ABS-KEY ('electronic AND surveillance') OR TITLE-ABS-KEY ('computer\* AND surveillance') OR TITLE-ABS-KEY ('digital AND surveillance') OR TITLE-ABS-KEY ('technostress') OR TITLE-ABS-KEY ('digital AND monitoring') OR TITLE-ABS-KEY ('digital AND workplace') OR TITLE-ABS-KEY ('e-surveillance') OR TITLE-ABS-KEY ('electronic\* AND surveillance') OR TITLE-ABS-KEY ('smart AND phone AND surveillance') OR TITLE-ABS-KEY ('tablet AND surveillance') OR TITLE-ABS-KEY ('electronic AND monitoring') OR ('computer\* AND monitoring')) AND ((TITLE-ABS-KEY (work) OR TITLE-ABS-KEY (workplace) OR TITLE-ABS-KEY (job) OR TITLE-ABS-KEY (employment) OR TITLE-ABS-KEY ("working place") OR TITLE-ABS-KEY ("organizational context")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j"))

Scopus and Web of Science (WoS) databases were used for our research due to their extensive use in social science and business research and their coverage of many social science, technology, and business journals.

Concerning the inclusion criteria, we specifically focused on records featured in peer-reviewed journals. This decision was made to ensure that the findings were as scientifically sound as possible (López Maciel et al., 2017). Consequently, in terms of exclusion criteria, we opted to remove contributions that were not subjected to a rigorous peer review process from the sample. In other words, conference proceedings, editorials, book chapters, and website articles were not considered for the review. We further excluded studies published before 2010 in an attempt to provide a more current perspective on the topic of the review compared to previously published SLRs (Ravid et al., 2020). A further exclusion criterion was set by filtering out studies not from the business field. Furthermore, we excluded studies that did not fit the conceptual scope of the SLR. In other words, we carefully reviewed the titles, keywords, and abstracts of each record found through the initial rounds of the search. We then compared the results with the theoretical boundaries depicted in Section 2 and discarded studies that did not fall within these boundaries. This process also allowed us to identify and remove duplicates from the sample.

Through an initial search of Scopus and WoS, a total of 1188 studies were found. The search was conducted in July 2022. The inclusion and exclusion criteria set above were preemptively applied to the search via the filtering options made available by both databases. Through the use of Microsoft Excel, we were able to identify and exclude duplicate records and merge both pools into a single pool consisting of 787 records. We then applied two subsequent levels of screening. For the first level, the authors focused on the titles and abstracts of each record and compared them with the conceptual boundaries of the study discussed in Section 2. Records that were deemed unfit for inclusion were consequently excluded. Then, a panel of two professors with backgrounds in digital transformation and organizational studies, alongside one professional from the private sector, reviewed the remaining records and suggested eliminating ones they deemed unsuitable for the review. To ensure the sample was as comprehensive as possible, the authors performed chain referencing and added studies that were not found in the initial search but still fell within the conceptual boundaries of the review. Chain referencing is reviewing the bibliography of each study included in the sample and verifying the possible existence of studies worthy of consideration for the SLR. Thus, we have set the final

sample to 57 and compiled all the steps in Fig. 2. While somewhat limited, the sample aligns with previous SLRs on the topic (Rohwer et al., 2022; Vrontis et al., 2022). Additionally, the limited sample could be interpreted as an absence of data, thus prompting future research on the topic (Hiebl, 2021).

## Research profile

In the current section, we present the research profile of the selected sample. By research profile, we mean descriptive statistics highlighting essential information on the sample, including yearly scientific production, most cited countries, most relevant sources, and the methodology choices across the sample.

Regarding yearly scientific production, Fig. 3 shows the increasing relevance of digital surveillance in business and social science literature over the years. We note an especially significant increase throughout 2020 and 2021, possibly due to the COVID-19 pandemic and the increasing prevalence of remote work. Regarding the publishing outlets depicted in Fig. 4, most studies were featured in outlets whose scope is blended between technology and social science, for instance, Technological Forecasting and Social Change. Finally, Fig. 5 illustrates the geographical scope of the bibliographies featured in the studies, showing a predominant position for the United States and the United Kingdom.

When investigating the distribution of scientific research across journals, we note how the increasing yearly number of publications shown in Fig. 3 is further accentuated by the range of outlets in which such research is published. As illustrated in Fig. 4, only six journals have published more than one article on the topic, thus implying a diffuse interest across several publication outlets.

When studying the country-wise distribution of the sample, we note how most research has been conducted in developed countries, namely the USA, the UK and France. Very few studies have been conducted in developing countries, thus implying a potential bias towards the Western conceptualization and setting of the modern workplace. While descriptive in nature, this finding shows how there's plenty of room for further research on empirical data drawn from Western countries, or developing countries, possibly through the lens of a comparative, cross-cultural approach.

Fig. 6 illustrates the methodological choices adopted by the authors in the sample. We note that most studies feature a qualitative approach ( $n = 26$ ), yet quantitative research is also well represented throughout the sample ( $n = 18$ ). It is interesting to note that the relatively high amount of experimental and quasi-experimental ( $n = 8$ ) research testifies to the exploratory nature of the literature stream of digital surveillance.

Looking deeper into the study's methodological choices and theoretical underpinnings, we notice how the most common qualitative technique is in-depth interviews (Kruse et al., 2018; Anwar & Graham, 2020; Shibata, 2021). Furthermore, when it comes to quantitative methodologies, structural equation modelling appears to be the most popular choice (Chatterjee et al., 2022).

When investigating the theoretical underpinnings of the studies featured in the sample, we notice a general need for a theory-based understanding of the topic. This assumption is highlighted by Hessari & Nategh (2022) and further backed by the dominance of exploratory, qualitative research found in our sample. However, a few studies do make use of theoretical underpinnings. Publications on technostress, for instance, use the Transactional Model of Stress and Coping (TMSC; Lazarus & Folkman, 1984) as their theoretical foundation (Marsh et al., 2022; Srivastava et al., 2015). Additional use of theories includes institutional theory (Chatterjee et al., 2022), regulation theory (Shibata, 2021), and resource-based theories (Becker et al., 2021). Finally, we also find a few studies synthesising new theoretical frameworks. For instance, Chandra et al. (2020) conceptualise technological spatial intrusion and theorise its impact on employee



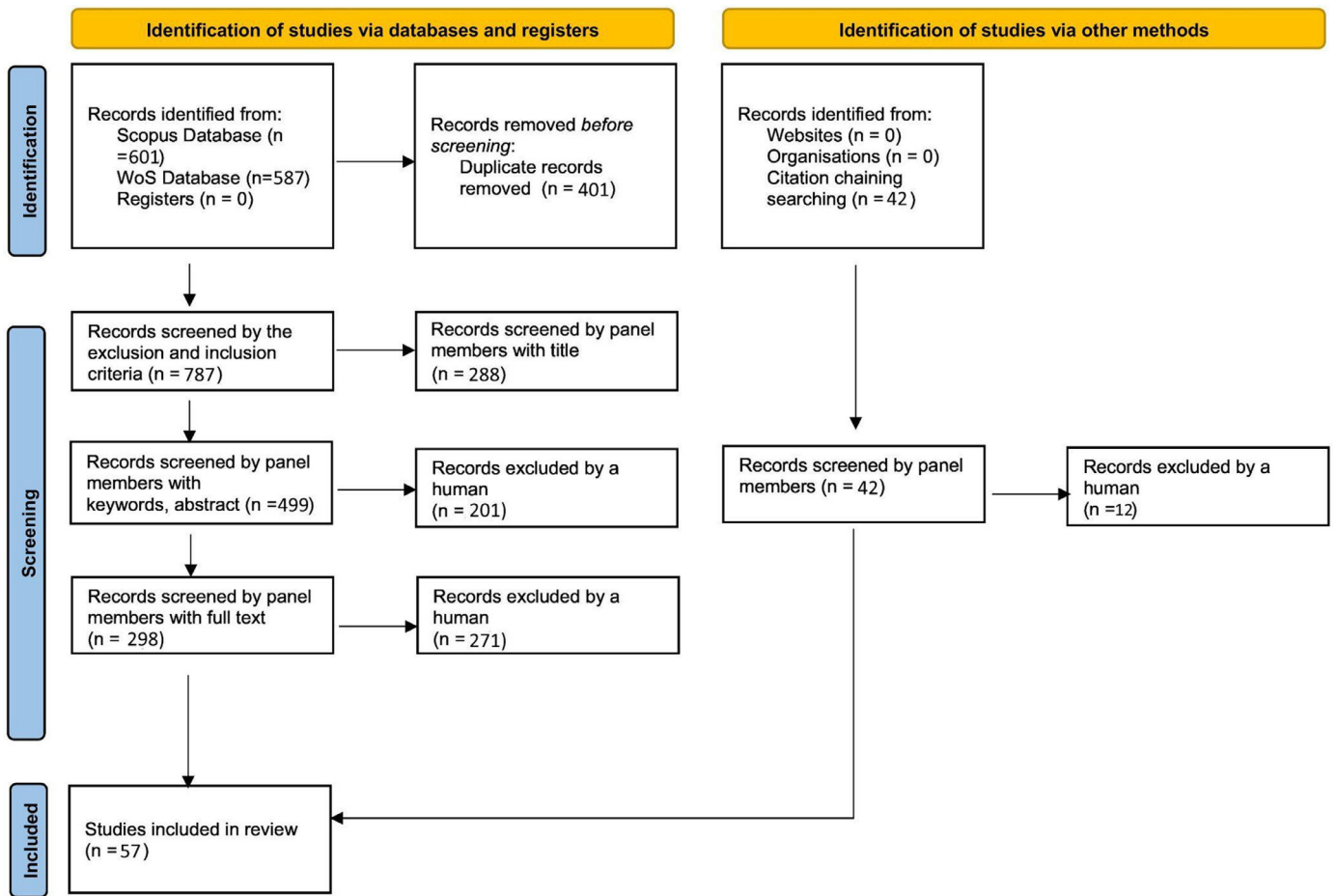


Fig. 2. PRISMA protocol used for the review.

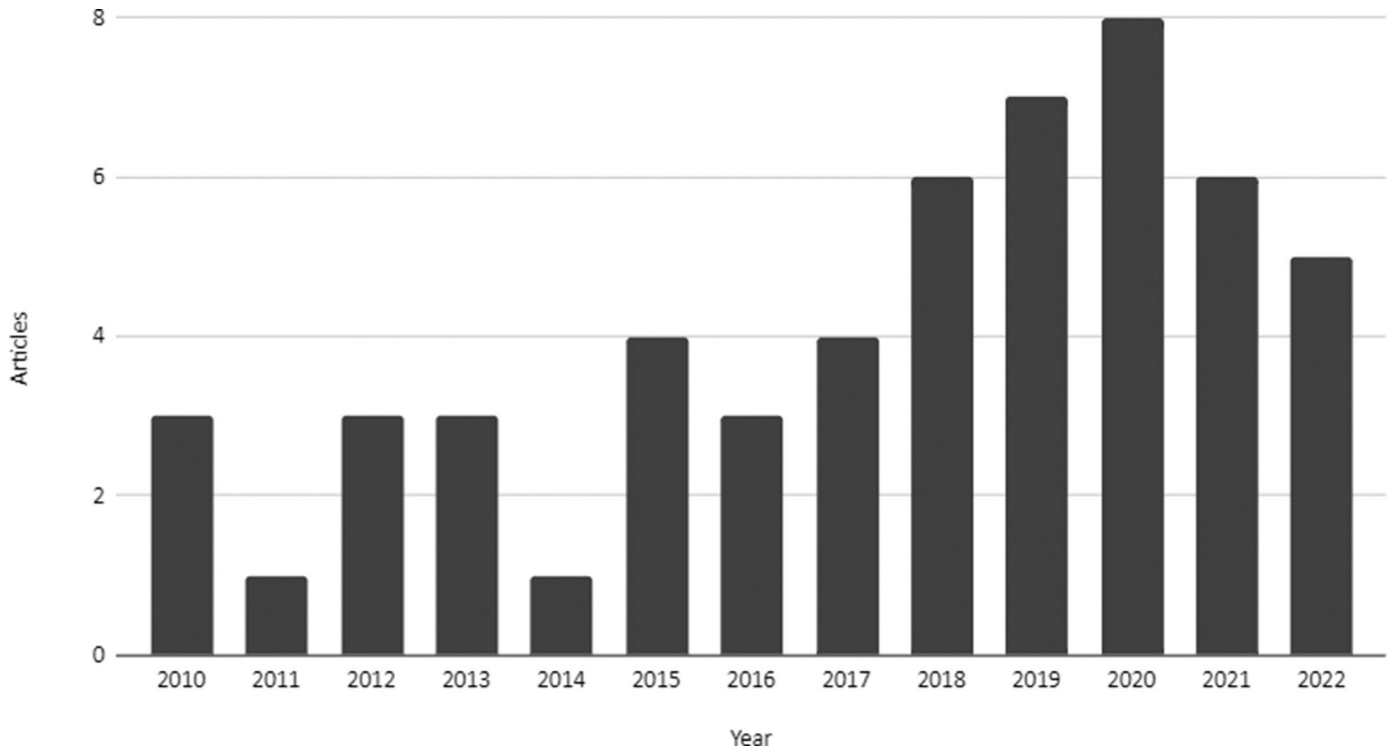


Fig. 3. Annual Scientific Production.

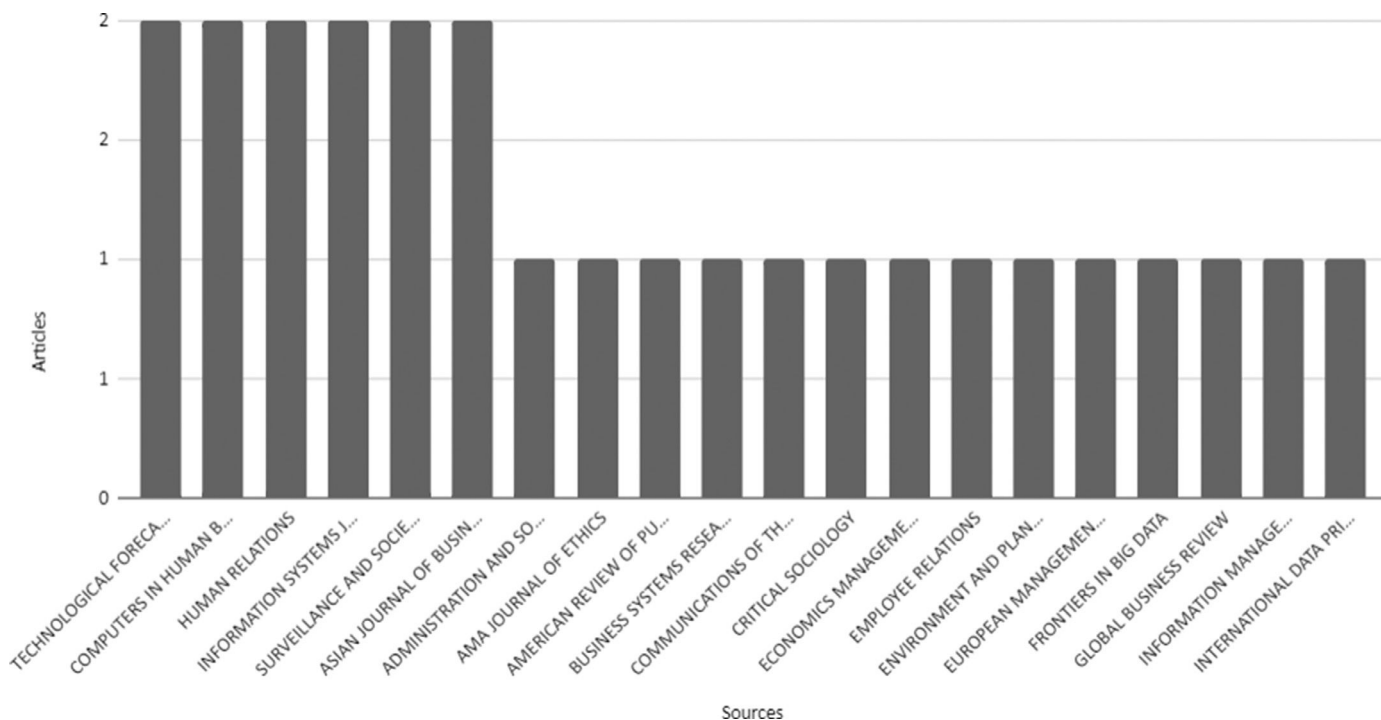


Fig. 4. Most Relevant Sources.

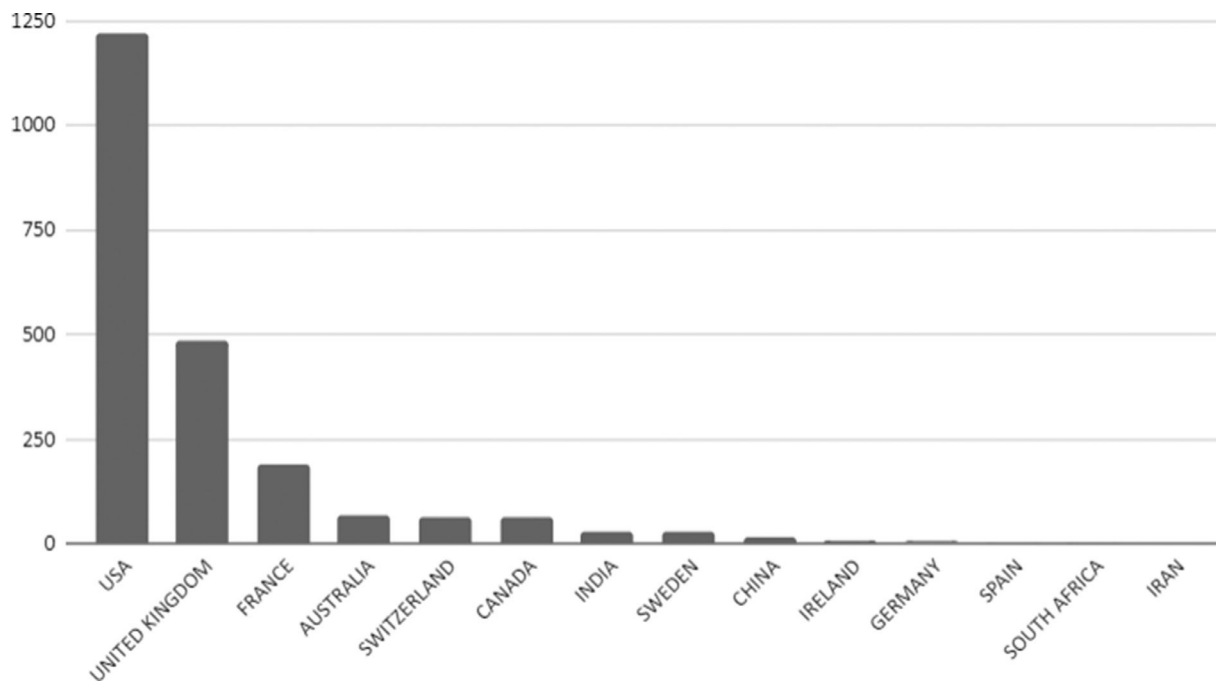


Fig. 5. Most Cited Countries.

innovation. Furthermore, Table 1 presents the most cited papers featured in the sample.

When investigating the most impactful documents, the work of Zuboff dominates the field. In their most cited manuscript, they explore how digital transformation has fundamentally changed the workplace, thereby impacting organizational culture. They also first introduced the concept of ‘Surveillance Capitalism,’ which is strictly linked to the literature stream on digital surveillance. That has sparked a debate to which many authors have contributed over the

years (Zuboff, 2015). Our bibliometric analysis highlighted the work of Ayyagari et al. (2011) as the second most impactful for the field of digital surveillance. Their manuscript has investigated the proliferation of ICT in the modern workplace and the harmful effects of technostress on workers (Ayyagari et al., 2011). Finally, the third most cited contribution comes from De’ et al. (2020), who investigated the surge in the use of digital technologies due to the social distancing norms and nationwide lockdowns amidst the COVID-19 pandemic. Their contribution is especially relevant in today’s context, as it

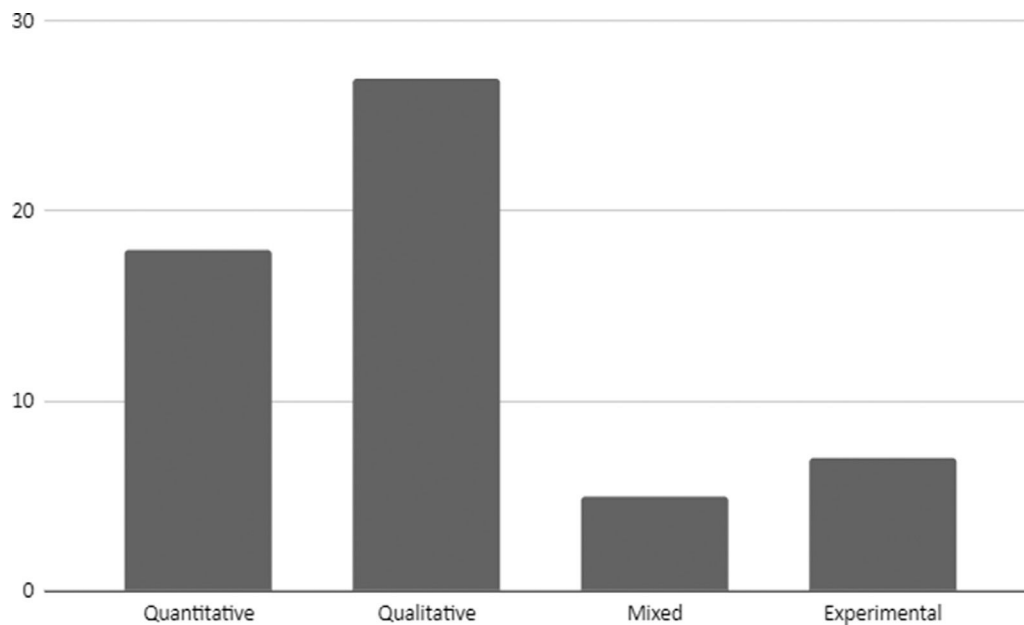


Fig. 6. Methodologies Used in the Studies.

Table 1  
Most Cited Articles.

Paper	Total Citations	TC per Year
ZUBOFF S, 2015, J INF TECHNOL	1073	134,125
AYYAGARI R, 2011, MIS QUART MANAGE INF SYST	852	71
DE R, 2020, INT J INF MANAGE	271	90,3333
TARAFDAR M, 2019, INF SYST J	211	52,75
BALL K, 2010, LABOR HIST	209	16,0769
SRIVASTAVA SC, 2015, INF SYST J	195	24,375
BARBER LK, 2015, J OCCUP HEALTH PSYCHOL	182	22,75
LEICHT-DEOBALD U, 2019, J BUS ETHICS	80	20
SEWELL G, 2012, HUM RELAT	65	5,9091
SARKER S, 2012, MIS Q EXEC	64	5,8182
NEWLANDS G, 2021, ORGAN STUD	54	27
HOLLAND PJ, 2015, PERS REV	51	6375
MOORE P, 2017, EMPLOYEE RELAT	50	8,3333
ANWAR MA, 2020, ENVIRON PLANN A	48	16
CARLSON JR, 2017, COMPUT HUM BEHAV	47	7,8333
KRUSE LM, 2018, SOCIOL Q	39	7,8
LPEZ-CABARCOS M, 2020, J INNOV KNOWL	35	11,6667
POPESCU GH, 2018, ECON MANAG FINANCIAL MARK	28	5,6
MARTIN AJ, 2016, INT J HUM RESOUR MANAGE	27	3,8571
WEST JP, 2016, ADM SOC	25	3,5714

encapsulates the rising interest of academics and practitioners towards the rushed implementation of digital surveillance and the concerns about its improper use.

Results

Technostress induced by monitoring

Technostress can be induced by surveillance and monitoring. When workers feel that monitoring devices are invading their privacy, they could be subjected to negative emotions tied to technostress (Tarafdar et al., 2019). The invasion of private life and the need to immediately respond to work-related messages are generally referred to as telepressure (Atkinson, 2018; Pfaffinger et al., 2020), which is the “combination of preoccupation and urge to immediately respond to work-related ICT messages” (Richardson, 2017). Surveillance and monitoring also revolve around the expectation of constant

availability, which generates technostress in the worker (Barber & Santuzzi, 2015). This was especially relevant during the pandemic, as organizational expectations for the email to be monitored in non-work time led to increased levels of technostress and anxiety in workers (Becker et al., 2021). Tarafdar et al. (2019) suggested that this invasion into personal life, as in non-work hours, may be considered a distinct construct from the intrusion into daily work life resulting from monitoring.

Several ‘stressors’ related to digital monitoring have been identified in the literature, such as the need to be available for work almost always, stay connected to digital devices constantly, and cope with multi-tasking (De’ et al., 2020). COVID-19 has seemingly exacerbated the problem, especially for those working from home using video conferencing technology, who often face intense scrutiny (Backhaus, 2019; Carlson et al., 2017). From a theoretical perspective, ‘stressors’ related to digital surveillance tend to fall within the invasion of privacy sphere (Hugl, 2010). As Ayyagari et al. (2011) pointed out, despite digital surveillance slowly becoming the new norm in the modern-day workplace, it can still pass as an invasion of privacy for some (Saura et al., 2021). Their findings have been echoed throughout the past decade (Barber & Santuzzi, 2015) and are still relevant today (Backhaus, 2019). More specifically, Tarafdar et al. (2019) highlighted the domino effect of digital intrusions in employees’ personal lives, as they eventually generate fears of job insecurity, concerns about shared data, and infringements of personal space. The blurred line between the professional and intimate spheres has also been highlighted by Zuboff (2015) as a point of significant concern for the future of work.

Generally speaking, existing literature agrees on the adverse effects digital surveillance has on employees’ well-being, as the vast majority of empirical studies found monitoring to have a stress-increasing effect on employees (Backhaus, 2019; Carlson et al., 2017). While a study by Camarena & Fusi (2022) found no correlation between the adoption of electronic monitoring in public organizations and higher levels of technostress, several other contributions seem to contradict the above assumption. De’ et al. (2020), for instance, stated that while there is early anecdotal evidence that digital monitoring has led to increased productivity, it has also led to increased levels of technostress among employees. Whether or not this trade-off is worth it in terms of overall productivity remains to be seen, however (Ayyagari et al., 2011; Tarafdar et al., 2019).

### The impact on job performance

Job performance has been explored under multiple lenses amidst the business and social science literature to determine the effects of factors such as job satisfaction, creativity, and motivation on performance. However, digital transformation has brought about a series of negative-impact changes to the work environment. For instance, Alan et al. (2021) identified a negative correlation between smartphone addiction and employee performance among healthcare employees. Similarly, Hessari & Nategh (2022) study highlighted the negative consequences of smartphone addiction on job performance through life invasion and techno exhaustion.

When it comes to digital surveillance specifically, however, the results are mixed. For example, Tsvangirai & Chinyamurindi (2019) found a positive correlation between employee performance and workplace surveillance—as employees perceived monitoring as a motivating factor due to its objective nature—regarding performance evaluation and subsequent rewards. Similarly, Corgnet et al. (2021) found monitoring systems to positively affect employees' performance, despite having a negative effect on employees' satisfaction. Additionally, Manokha (2019) noted that when placed under digital surveillance, workers tend to be more productive and outcompete fellow employees. Subsequently, Manokha (2020) also warned of the intensive and extensive exploitation of workers through digital surveillance, which may guarantee increased productivity but can also negatively affect employee health in the long run. Finally, Cantor (2016) noted how management, work teams, and even individuals could benefit from real-time data monitoring worker productivity, coordination, and performance.

However, these positive results are questioned by several studies showing a negative correlation between the two factors (Cordella & Cordella, 2017; Potoski & Calley, 2018). Hence, the debate is still ongoing. Overall, job performance and digital surveillance are seemingly tied to a trade-off nature. Ganguly et al. (2022) noted that teleworking employees found their productivity to be increased under digital surveillance. This, however, cost them their work flexibility. Additional empirical evidence suggested that those who were used to digital technologies and remote working adjusted better to the changes than those who were not accustomed to these changes (Oksanen et al., 2021).

Manokha (2020) studied research on digital surveillance and performance has been conducted and asked whether these changes are quantifiable in terms of how much more extensive the use of digital surveillance is or whether they are qualitative changes at the core of the whole concept of digital surveillance. What is known is that algorithms and AI-driven performance insights have become so commonplace that they are almost seemingly integrated into the workplace (Popescu et al., 2018). Hence it would be worth investigating whether or not their implementation will become progressively seamless to lessen the adverse effects. In this regard, Aloisi & De Stefano (2020) mentioned how even hand hygiene-monitoring systems were turned into performance management devices in the United States, further testifying to the widespread use of digital surveillance.

### Trust, resistance, and acceptance of digital surveillance in the workplace

Trust and control in the workplace are strictly tied together. From a theoretical perspective, trust describes the willingness of one person to rely on an interaction partner without the control of another person (Ganguly et al., 2022). Supervision and monitoring are occasionally interpreted as a lack of trust, as they generate bilateral dependencies among workers. As noted by Ganguly et al. (2022), trust issues may arise for different reasons. For instance, they could come about when workers take an unusual amount of time to complete an assigned task. Theoretical underpinnings aside, the literature on workplace trust in digital surveillance shows contradictory

empirical results. When employees are told their performance is being monitored as part of a performance assessment or promotion, evaluation reactions could differ widely (McParland & Connolly, 2020). Chandra et al. (2020) noted that digital surveillance could eventually enhance innovation performance if monitoring is justified and collaboration is healthy. Newlands (2021) found this to be true for jobs that rely heavily on tracking and monitoring, making the acceptance of digital monitoring far easier for employees. In their study, Newlands (2021) investigated ride-hailing platforms and noted how vital tracking is in building mutual trust, not just between employees and the company but also, and most importantly, between the customers and the company.

Similarly, Sarpong & Rees (2014) found that the electronic monitoring of staff led to positive results, with an emphasis on their perception of increased security and safety. Additionally, Payne's (2018) empirical study found that digital surveillance led workers to internalise organisational expectations and police themselves, effectively turning monitoring into a game between competing peers. Finally, Whalen & Gates (2010) have shown positive employee monitoring results, albeit the practice featured in their study was voluntary.

Similarly to performance measurement, safety and trust can be, at the same time, the driver and the desired outcome of digital surveillance. For instance, Adams et al. (2021) have demonstrated that some U.S. agencies had begun limited experimenting with body-worn cameras before for the sake of improving officer safety and reducing agency liability. Similarly, the empirical work of Doberstein et al. (2022) finds that safety and theft prevention are typically viewed as a legitimate use of surveillance. However, while it is generally agreed that surveillance contributes to workplace safety, it can also lead to detrimental effects on trust due to the increased levels of pressure tied to constant monitoring (Manokha, 2020). Interestingly enough, several studies have shown contradictory results compared to the one by Whalen & Gates (2010). For instance, Indiparambi (2019) claimed that painting digital surveillance as a means to achieve employee care and safety is ambiguous and insufficient, effectively going against the findings of Sarpong & Rees (2014), who instead found a positive correlation between surveillance and trust. An underlying layer of distrust will remain unless a massive cultural change is adopted (Indiparambi, 2019). Furthermore, despite showing promising results, Newlands (2021) warned of the phenomenon of data obfuscation, an individualistic practice of workplace resistance in which employees actively manipulate their data to escape monitoring. Additionally, on the topic of data obfuscation and resistance, Marchant (2019) highlighted how, in their case study, there had been instances of employees attempting to disable surveillance devices for non-work periods and them being disciplined or even fired altogether for their actions. Similarly, Kruse et al. (2018) noted that the fear of digital surveillance has conditioned employees' use of social media, as they are worried about their employers or future employers disapproving of their online behavior.

### Research gaps and avenues for future research

Our review finds that while the topic of digital surveillance encompasses a growing area of research amidst the broader digital transformation literature, this specific stream suffers from several limitations that could be turned into opportunities for future research. In this section, we synthesize the most significant research gaps found in our critical review of extant literature, both from a methodological perspective and a content perspective. We then formulate several research questions based on the avenues of future research that have been identified. The research questions are listed at the bottom of each subsection, namely in Tables 2–4.



**Table 2**  
Future Research Questions on Technostress induced by Monitoring.

Technostress induced by Monitoring	
RQ1	How do the effects of digital surveillance on technostress fare when compared to their effect on overall productivity and performance? Is there a 'trade-off' nature between the two?
RQ2	From a longitudinal perspective, are the effects of digital surveillance on technostress changing over time in terms of intensity? In other words, as time progresses and digital surveillance becomes 'the new normal', will the resulting technostress diminish in return?
RQ3	What variables moderate the effects of digital surveillance on technostress?

**Table 3**  
Future Research Questions on the impact of Digital Surveillance on Job Performance.

The impact of Digital Surveillance on Job Performance	
RQ1	What variables moderate the effects of digital surveillance on performance?
RQ2	Are there differences in perception of digital surveillance between naturally over-performing and sub-performing workers? If so, can the differences in performance level explain the changes in perception and in what percentage compared to other variables?
RQ3	From a longitudinal perspective, how can companies effectively program the long-term effects of digital surveillance on performance?

**Table 4**  
Future Research Questions on the Acceptance of Digital Surveillance in the Workplace.

The Acceptance of Digital Surveillance in the Workplace	
RQ1	How can companies develop digital surveillance policies as a concerted effort from multiple stakeholders? Further, is there a positive correlation between the use of IT policies built in collaboration with workers and the levels of acceptance of digital surveillance?
RQ2	Along with data obfuscation, what other practices of workplaces resistance towards digital surveillance are gaining relevance? In what ways can management combat them? What are their effects on the company as a whole?

### Technostress induced by monitoring

Research on technostress is vast; however, there is still much to be discovered when it comes to its connections to workplace surveillance. In fact, while authors generally agree on the relevance of surveillance when it comes to technostress literature, literary production is lagging; thus far, this specific stream of technostress literature has yet to receive adequate levels of attention (Camarena & Fusi, 2022).

Generally speaking, the digital surveillance and technostress literature stream suffers from generalizability issues. Much purely empirical research is often based on case studies or limited samples. Additionally, studies such as that of Martin et al. (2016) use data collected several years ago, ignoring increasing levels of surveillance associated with technological change in more recent times. Consistent with the above gap, we suggest that future research focus on the replicability of extant studies to gather more updated empirical data that could help us better understand this complex phenomenon.

Methodological gaps aside, several avenues for future research can be identified when examining the extant literature. For example, contextual factors and their positive or negative effects on technostress levels are yet to be fully understood Chandra et al. (2020). This need for further research has been echoed in several other publications. For instance, Camarena & Fusi (2021) called for research on technostress to be conducted during periods of increased technology dependency. Additional contextual factors to be examined include

the range of individual differences and organizational characteristics (Marsh et al., 2022), critical digital literacy, and firm-sponsored training for the ethical implementation of digital surveillance (Aloisi & De Stefano, 2022).

### The impact on job performance

Digital surveillance enables the continuous monitoring of employees' performance, acting as a motivating factor in the pursuit of better results. However, we have seen how technological intrusions into workers' personal space negatively impact employee performance (Ayyagari et al., 2011; Camarena & Fusi, 2022). This creates an almost paradoxical situation in which the same technology used as a performance-enhancing tool is detrimental to overall productivity due to its adverse employee outcomes. Amidst this conflicting literature stream, several streams for future research can be identified and pursued.

Research on digital surveillance and performance is needed regarding contextual factors acting as moderators. As pointed out by Srivastava et al. (2015), different personality traits can influence the adverse effects of monitoring performance. In addition, Sewell et al. (2012) highlighted a paradox of performance measurement via monitoring that has yet to be fully explained by research. The above authors stated that the perception of surveillance depends on the employee's performance. In other words, they claimed that more productive employees tend to see surveillance as fair and justified. In contrast, underperforming employees tend to see it as unfair and biased. This line of research is worthy of further investigation, primarily due to COVID-19 and its impact on practices such as telework.

What is also needed, however, is longitudinal research on the long-term effects of digital surveillance on performance. Corgnet et al. (2021) warned that companies tend to downplay the long-term consequences of a dissatisfied and unmotivated workforce on performance levels. Thus, further research is needed to move past the reactive stance digital surveillance has maintained since the onset of the COVID-19 pandemic and move towards a more concerted, long-term vision. This is especially true in workplaces where constant monitoring leads to constant availability, blurring the line between work and personal life (Sarker et al., 2012). This issue has been progressively relevant over the past decade and will inevitably characterize the upcoming one.

### Trust, resistance and acceptance of digital surveillance in the workplace

In the wake of the COVID-19 crisis, concerted efforts to effectively implement digital transformation in the workplace are needed (Shibata, 2021). This is especially true for innovations here to stay, such as telework (Ganguly et al., 2022), or body-worn cameras for public officials (Adams et al., 2021). However, the road towards fully accepting digital surveillance and consequent trust towards new technologies is still rather complicated, and several grey areas are deemed worthy of future research. For example, Stark et al. (2020) pointed out that half of the sample featured in the qualitative empirical examination stated that it was acceptable for employers to use camera surveillance with facial recognition software in the workplace. Interestingly, their study suggested that gender acts as a moderator when accepting digital monitoring. In fact, in their study, they've found that women are much less likely than men to approve of the use of surveillance. However, further qualitative data from different types of workers are necessary to contextualize better and, more importantly, generalize their findings.

Furthermore, future research should analyze potential conflicts between workers and management over digital surveillance (McParland & Connolly, 2020). Data obfuscation, for instance, is rapidly growing as a relatively novel form of workplace resistance, yet it has yet to receive much attention in the literature thus far (Newlands,

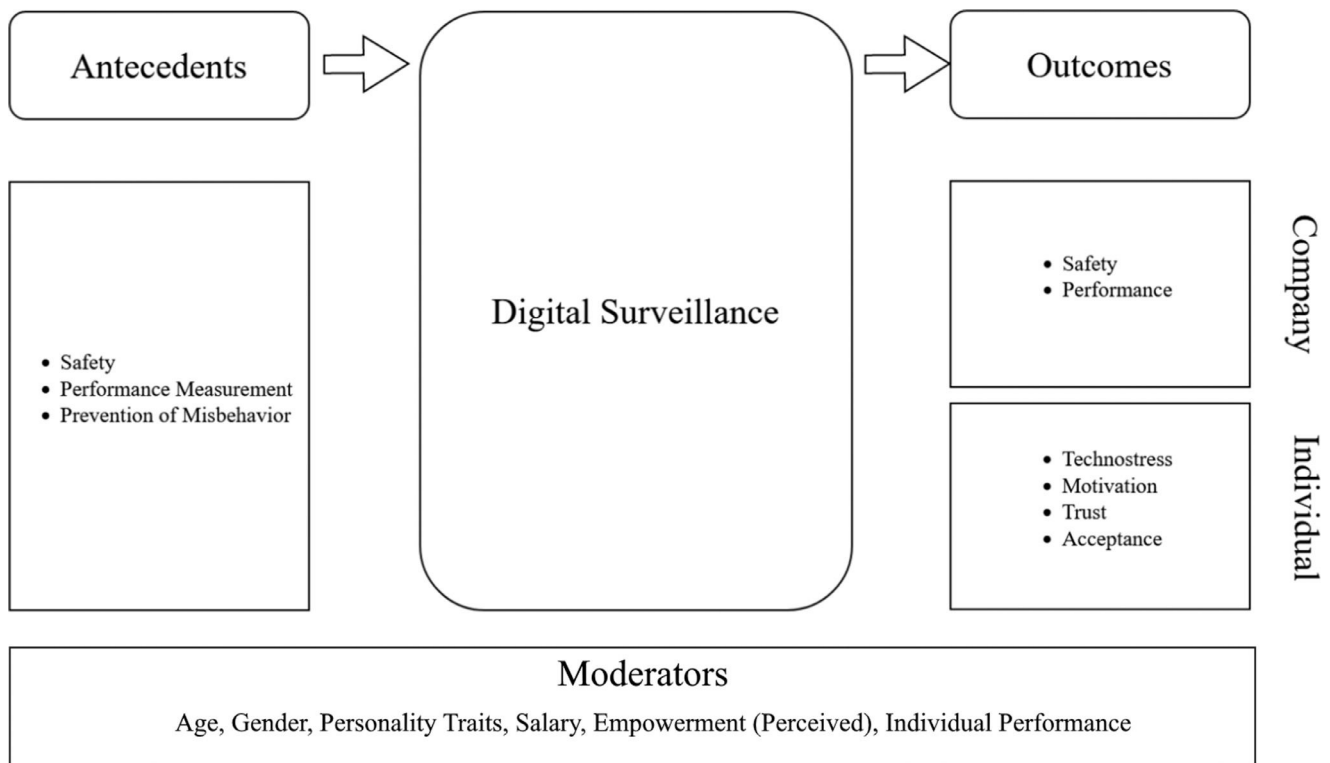


Fig. 7. Theoretical Framework.

2021). Sarpong & Rees (2014) stressed the importance of clear and transparent IT policies to combat resistance and favour acceptance. Future research could concentrate on developing the managerial skills needed to implement digital surveillance to smoothly guarantee transparency and fair use. The need for this development in research was echoed recently by Thompson et al. (2020), who highlighted how current IT policies tend to rely excessively on overly broad prescriptions against 'inappropriate behaviors', thus introducing a grey area that precludes proper acceptance while instead favouring unsustainable allegations of misconduct. Subsequently, Leicht-Deobald et al. (2019) highlighted the importance of critical data literacy and ethical awareness. Future studies could focus on participatory design methods of IT policies (Xu, 2019), meant to facilitate trust in the workplace and monitor the level of acceptance over time to determine whether digital surveillance becomes a 'new norm' in the workplace.

### Theoretical framework

In the present section, we provide a conceptual framework synthesizing the multiple dimensions of digital monitoring in the workplace. The framework is presented in Fig. 7. At the framework's core is the intent to highlight the determinants of digital surveillance, the outcomes of its implementation, and the potential moderating effects found in some variables. In developing the framework, we draw from previously published SLRs to formulate it to highlight extant literature gaps and serve as a baseline for future research (Kaur et al., 2022; Rohwer et al., 2022). The reasoning behind formulating the theoretical framework is to address the complex and multifaceted nature of the literature on digital surveillance. In this regard, using previous digital surveillance theoretical frameworks appears insufficient to appreciate it fully (Stanton, 2000). Instead, by adopting an intuitive summary of the factors influencing and being influenced by digital surveillance, we provide a more comprehensive understanding of this phenomenon.

Various internal and external factors drive digital surveillance initiatives. Our framework proposes three distinct antecedents of digital surveillance. The first is the need to improve work rate and productivity, as constant performance monitoring incentivizes employees in terms of rewards and career progression based on their results (Martin et al., 2016). Second, we identify the need for corporations to minimize and prevent theft and criminal behavior. Lastly, we find employee's care as a driving factor for digital surveillance, as companies strive to monitor their employees' well-being and prevent threats to their health (Bentotahewa et al., 2021).

On the other side of the spectrum, we determine the outcomes of digital surveillance, which are several and multifaceted. We notice a strong dominance of scientific production on the outcomes of digital surveillance compared to production on its drivers (Marsh et al., 2022; Srivastava et al., 2015). We divide the outcomes into two distinct perspectives, following the theoretical evidence found in the sample at the company and individual levels. First, we find trust in the individual outcomes of digital surveillance (McParland & Connolly, 2020). Digital surveillance influences an individual's trust in their company, albeit this correlation is heavily dependant on moderators. Additionally, we find an impact on technostress levels; motivation, which includes job satisfaction and commitment (Martin et al., 2016); and acceptance of digital technologies. On a broader scale, digital surveillance's positive effects on companies can be seen in the overall levels of performance reached by its employees and safety, which includes all the steps taken to make the workplace more secure and free of malpractice.

Although we have found a few studies exploring the moderating role of a few variables in terms of resistance towards digital surveillance (Anwar & Graham, 2020), its acceptance, or the resulting levels of technostress, a plethora of moderating variables still needs to be investigated. In terms of the moderating effects on technostress, we suggest that future studies explore potential moderating variables, including but not limited to empowerment (Carlson et al., 2017), salary (Cordella & Cordella, 2017), and personality traits (Srivastava et al., 2015). Meanwhile, in terms of the acceptance of digital

surveillance, future research should investigate the moderating role of perceptions of the fairness of monitoring itself (McParland & Connolly, 2020) and demographic traits such as age and gender (Stark et al., 2020) and age (Smith & Lyon, 2013). The above considerations lead to the theoretical framework featured in Fig. 7.

As noted in the framework, variables such as safety and performance appear as both outcomes (Marsh et al., 2022; Srivastava et al., 2015) and antecedents (Adams et al., 2021; Bentotahewa et al., 2021) of digital surveillance. Companies might implement digital surveillance to achieve a specific goal, yet their outcome may vary and have a few unplanned consequences. For instance, Manokha (2020) points out that while companies might plan to implement digital surveillance to guarantee better safety standards for their employees, being constantly monitored has indirect effects on their performance since they might feel pressured by real-time surveillance. The recursiveness and circularity of the elements featured in the framework could serve as the theoretical basis for further research meant to better understand the effects of digital surveillance.

## Implications

Our systematic review of the extant literature on digital surveillance in the workplace and its implications for technostress has helped us identify key research themes and notable gaps that future studies could address. In addition, using the theoretical lens of technostress, we have formulated a comprehensive conceptual framework that could act as the theoretical underpinning of future contributions. Several theoretical and practical implications can be drawn from this study, as discussed below.

### Theoretical implications

Three main theoretical contributions are offered in this systematic review. First, our study contributes to the innovation and digital surveillance literature by organizing and synthesizing the extant body of knowledge on the topic (Frith & Saker, 2020; Newlands et al., 2020). At the same time, several attempts have already been made when it comes to systematically reviewing the literature on technostress (Martin et al., 2016), the stream of digital surveillance has yet to be synthesised in a systematic manner. Hence, our contribution fills a significant literature gap by identifying and analysing three distinct and emerging themes: technostress induced by monitoring, the effects of digital surveillance on job performance, and the implications of digital surveillance on trust and perceived control.

The second theoretical contribution of the present study is the systematic review of extant research gaps in the literature related to digital surveillance (López Maciel et al., 2017; Saunila, 2020). Our analysis reveals how digital surveillance is a field that has yet to be fully explored. As such, several pathways for future research exist during writing (Kraus et al., 2021). Consistent with the research gaps identified throughout the SLR, a list of research questions have been formulated and proposed to provide a clear direction for further contributions to digital surveillance.

The third and final contribution is formulating a comprehensive theoretical framework that draws upon technostress and the digital surveillance literature to synthesize and conceptualize extant knowledge (Kraus et al., 2022a; Saura et al., 2021). The framework provides future researchers with a clear-cut view of extant research on the topic and could serve as a theoretical base for future work. This contribution, combined with the information featured in the research profiling section of the paper, helps authors identify what is left to be explored in this specific literature stream and suitable publication outlets for future research.

### Practical implications

From a practical perspective, the present study has several implications for stakeholders and practitioners. First, our study reinforces the relevance of digital surveillance in the modern workplace and the concerns it raises for employers and employees (Indiparambi, 2019). First, the results confirm digital surveillance's impact on technostress and the subsequent effects on overall performance and productivity (Sarpong & Rees, 2014). While there are benefits and difficulties related to implementing digital surveillance in the workplace, our study illustrates the conflicting nature of monitoring and the importance of moderating variables in counteracting its adverse effects (Newlands, 2021; Marchant, 2019). In other words, our evidence can prove beneficial for practitioners as a means to ponder the implementation of digital surveillance and make more informed decisions by evaluating every possible positive and negative outcome.

Second, our study shows the importance of policy regarding digital surveillance and, more specifically, clear and transparent IT policies (Sarpong & Rees, 2014). In this regard, practitioners and stakeholders follow two distinct lines of development. First, they should invest in the participatory design of digital surveillance policies (Leicht-Deobald et al., 2019) to increase the employees' trust and acceptance levels. Second, investments should be made in the education of managers and decision-makers, as critical data literacy and ethical awareness are crucial in the modern workplace (Thompson et al., 2020; West & Bowman, 2016).

Third, our findings stress the importance of long-term vision when designing digital surveillance systems. While the unpredictability of the COVID-19 pandemic might have forced companies into making short-term decisions and 'playing it by ear' (Bertello et al., 2022; Chatterjee et al., 2022), digital surveillance will inevitably translate over to the post-pandemic workplace and become a stable factor for years to come (McParland & Connolly, 2020). As per the definition of rushed innovation, digital surveillance amidst COVID-19 came with little pre-planning. However, as we progressively shift towards a post-pandemic future, practitioners should acknowledge and join the debate on digital surveillance, to which our manuscript contributes. Thus, practitioners need to plan the expected outcomes of digital surveillance in terms of added productivity, safety, and technostress levels in advance (Corgnet et al., 2021) instead of adopting a short-term reactive stance.

## Conclusions

This SLR aimed to apply a critical lens to existing digital surveillance literature to highlight the existing paradoxes featured in it and propose a future research agenda for the topic. While several attempts to systematically review the extant literature on technostress have been made, to the best of our knowledge, this is the first attempt to review the literature stream on digital surveillance. Additionally, we have answered four distinct research questions, as listed below.

More specifically, regarding RQ1, we sought to profile the current state of the extant literature on digital surveillance in the workplace. In doing so, we first identified a representative sample through a rigorously planned research protocol. Second, we have compiled descriptive statistics of the sample to gauge its overall state regarding annual scientific production, most cited sources, and relevant countries. Regarding RQ2, we have identified three distinct sub-themes via qualitative coding: its impact on technostress, the relation between digital surveillance and performance, and, lastly, the implications for trust and acceptance. To answer RQ3, we critically examined the extant literature to unveil existing research gaps that could be explored by future research. In addition, we presented several questions for future research that were either theme-related or methodology-related. Finally, we addressed RQ4 by formulating a



comprehensive framework that could effectively encapsulate multiple dimensions and nuances of digital surveillance. As a result, we propose a theoretical framework featuring both the antecedents and outcomes of digital surveillance, along with a comprehensive set of moderating variables to be tested.

Finally, our research has a few limitations intrinsic to the SLR methodology being used. First, the exclusion of conference proceedings, book chapters, and publications that were not peer-reviewed limits the scope of the review to a certain extent. This limitation could be addressed by a future systematic review of the digital surveillance literature to expand the current research scope. In addition, while the overall sample size is acceptable by SLR standards, as scientific production on digital surveillance increases, future studies could synthesize more scientific data. The second limitation comes with using Scopus and WebOfScience as databases. This choice was due to our intent to focus on management and social science outlets rather than medicine and psychology publications that previous reviews of technostress literature have already investigated. As with our previous limitation, future studies could address this one. Finally, despite using a rigorous research protocol, our SLR is subject to human error. In other words, certain relevant studies might have been omitted despite the multiple steps taken to ensure the sample was as extensive as possible. Once again, this limitation could be addressed by scholars willing to investigate the topic of digital surveillance under a broader scope in the future.

## References

- Adams, I. T., Mourtgos, S. M., & Mastracci, S. H. (2021). High-stakes administrative discretion: What drives body-worn camera activations? *Public Administration Review*, 81(4), 691–703. doi:10.1111/puar.13339.
- Aloisi, A., & De Stefano, V. (2022). Essential jobs, remote work and digital surveillance: Addressing the COVID-19 pandemic panopticon. *International Labour Review*, 161(2), 289–314. doi:10.1111/ilr.12219.
- Anwar, M. A., & Graham, M. (2020). Hidden transcripts of the gig economy: Labour agency and the new art of resistance among african gig workers. *Environment and Planning A*, 52(7), 1269–1291. doi:10.1177/0308518X19894584.
- Atkinson, J. (2018). Workplace monitoring and the right to private life at work. *Modern Law Review*, 81(4), 688–700. doi:10.1111/1468-2230.12357.
- Ayyagari, R., Grover, V., & Purvis, R. (2011). Technostress: Technological antecedents and implications. *MIS Quarterly: Management Information Systems*, 35(4), 831–858. doi:10.2307/41409963.
- Backhaus, N. (2019). Context sensitive technologies and electronic employee monitoring: A meta-analytic review. In *Proceedings of the IEEE/SICE international symposium on system integration (SIU)*.
- Ball, K. (2010). Workplace surveillance: An overview. *Labor History*, 51(1), 87–106. doi:10.1080/00236561003654776.
- Barber, L. K., & Santuzzi, A. M. (2015). Please respond ASAP: Workplace telepressure and employee recovery. *Journal of Occupational Health Psychology*, 20(2), 172–189. doi:10.1037/a0038278.
- Becker, W. J., Belkin, L. Y., Conroy, S. A., & Tuskey, S. (2021). Killing me softly: Organizational e-mail monitoring expectations' impact on employee and significant other well-being. *Journal of Management*, 47(4), 1024–1052. doi:10.1177/0149206319890655.
- Bentotahewa, V., Hewage, C., & Williams, J. (2021). Solutions to big data privacy and security challenges associated with COVID-19 surveillance systems. *Frontiers in Big Data*, 4. doi:10.3389/fdata.2021.645204.
- Bertello, A., Ferraris, A., Bresciani, S., & De Bernardi, P. (2021). Big data analytics (BDA) and degree of internationalization: The interplay between governance of BDA infrastructure and BDA capabilities. *Journal of Management & Governance*, 25(4), 1035–1055. doi:10.1007/s10997-020-09542-w.
- Bertello, A., Bogers, M. L. A. M., & De Bernardi, P. (2022). Open innovation in the face of the COVID-19 grand challenge: Insights from the pan-european hackathon 'EUvsVirus. *R and D Management*, 52(2), 178–192. doi:10.1111/radm.12456.
- Bhatti, S. H., Hussain, W. M. H. W., Khan, J., Sultan, S., & Ferraris, A. (2022). Exploring data-driven innovation: What's missing in the relationship between big data analytics capabilities and supply chain innovation? *Annals of Operations Research*. doi:10.1007/s10479-022-04772-7.
- Bhave, D. P., Teo, L. H., & Dalal, R. S. (2020). Privacy at work: A review and a research agenda for a contested terrain. *Journal of Management*, 46(1), 127–164. doi:10.1177/0149206319878254.
- Bresciani, S., Ferraris, A., Santoro, G., & Kotabe, M. (2022). Opening up the black box on digitalization and agility: Key drivers and main outcomes. *Technological Forecasting and Social Change*, 178. doi:10.1016/j.techfore.2022.121567.
- Bresciani, S., Huang, K., Malhotra, A., & Ferraris, A. (2021). Digital transformation as a springboard for product, process and business model innovation. *Journal of Business Research*, 128, 204–210. doi:10.1016/j.jbusres.2021.02.003.
- Brod, C. (1984). *Technostress: The Human Cost of the Computer Revolution*. Reading, USA: Addison-Wesley Publishing Company.
- Camarena, L., & Fusi, F. (2022). Always connected: Technology use increases technostress among public managers. *American Review of Public Administration*, 52(2), 154–168. doi:10.1177/02750740211050387.
- Cantor, D. E. (2016). Maximizing the potential of contemporary workplace monitoring: Techno-cultural developments, transactive memory, and management planning. *Journal of Business Logistics*, 37(1), 18–25. doi:10.1111/jbl.12115.
- Carlson, J. R., Carlson, D. S., Zivnuska, S., Harris, R. B., & Harris, K. J. (2017). Applying the job demands resources model to understand technology as a predictor of turnover intentions. *Computers in Human Behavior*, 77, 317–325. doi:10.1016/j.chb.2017.09.009.
- Chandra, S., Shirish, A., & Srivastava, S. C. (2020). Theorizing technological spatial intrusion for ICT enabled employee innovation: The mediating role of perceived usefulness. *Technological Forecasting and Social Change*, 161. doi:10.1016/j.techfore.2020.120320.
- Chatterjee, S., Chaudhuri, R., Vrontis, D., Mahto, R. V., & Kraus, S. (2022). Global talent management by multinational enterprises post-COVID-19: The role of enterprise social networking and senior leadership. *Thunderbird International Business Review*. doi:10.1002/tie.22248.
- Ciocchetti, C. A. (2011). The eavesdropping employer: A twenty-first century framework for employee monitoring: The eavesdropping employer. *American Business Law Journal*, 48(2), 285–369. doi:10.1111/j.1744-1714.2011.01116.x.
- Cordella, A., & Cordella, T. (2017). Motivations, monitoring technologies, and pay for performance. *Journal of Economic Behavior and Organization*, 133, 236–255. doi:10.1016/j.jebo.2016.10.016.
- Corgnet, B., Gunia, B., & Hernán González, R. (2021). Harnessing the power of social incentives to curb shirking in teams. *Journal of Economics and Management Strategy*, 30(1), 139–167. doi:10.1111/jems.12405.
- De', R., Pandey, N., & Pal, A. (2020). Impact of digital surge during covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management*, 55. doi:10.1016/j.ijinfomgt.2020.102171.
- Doberstein, C., Charbonneau, É., Morin, G., & Despatie, S. (2022). Measuring the acceptability of facial recognition-enabled work surveillance cameras in the public and private sector. *Public Performance & Management Review*, 45(1), 198–227. doi:10.1080/15309576.2021.1931374.
- Frith, J., & Saker, M. (2020). It is all about location: Smartphones and tracking the spread of COVID-19. *Social Media + Society*, 6(3) 2056305120948257. doi:10.1177/2056305120948257.
- Fuchs, C. (2013). Political economy and surveillance theory. *Critical Sociology*, 39(5), 671–687. doi:10.1177/08969205114435710.
- Fusi, F., & Feeney, M. K. (2018). Electronic monitoring in public organizations: Evidence from US local governments. *Public Management Review*, 20(10), 1465–1489. doi:10.1080/14719037.2017.1400584.
- Ganguly, A., Joseph, J. M., Dutta, S., & Dey, K. (2022). Exploring the employer–employee relationship: A management versus employee perspective of the vicissitudes in the virtual workplace. *Global Business Review*. doi:10.1177/09721509221086353.
- Graham, S., & Wood, D. (2003). Digitizing surveillance: Categorization, space, inequality. *Critical Social Policy*, 23(2), 227–248. doi:10.1177/0261018303023002006.
- Hermosilla, M. (2021). Rushed innovation: Evidence from drug licensing. *Management Science*, 67(1), 257–278. doi:10.1287/mnsc.2019.3530.
- Hessari, H., & Nategh, T. (2022). Smartphone addiction can maximize or minimize job performance? Assessing the role of life invasion and techno exhaustion. *Asian Journal of Business Ethics*, 11(1), 159–182. doi:10.1007/s13520-022-00145-2.
- Hiebl, M. R. W. (2021). Sample selection in systematic literature reviews of management research. *Organizational Research Methods*. doi:10.1177/10944281209868511094428120986851.
- Holland, P. J., Cooper, B., & Hecker, R. (2015). Electronic monitoring and surveillance in the workplace: The effects on trust in management, and the moderating role of occupational type. *Personnel Review*, 44(1), 161–175. doi:10.1108/PR-11-2013-0211.
- Hugl, U. (2010). We will be watching you: Workplace surveillance and employee privacy. *International Journal of Knowledge, Culture and Change Management*, 10(6), 117–131. doi:10.18848/1447-9524/cgp/v10i06/50000.
- Indiparambil, J. J. (2019). Privacy and beyond: Socio-ethical concerns of 'on-the-job' surveillance. *Asian Journal of Business Ethics*, 8(1), 73–105. doi:10.1007/s13520-019-00089-0.
- Introna, L., & Wood, D. (2002). Picturing algorithmic surveillance: The politics of facial recognition systems. *Surveillance & Society*, 2(2/3). doi:10.24908/ss.v2i2/3.3373.
- Kaur, P., Talwar, S., Madanaguli, A., Srivastava, S., & Dhir, A. (2022). Corporate social responsibility (CSR) and hospitality sector: Charting new frontiers for restaurant businesses. *Journal of Business Research*, 144, 1234–1248. doi:10.1016/j.jbusres.2022.01.067.
- Kraus, S., Bouncken, R. B., Görmar, L., González-Serrano, M. H., & Calabuig, F. (2022a). Coworking spaces and makerspaces: Mapping the state of research. *Journal of Innovation and Knowledge*, 7(1). doi:10.1016/j.jik.2022.100161.
- Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022b). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, 63. doi:10.1016/j.ijinfomgt.2021.102466.
- Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *SAGE Open*, 11(3). doi:10.1177/21582440211047576.
- Kruse, L. M., Norris, D. R., & Flinchum, J. R. (2018). Social media as a public sphere? Politics on social media. *Sociological Quarterly*, 59(1), 62–84. doi:10.1080/00380253.2017.1383143.



- Leicht-Deobald, U., Busch, T., Schank, C., Weibel, A., Schafheitle, S., Wildhaber, I., et al. (2019). The challenges of algorithm-based HR decision-making for personal integrity. *Journal of Business Ethics*, 160(2), 377–392. doi:10.1007/s10551-019-04204-w.
- López Maciel, G. T., Pertusa Palacios, A., & Gonzalez Rosas, E. L. (2017). Una revisión de la literatura sobre crowdsourcing. *Journal of Innovation & Knowledge*, 2(1), 24–30. doi:10.1016/j.jik.2016.09.001 Elsevier BV.
- Manokha, I. (2019). New means of workplace surveillance: From the gaze of the supervisor to the digitalization of employees. *Monthly Review*, 70(9), 25–39. doi:10.14452/MR-070-09-2019-02\_2.
- Manokha, I. (2020). The implications of digital employee monitoring and people analytics for power relations in the workplace. *Surveillance and Society*, 18(4), 540–554. doi:10.24908/ss.v18i4.13776.
- Marchant, G. E. (2019). What are best practices for ethical use of nanosensors for worker surveillance? *AMA Journal of Ethics*, 21(4), 356–362. doi:10.1001/ama-jethics.2019.356.
- Marsh, E., Vallejos, E. P., & Spence, A. (2022). The digital workplace and its dark side: An integrative review. *Computers in Human Behavior*, 128. doi:10.1016/j.chb.2021.107118.
- Martin, A. J., Wellen, J. M., & Grimmer, M. R. (2016). An eye on your work: How empowerment affects the relationship between electronic surveillance and counterproductive work behaviours. *International Journal of Human Resource Management*, 27(21), 2635–2651. doi:10.1080/09585192.2016.1225313.
- Martin, A. K., Van Brakel, R. E., & Bernhard, D. J. (2009). Understanding resistance to digital surveillance: Towards a multi-disciplinary, multi-actor framework. *Surveillance & Society*, 6(3), 213–232. doi:10.24908/ss.v6i3.3282.
- McParland, C., & Connolly, R. (2020). Dataveillance in the workplace: Managing the impact of innovation. *Business Systems Research*, 11(1), 106–124. doi:10.2478/bsrj-2020-0008.
- Monteleagre, R., & Cascio, W. F. (2017). Technology-driven changes in work and employment. *Communications of the ACM*, 60(12), 60–67. doi:10.1145/3152422.
- Moore, P., & Piwek, L. (2017). Regulating wellbeing in the brave new quantified workplace. *Employee Relations*, 39(3), 308–316. doi:10.1108/ER-06-2016-0126.
- Newlands, G., Lutz, C., Tamò-Larriueu, A., Villaronga, E. F., Harasgama, R., & Scheitlin, G. (2020). Innovation under pressure: Implications for data privacy during the Covid-19 pandemic. *Big Data & Society*, 7(2), 205395172097668. doi:10.1177/2053951720976680.
- Newlands, G. (2021). Algorithmic surveillance in the gig economy: The organization of work through lefevrian conceived space. *Organization Studies*, 42(5), 719–737. doi:10.1177/0170840620937900.
- Payne, J. (2018). Manufacturing masculinity: Exploring gender and workplace surveillance. *Work and Occupations*, 45(3), 346–383. doi:10.1177/0730888418780969.
- Pfaffinger, K. F., Reif, J. A. M., & Spieß, E. (2020). When and why teppressure and technostress creators impair employee well-being. *International Journal of Occupational Safety and Ergonomics*. doi:10.1080/10803548.2020.1846376.
- Popescu, G. H., Petrescu, I. E., & Sabie, O. M. (2018). Algorithmic labor in the platform economy: Digital infrastructures, job quality, and workplace surveillance. *Economics, Management, and Financial Markets*, 13(3), 74–79. doi:10.22381/EMFM13320184.
- Potoski, M., & Callery, P. J. (2018). Peer communication improves environmental employee engagement programs: Evidence from a quasi-experimental field study. *Journal of Cleaner Production*, 172, 1486–1500. doi:10.1016/j.jclepro.2017.10.252.
- Ravid, D. M., Tomczak, D. L., White, J. C., & Behrend, T. S. (2020). EPM 20/20: A review, framework, and research agenda for electronic performance monitoring. *Journal of Management*, 46(1), 100–126. doi:10.1177/0149206319869435.
- Richardson, K. M. (2017). Managing employee stress and wellness in the new millennium. *Journal of Occupational Health Psychology*, 22(3), 423–428. doi:10.1037/ocp0000066.
- Rohwer, E., Flöther, J. C., Harth, V., & Mache, S. (2022). Overcoming the “dark side” of technology—a scoping review on preventing and coping with work-related technostress. *International Journal of Environmental Research and Public Health*, 19(6), 3625. doi:10.3390/ijerph19063625.
- Samuel, G., Roberts, S. L., Fiske, A., Lucivero, F., McLennan, S., Phillips, A., ... Johnson, S. B. (2021). COVID-19 contact tracing apps: UK public perceptions. *Critical Public Health* (32, pp. 31–43). Informa UK Limited
- Sarker, S., Xiao, X., Sarker, S., & Ahuja, M. (2012). Managing employees' use of mobile technologies to minimize work-life balance impacts. *MIS Quarterly Executive*, 11(4), 143–157. Retrieved from [www.scopus.com](http://www.scopus.com).
- Sarpong, S., & Rees, D. (2014). Assessing the effects of 'big brother' in a workplace: The case of WAST. *European Management Journal*, 32(2), 216–222. doi:10.1016/j.emj.2013.06.008.
- Saunila, M. (2020). Innovation capability in SMEs: A systematic review of the literature. *Journal of Innovation and Knowledge*, 5(4), 260–265. doi:10.1016/j.jik.2019.11.002.
- Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). Setting privacy “by default” in social IoT: Theorizing the challenges and directions in big data research. *Big Data Research*, 25. doi:10.1016/j.bdr.2021.100245.
- Schneider, P. (2018). Managerial challenges of Industry 4.0: An empirically backed research agenda for a nascent field. *Review of Managerial Science*, 12(3), 803–848. doi:10.1007/s11846-018-0283-2.
- Sewell, G., Barker, J. R., & Nyberg, D. (2012). Working under intensive surveillance: When does 'measuring everything that moves' become intolerable? *Human Relations*, 65(2), 189–215. doi:10.1177/0018726711428958.
- Shibata, S. (2021). Digitalization or flexibilization? the changing role of technology in the political economy of japan. *Review of International Political Economy*. doi:10.1080/09692290.2021.1935294.
- Smith, E., & Lyon, D. (2013). *Comparison of survey findings from Canada and the USA on surveillance and privacy from 2006 to 2012: 11* (pp. 190–203). Surveillance and Society. doi:10.24908/ss.v11i1/2.4517.
- Srivastava, S. C., Chandra, S., & Shirish, A. (2015). Technostress creators and job outcomes: Theorising the moderating influence of personality traits. *Information Systems Journal*, 25(4), 355–401. doi:10.1111/isj.12067.
- Stanton, J. M. (2000). Reactions to employee performance monitoring: Framework, review, and research directions. *Human Performance*, 13(1), 85–113. doi:10.1207/s15327043hup1301\_4.
- Stark, L., Stanhaus, A., & Anthony, D. L. (2020). I don't want someone to watch me while I'm working": Gendered views of facial recognition technology in workplace surveillance. *Journal of the Association for Information Science and Technology*, 71(9), 1074–1088. doi:10.1002/asi.24342.
- Svantesson, D. J. B. (2012). Online workplace surveillance—the view from down under. *International Data Privacy Law*, 2(3), 179–191. doi:10.1093/idpl/ips013.
- Tarafdar, M., Cooper, C. L., & Stich, J.-. (2019). The technostress trifecta - techno stress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29(1), 6–42. doi:10.1111/isj.12169.
- Thompson, P., McDonald, P., & O'Connor, P. (2020). Employee dissent on social media and organizational discipline. *Human Relations*, 73(5), 631–652. doi:10.1177/0018726719846262.
- Tsvangirai, F. P., & Chinyamurindi, W. T. (2019). The moderating effect of employee motivation on workplace surveillance and employee engagement amongst employees at the Zimbabwe revenue authority. *SA Journal of Human Resource Management*, 17. doi:10.4102/sajhrm.v17i0.1106.
- Tweedie, D. (2013). Is call centre surveillance self-developing? Capacities and recognition at work. *Travailler*, 30(2), 87–104. doi:10.3917/trav.030.0087.
- Vrontis, D., Christofi, M., Pereira, V., Tarba, S., Makrides, A., & Trichina, E. (2022). Artificial intelligence, robotics, advanced technologies and human resource management: A systematic review. *The International Journal of Human Resource Management*, 33(6), 1237–1266. doi:10.1080/09585192.2020.1871398.
- West, J. P., & Bowman, J. S. (2016). Electronic surveillance at work: An ethical analysis. *Administration and Society*, 48(5), 628–651. doi:10.1177/0095399714556502.
- Whalen, T., & Gates, C. (2010). Watching the watchers: “Voluntary monitoring” of infosee employees. *Information Management and Computer Security*, 18(1), 14–25. doi:10.1108/09685221011035232.
- Xu, Z. (2019). An empirical study of patients' privacy concerns for health informatics as a service. *Technological Forecasting and Social Change*, 143, 297–306. doi:10.1016/j.techfore.2019.01.018.
- Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1), 75–89. doi:10.1057/jit.2015.5.

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