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Corresponding author:
Mari-Liis Ivask
mari-liis.ivask@taltech.ee

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Digitalisation as a driver of psychosocial risks in post-pandemic workplaces with implications for psychosocial risk management

Mari-Liis Ivask

Department of Business Administration, School of Business and Governance, Tallinn University of Technology, Akadeemia tee 3, 12616 Tallinn, Estonia

ABSTRACT

Digitalisation has become a defining feature of post-pandemic work, reshaping work organisation and creating psychosocial risk (PSR) patterns that are not always captured in established assessment frameworks. This qualitative study examines how digitalisation, including remote/hybrid work and the growing role of advanced systems, amplifies traditional PSRs and generates emerging risks, using Estonia as an information-rich case. Twelve semi-structured interviews were conducted with occupational health experts, including occupational psychologists and occupational health physicians, between November and December 2025. Data were analysed using Braun and Clarke's thematic analysis.

Based on this Estonian expert sample, the analysis identified five interrelated PSR themes in post-pandemic digitalised workplaces: (1) work demands and workload, (2) organisational culture and change management, (3) social relations and isolation, (4) work–life boundaries and availability, and (5) career insecurity and individual adaptation. Experts highlighted an increased cognitive load and 'double work' caused by poorly integrated systems and the need to check digital and AI-generated outputs. They also described uncertainty and limited involvement in change processes, loneliness and misunderstandings in digital communication, constant availability that reduces recovery, ongoing skills pressure, and perceived monitoring. Across themes, digitalisation functioned as a cross-cutting driver spanning widely used Cox's PSR domains. The findings underline the need to make digitalisation explicit in PSR assessment and management by integrating technology-mediated exposure pathways into routine procedures and controls. This is important for designing effective workplace interventions, supporting employee well-being and resilience, and strengthening sustainable management practices – so that digital transformation contributes not only to efficiency and innovation but also to healthier and more sustainable work environments.

Introduction

Psychosocial risks (PSRs) are aspects of work design, organisation, and management – and their social and organisational context – that can harm employees' psychological or physical health (Leka et al. 2010). To support prevention, several frameworks have been developed to structure PSR identification and assessment. Among the most influential is Cox's taxonomy, which classifies psychosocial hazards into core domains and has remained widely used in research and institutional guidance (Cox 1993; Leka and Jain 2024). A key strength of this approach is that PSRs are understood as consequences of working conditions and work organisation rather than individual vulnerability (Cox 1993). This conceptualisation aligns with broader evidence from decades of research showing that psychosocial working conditions are robustly linked to employee health and well-being outcomes, reinforcing the importance of organisational-level prevention (Boot et al. 2024).

Cox's taxonomy has strongly shaped how PSRs are framed in major international and European guidance. Institutional reports emphasise that PSRs are linked to organisational arrangements such as workload and work pace, organisational culture and communication, interpersonal relations, role clarity, job security, and the work–home interface (EU-OSHA 2000; WHO 2003; ILO 2016). At the same time, the nature of work is changing rapidly. Post-pandemic workplaces increasingly rely on digital technologies and digitally mediated work arrangements, which may reshape 'classic' PSR domains and generate emerging risk patterns that are not always visible in routine assessment practices (Leka and Jain 2024).

One prominent example is technostress, first introduced to describe difficulties in adapting to new computer technologies (Brod 1984). Later research conceptualised technostress as a work-related, organisationally shaped stressor connected to how information and communication technologies (ICTs) are designed, introduced, and used. A widely applied operationalisation distinguishes several 'technostress creators', including techno-overload (pressure to work faster/longer), techno-invasion (blurring of work–life boundaries), techno-complexity (learning demands), techno-insecurity (threats to employability), and techno-uncertainty (ongoing change and upgrades) (Tarafdar et al. 2007; Ragu-Nathan et al. 2008). Evidence also suggests that organisational conditions can mitigate these effects – for example, through support, training, and implementation practices that reduce unnecessary technology-driven strain (Tarafdar et al. 2015). Building on transactional stress perspectives, technostress is viewed as an appraisal-and-coping process that can yield both techno-distress and techno-eustress, shaped by system design and organisational practices (Tarafdar et al. 2019). From this perspective, digitalisation can be understood as a double-edged phenomenon for the contemporary workforce (Xu et al. 2025). When digital tools and hybrid work arrangements are well designed and adequately supported, they may function as resources that enhance flexibility, autonomy, efficiency, and work–life balance (Gajendran and Harrison 2007; Tarafdar et al. 2019; Chafi et al. 2022). Under less favourable conditions, however, they may become a source of psychosocial strain. As psychosocial risk research is primarily concerned with work-related conditions that may harm health and well-being, the present study focuses specifically on the adverse side of digitalisation. Recent review evidence indicates that technostress research increasingly differentiates between techno-distress and techno-eustress and highlights the need for more robust approaches to identifying and measuring technostress to support organisational monitoring and intervention (Kumar 2024). Despite this, technology-related exposures are often treated as background 'infrastructure' rather than explicitly operationalised as PSRs within standard risk assessment tools and routines (Leka and Jain 2024).

This study responds to that practical and conceptual gap by empirically mapping PSRs in post-pandemic workplaces and examining how digitalisation (including hybrid/remote work and the growing role of advanced systems) reshapes and amplifies PSRs across established domains. Drawing on Cox's taxonomy as an organising framework (Cox 1993) and informed by macro-level conceptual work emphasising technological developments as part of the wider context shaping psychosocial exposures (Leka and Jain 2024), the study aims to support more explicit integration of digitalisation-related hazards into PSR assessment and management processes. Established approaches such as PRIMA-EF provide a procedural foundation for PSR management (Leka et al. 2011) but may benefit from clearer operational guidance for identifying and managing technology-mediated PSRs within those processes.

Materials and methods

This study used a qualitative design based on semi-structured expert interviews to explore current PSRs in post-pandemic work, with specific attention to PSRs related to digitalisation, including remote and hybrid work as digitally mediated work arrangements. The interview guide was developed through a targeted literature review covering PSRs, digitalisation, and post-pandemic work contexts, and drew on experts' practice-based observations regarding workplace PSRs and employee experience. The interview plan addressed three primary domains: (1) key PSRs in today's work context, (2) PSRs associated with digitalisation, and (3) PSRs linked to remote and hybrid work.

Study context

Estonia was selected as an information-rich case for examining digitalisation-related PSRs. The EU Digital Decade Country Report indicates that Estonia performs above the EU average in digital skills and digital public services, while the uptake of advanced digital technologies in enterprises remains below the EU average but is a priority area for significant improvement (European Commission 2024). This combination of high digital maturity and ongoing digital transformation makes Estonia well suited for identifying emerging PSRs linked to digitalisation.

Participants and data collection

A total of 12 expert interviews were conducted in Estonia between November and December 2025 with occupational psychologists and occupational health physicians. Participants were recruited through purposive sampling, with eligibility criteria including several years of professional experience and current involvement in addressing workplace PSRs through organisational consulting, employee counselling, or both. Experts were positioned as intermediaries between organisations and employees, drawing on their professional exposure to PSR situations from both organisational and individual perspectives to support PSR management and enhance organisational and employee resilience (Jain et al. 2021). Interviews were conducted via Microsoft Teams or in person and lasted approximately 30 minutes to 1 hour. All interviews were audio-recorded with participants' permission, transcribed verbatim using the transcription tool Tekstiks, and verified by the author for accuracy prior to analysis.

Data analysis

Data were analysed using thematic analysis following Braun and Clarke's six-phase approach (Braun and Clarke 2006): familiarisation, initial coding, theme development, theme review, theme definition and naming, and reporting. Coding and data organisation were conducted manually by the author using MS Office tools. NotebookLM was used to support documentation by reviewing the coherence of author-generated code labels, without influencing analytic decisions. The author managed and clustered coded segments and requested peer review to support credibility. Themes were

developed iteratively by grouping conceptually similar codes into subthemes and higher-order themes.

Results

In this expert sample, the thematic analysis identified five interrelated themes characterising PSRs in a post-pandemic, digitalised work environment (see Table 1): (1) work demands and workload, (2) organisational culture and change management, (3) social relations and isolation, (4) work–life boundaries and availability, and (5) career insecurity and individual adaptation. Across these themes, experts consistently described digitalisation as a cross-cutting influence that shapes how demands, communication practices, boundary management, and experiences of insecurity occur in everyday work contexts.

Theme 1: Work demands and workload. Experts described *increased workload and work intensification* as driven by organisational restructuring, staff reductions, and efficiency pressures, with digital tools often adding layers of work through increased information flow and an amplified meeting culture. Participants emphasised that faster tools (including AI-enabled solutions) do not necessarily reduce workload but may increase output expectations and task volume. A second subtheme was *cognitive and mental overload*, characterised by multitasking, frequent interruptions, and constant switching between digital environments. Experts reported that employees struggle to maintain sustained attention, and long-term strain may accumulate when concentration is repeatedly disrupted. Third, experts highlighted *technological barriers and 'double work'*. Examples included poorly integrated systems, duplicate data entry, parallel manual and digital processes, and additional checking or correcting of system outputs. These issues were described as especially burdensome when systems are introduced quickly or without adequate training and support.

Theme 2: Organisational culture and change management. Experts described *strategic uncertainty and poor communication*, which contributed to unclear roles, shifting expectations, and anxiety – especially when employees lacked timely explanations about 'why' changes were happening. A closely related subtheme was *insufficient change management and employee involvement*. Change initiatives (including digitalisation projects) were often described as rapid, partial, or unfinished, with limited employee participation beyond formal consultation. Finally, experts stressed *management quality and psychological safety* as central conditions that either enabled or undermined open communication about PSRs. Participants described patterns of weak managerial support, toxic leadership behaviours, and fear of speaking up – conditions that made it difficult to surface problems early and address them constructively.

Theme 3: Social relations and isolation. Experts described *social isolation* as a salient PSR, especially under prolonged remote work, but also more broadly as a decline in everyday collegial contact and belonging. Reduced interaction and weaker social support were described as contributing to emotional strain, loneliness, and mood-related difficulties across different work arrangements. In addition, experts described *communication barriers and interpersonal tensions* (e.g. misunderstandings, conflicts, and bullying). Hybrid/remote arrangements and digital communication channels were perceived as amplifying these risks by reducing non-verbal cues, increasing ambiguity, and making it easier for misinterpretations to escalate.

Theme 4: Work–life boundaries and availability. Experts described *constant availability* through multiple channels and frequent notifications, with implicit expectations of quick responses, creating *pressure to respond*. These expectations were often not formally stated but reinforced through everyday practices and uneven norms between managers and teams. Experts also described *boundary blurring and insufficient recovery*, including skipped breaks, overtime, and extended working hours to manage high demands. Flexible arrangements were frequently perceived as enabling work to spill into private time, making it harder for employees to detach and restore energy.

Theme 5: Career insecurity and individual adaptation. The fifth theme focused on *job and future insecurity* arising from organisational restructuring and broader uncertainty, combined with technology-related concerns such as job replacement, changing work content, and the growing role of AI-related technologies. Experts described insecurity as ex-

Table 1. Expert-identified PSR themes and subthemes

Theme	Category (subtheme)
Work demands and workload	*Increased workload and work intensification*
	Cognitive and mental overload
	Technological barriers and double work
Organisational culture and change management	*Strategic uncertainty and poor communication*
	Insufficient change management and employee involvement
	Management quality and psychological safety
Social relations and isolation	*Social isolation*
	Communication barriers and interpersonal relations
Work–life boundaries and availability	*Constant availability and pressure to respond*
	Boundary blurring and insufficient recovery
Career insecurity and individual adaptation	*Job and future insecurity*
	Technological anxiety and development pressure
	Control and monitoring

tending beyond immediate layoffs toward longer-term ambiguity about employability and career continuity. A second subtheme involved *technological anxiety and development pressure*. Experts reported that employees experienced continuous pressure to learn new tools, while organisations sometimes assumed competence rather than supporting adaptation. This was perceived to contribute to competence-related anxiety, development fatigue, and perceived inequality between employees with different digital skill levels. Finally, experts described emerging concerns about *control and monitoring*, including fears of increased surveillance enabled by digital tools and a perceived 'culture of control'.

Discussion

This study aimed to identify the main PSRs in post-pandemic, digitalised work, using Estonia as a case study. The findings from this expert sample indicate that digitalisation is no longer merely a background feature of work; rather, it has become a cross-cutting driver that amplifies established PSRs and contributes to emerging risk patterns. Interpreted through Cox's (1993) taxonomy, the findings align with core hazard domains (e.g. workload and pace, organisational culture and function, interpersonal relations, the work–home interface, and career development). Crucially, however, digitalisation cannot be located within a single domain. Instead, it operates across domains by reshaping task design, communication rhythms, boundary conditions, and control mechanisms. In this sense, digitalisation functions as a macro-level driver that reconfigures established hazards while also enabling emergent risk patterns (Leka and Jain 2024).

Experts described intensified work under digitalisation – faster communication cycles, more parallel tasks, and pressure to 'keep up' – consistent with technostress research showing that strain stems less from technology itself than from how it reshapes demands and work processes (Tarafdar et al. 2007). In this study, cognitive overload and constant switching between digital environments reflect techno-overload and techno-complexity, while frequent tool and system changes align with techno-uncertainty (Tarafdar et al. 2007; Ragu-Nathan et al. 2008). These accounts align with evidence that work-related ICT use can intensify work and increase strain (Chesley 2014), and specific ICT-related demands predict stress and burnout beyond general job demands, while strong organisational ICT support can reduce these negative effects (Day et al. 2012). A distinctive finding was the recurring emphasis on 'double work' (e.g. duplicate entry, parallel systems, extra checking), including verification/correction work around AI-generated outputs. This suggests a sociotechnical misfit: when tools are layered onto existing workflows without redesign and integration, 'efficiency technologies' can become additional job demands. Given associations between ICT demands, job strain, and poorer self-rated health (Stadin et al. 2016), prevention should prioritise work design, integration, and implementation quality rather than rely mainly on individual training (Leka and Cox 2008; Tarafdar et al. 2015).

Findings on digital change processes indicate that technostress is shaped – and can be mitigated – by organisational conditions. Experts linked strain to rapid or unfinished rollouts, unclear expectations, weak communication, limited resources, and low employee involvement. This suggests that accelerated change can itself function as a psychosocial hazard by sustaining uncertainty and fears of skill obsolescence (Schabracq and Cooper 2000). Consistent with the results, technostress tends to be higher in more centralised organisational contexts – where decision-making is more top-down and employees typically have less discretion and participation – than in less centralised settings (Wang et al. 2008). In turn, organisational resources can mitigate these pressures: ICT support and 'technostress inhibitors', including training, technical support, and mechanisms that facilitate user involvement, help buffer ICT hassles and learning demands and are associated with better work-related outcomes (Ragu-Nathan et al. 2008; Day et al. 2012). Overall, the findings suggest that job resources – including autonomy, leadership, social support, and ICT-use facilitators – can function as protective conditions that may support PSR management when ICT demands intensify (Salanova et al. 2013).

Work–life boundary blurring emerged strongly in technology-mediated work. Experts described implicit norms of rapid responsiveness, constant notifications, and 'always-on' reachability that undermine detachment and recovery. This aligns with workplace telepressure – a socially driven preoccupation with and urge to respond quickly to work messages – which is associated with poorer recovery and burnout-related outcomes (Barber and Santuzzi 2015). Evidence also suggests that greater after-hours use of work-related communication technologies is linked to increased work–life conflict, which in turn relates to higher burnout/exhaustion (Wright et al. 2014). Similarly, after-hours work email use is associated with higher emotional exhaustion, partly because it predicts lower psychological detachment and greater work–life conflict (Tedone 2022). Together, these findings suggest that blurred work–life boundaries are not simply an individual time-management problem. Without explicit norms, workload planning, and 'disconnect' protections, digitally enabled availability is likely to translate into psychosocial strain.

Finally, the findings from this expert sample indicate a growing psychosocial burden linked to skills pressure and AI-related insecurity. AI-related resources (e.g. AI efficacy and generative AI support) may enhance engagement and productivity, whereas AI-related technostress is associated with exhaustion, work–life conflict, and poorer mental health (Chuang et al. 2025; Liţan 2025). The accounts in this study align with technostress research suggesting that a rapid pace of technological change can be associated with heightened job insecurity and greater technology-related strain (Ayyagari et al. 2011). More recent evidence suggests that automation- and AI-related concerns are associated with poorer employee well-being, including greater sleep disturbance among workers reporting higher automation anxiety (Baek et al. 2022) and higher depressive symptoms in relation to organisational AI adoption (Kim et al. 2025), alongside broader evidence that

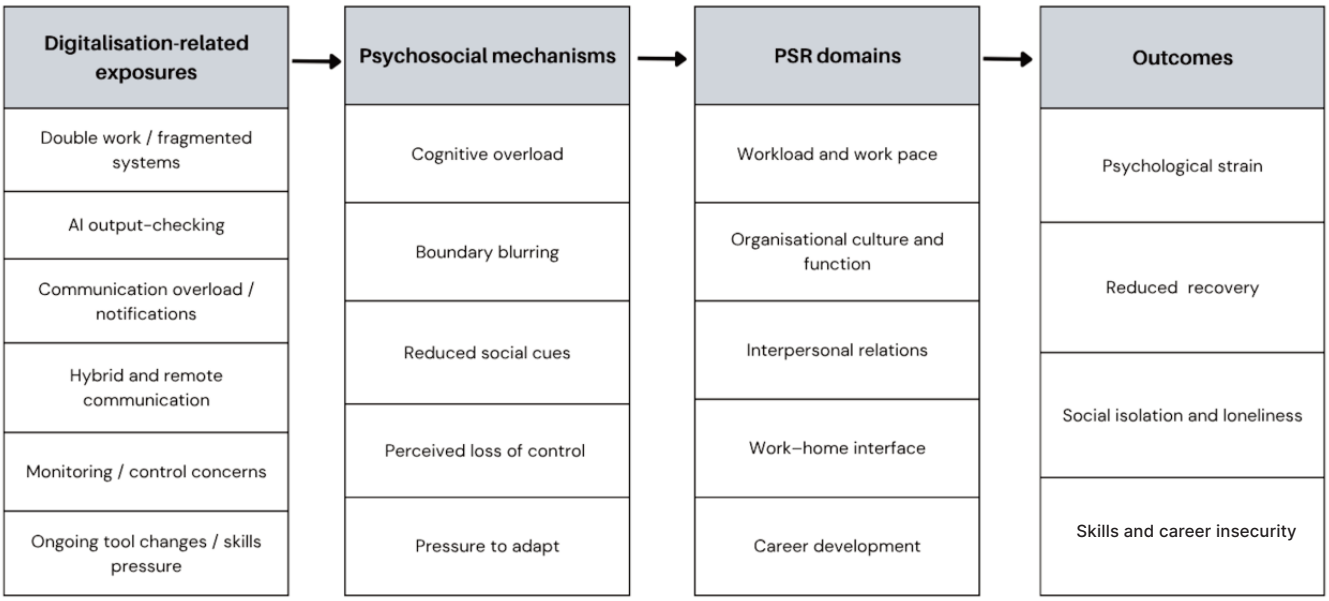

Fig. 1. Digitalisation as a driver of psychosocial risks. A conceptual synthesis of the findings, illustrating how digitalisation-related exposures identified by experts may operate through key psychosocial mechanisms across established PSR domains and contribute to adverse employee outcomes.

working in more automatable jobs is linked to elevated mental health risks (Blasco et al. 2022). Overall, these findings suggest that managing digitalisation-related PSRs requires governance that combines competence development, clear implementation decisions, and boundary protections.

These interconnected themes are visually summarised in Fig. 1, which provides a conceptual synthesis based on this study of how digital exposures may relate to psychosocial mechanisms, PSR domains, and outcomes. This synthesis helps illustrate the pathways through which digitalisation may reshape the modern work environment.

Conclusions

This expert-based study in Estonia suggests that digitalisation functions as a macro-level driver of PSRs, amplifying traditional hazards and creating new pressures linked to constant change and AI-related technologies. The results highlight organisational root causes that intensify technostress and boundary blurring. Effective prevention therefore requires system-level measures: integrated work and technology design, adequate resources and support, clear communication and involvement practices, and explicit norms that protect recovery and manage career uncertainty.

Implications for PSR assessment and management

The findings from this expert sample indicate that organisations should make digitalisation explicit in PSR assessment and management by assessing technology-mediated exposure pathways (e.g. system fragmentation causing double work, communication overload, implicit availability norms, AI-related insecurity, monitoring concerns). Established PSR management approaches (e.g. PRIMA-EF) provide a strong process model – identify risks, plan actions, implement, and evaluate – to support a positive work environment and organisational sustainability (Leka and Cox 2008). However, organisations still need clearer operational guidance for assessing and managing technology-driven hazards (Leka and Jain 2024). This study contributes to it by specifying exposure pathways and indicators that can be integrated into PSR assessment and action planning. In practice, this means assessing whether digitalisation contributes to duplicate work, communication overload, constant availability, and other PSRs. These issues should be addressed through PSR assessment, organisational policies and support, training, employee involvement, and follow-up.

Limitations and future research

As an expert-based qualitative study conducted in one national context (Estonia), the findings prioritise depth and practice relevance over statistical generalisability. Expert perspectives provide a useful cross-organisational overview but may reflect help-seeking dynamics, as consultants often engage with employees experiencing higher psychosocial strain. In addition, individual consultations were reported to involve predominantly white-collar employees, although experts' organisational-level work covered both white- and blue-collar settings. The findings may therefore more strongly reflect white-collar digitalisation issues than blue-collar digital exposures. Future research could explore the transferability of these findings across sectors and occupations. It may also be useful to develop technology-specific items (e.g. modules/checklists) that can be integrated into PSR assessment and management tools, and to assess their practical feasibility and impact.

Data availability statement

The data supporting the findings of this study are available from the author upon reasonable request.

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Digitaliseerimine kui psühhosotsiaalsete riskide kujundaja pandeemiajärgses töökeskkonnas ja selle tähendus psühhosotsiaalsete riskide juhtimisel

Mari-Liis Ivask

Pandeemiajärgses tööelus on digitaliseerimine muutunud oluliseks töökorraldust kujundavaks teguriks, mis mõjutab ka töötajate psühhosotsiaalset töökeskkonda. Uurimuse eesmärk on selgitada, kuidas digitaliseerimine, sealhulgas kaugtöö, hübriidtöö ning arenenud digisüsteemide ja tehisintellekti kasutamine, võimendab olemasolevaid psühhosotsiaalseid ohutegureid ja loob uusi riske töökeskkonnas. Uuring lähtub levinud Coxi psühhosotsiaalsete ohutegurite taksonoomiast ja aitab laiendada arusaama sellest, kuidas digitaliseerimine mõjutab psühhosotsiaalseid riske tänapäeva töökeskkonnas. Uuring keskendub Eestile kui digitaalselt arenenud, kuid jätkuvalt muutuste protsessis olevale riigile, kus ilmnevad digitaliseerimisega seotud psühhosotsiaalsed riskid. Uuringu andmed põhinevad 12 poolstruktureeritud eksperdiintervjuul organisatsiooni- ja tööpsühholoogide ning töötervishoiuarstidega, mis viidi läbi 2025. aasta novembris ja detsembris. Kogutud andmeid analüüsiti temaatilise analüüsi meetodil.

Tulemused näitavad, et digitaliseerimine kujundab ja võimendab erinevaid psühhosotsiaalseid ohutegureid. Analüüsi tulemusena eristus viis omavahel seotud teemat: 1) töö nõudmised ja töökoormus, 2) organisatsioonikultuur ja muutuste juhtimine, 3) sotsiaalsed suhted ja isolatsioon, 4) töö- ja eraelu piirid ja kättesaadavus ning 5) karjäärialane ebakindlus ja individuaalne kohanemine. Eksperdid tõid esile suurenenud kognitiivse koormuse, töö intensiivistumise, erinevatest halvasti integreeritud süsteemidest tuleneva topelttöö ning vajaduse kontrollida digilahenduste ja tehisintellekti loodud väljundeid. Lisaks kirjeldati vähest kaasatust muutuste protsessidesse, üksindust, digisuhtluses ette tulevaid arusaamatusi, survet olla pidevalt kättesaadav ning tehisintellekti ja tehnoloogiliste muutustega seotud ebakindlust.

Artikli tulemused osutavad, et digitaliseerimine ei ole pelgalt tehnoloogiline protsess, vaid ka töökorralduslik ja juhtimisalane väljakutse, millel on oluline tähendus töötajate psühhosotsiaalse töökeskkonna kujundamisel. Seetõttu tuleks digitaliseerimisega seotud ohutegureid psühhosotsiaalsete riskide hindamisel ja juhtimisel senisest selgemalt arvesse võtta. Edasistes uuringutes tuleks täpsustada, kuidas integreerida tehnoloogiaga seotud riske riskihindamise vahenditesse ja juhtimispraktikatesse. See võimaldab suunata digitaliseerimist viisil, mis toetab töötajate heaolu, säilenõtkust ja kestlikke juhtimispraktikaid.