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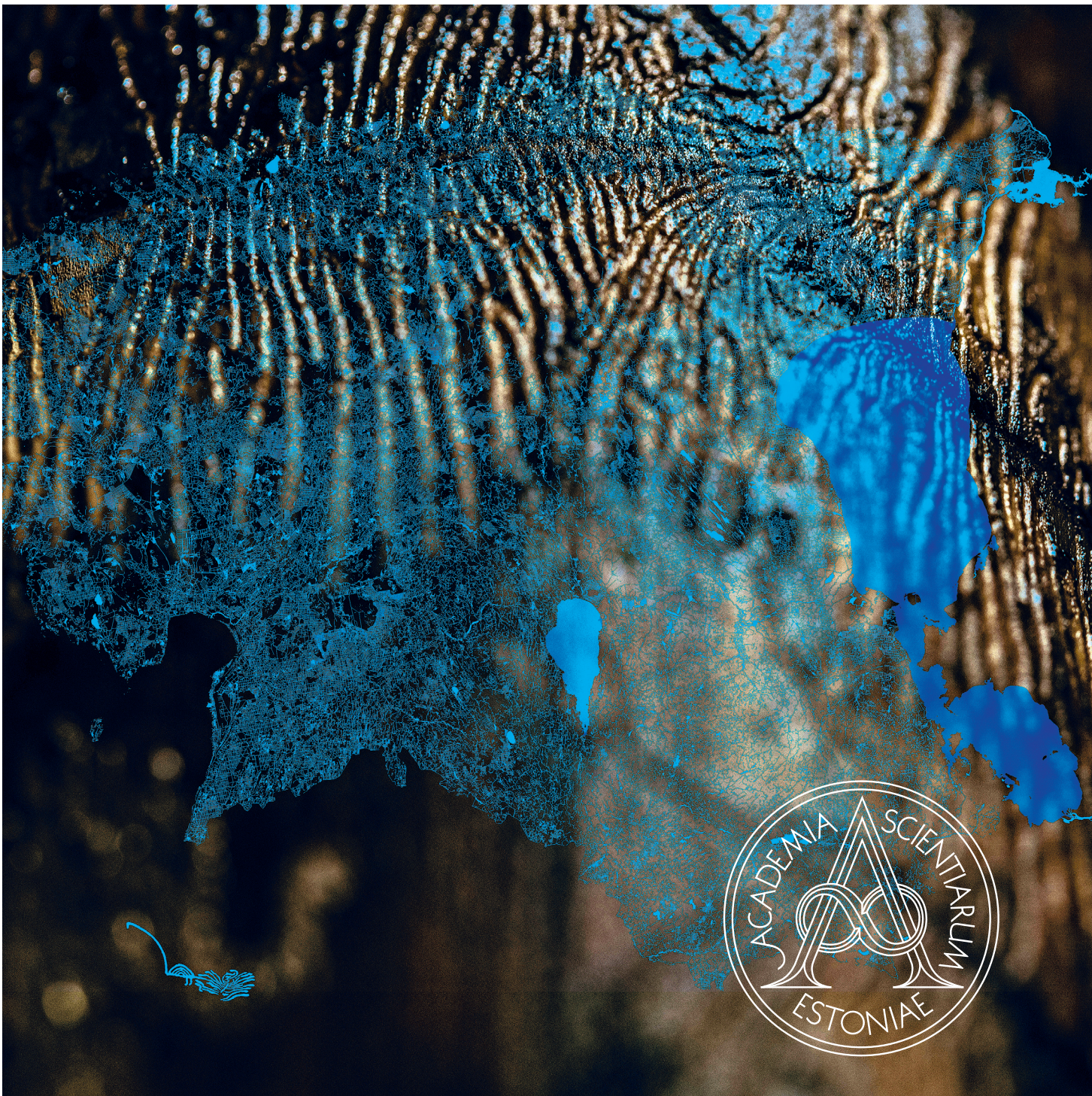

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Foreword

Dear academic community,

We are pleased to present this special issue, *Sustainable Management in the Digital Era.* The rapid development of digital technologies, the broad adoption of artificial intelligence, global sustainability challenges, and changing forms of work have led us to the era in which management can no longer be limited to efficiency, growth, and competitiveness. Increasingly important is to understand how to design and lead organisations in a way that simultaneously supports economic performance, human well-being, ethical decision-making, and environmental responsibility.

The journal issue addresses people management practices in the digital era, sustainability-related tensions in platform companies, challenges related to human resource management and employee well-being, the impact of digitalisation on employment, and workplace risk assessment. The articles approach sustainable management from multiple perspectives, highlighting, among other themes, value-based management and managers' willingness to intervene in unethical situations. These topics are important not only for the internal functioning of organisations but also for broader social trust and responsible economic development.

The articles contribute to a better understanding of the interdisciplinary nature of sustainable management in the digital era within the context of a sustainable economy marked by complex challenges.

We hope that this special issue will provide valuable reading for researchers, practitioners, policymakers, and all those interested in sustainable management, digital transformation, and responsible organisational behaviour.

We would like to express our sincere gratitude to all authors, reviewers, and to the journal's editorial board, whose commitment, expertise, and collaboration made this special issue possible.

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HUMAN CAPITAL, PERSONNEL MANAGEMENT, SUSTAINABILITY

RESEARCH ARTICLE

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Digital era people management practices: general management insights

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ABSTRACT

This research article examines the critical challenges and opportunities of people management in the digital era, offering valuable insights from general management and sustainable management perspectives. As organizations increasingly operate in digitally transformed environments, sustainable people management becomes essential to fulfilling the organization's evolutionary purpose, reflecting its deeper reason for existence. Therefore, understanding how such strategies are constructed and implemented is very important. The authors aim to construct a typology of people management practices by adopting a case study strategy and drawing on general management insights from face-to-face interviews with top management from two information and communications technology (ICT) companies in Estonia. All material and data are entered into a case database (n = 20). The authors use a model of empirically grounded type construction and have constructed a typology of people management practices. The results make a significant contribution to people management by addressing the critical challenges and opportunities in managing human capital in the digital era.

1. Introduction

The digital era compels organizations to rethink their purpose and strategic objectives. By aligning technological advancements with stakeholder expectations and integrating sustainability into core operations, organizations can create sustainable value. This transformation enhances operational efficiency and fosters a culture of responsibility and ethical conduct, which is essential for long-term success in a post-growth world (Kasemsap 2017; Kumar 2021; Saari et al. 2024; Inan and Yilmaz 2025). Complex, autocatalytic, self-organizing, nonlinear, and adaptive systems are the principal challenges of the digital era (Laloux 2016; Raworth 2017; Henderson 2020).

Yet the practical and scholarly question remains: How is strategizing enacted in such contexts, and what role do people management practices play in enabling sustainable value creation and an organization's evolutionary purpose? Existing studies have not provided an empirically grounded typology that differentiates people management practice configurations by both their integration into strategizing and their sustainability orientation. Consequently, alignment, culture, and sustainability are often invoked, but the field offers limited clarity on how these concepts translate into comparable patterns of people management practices across organizations. Therefore, the authors ask questions such as: How are strategies constructed and implemented? What is a people management practice? Are people management practices an integral part of strategies? What kinds of people management practices are sustainable in fulfilling the evolutionary purpose? This supports the article's aim, which is to develop a typology of people management practices. Theoretical and methodological rigor in typology construction is achieved by grounding the process in established theories and methodologies, systematically selecting and operationalizing attributes, and integrating qualitative and quantitative methods.

Sustainable people management practices that fulfil the evolutionary purpose aim to balance long-term organizational performance with the well-being, development, and dignity of employees, while also contributing positively to environmental and social goals. However, despite the broad agreement that people management is important for strategic renewal and sustainability, we still lack an empirically grounded way to differentiate people management practice configurations by (a) their integration into strategy and (b) their sustainability as an ongoing equilibrium, rather than as isolated initiatives. Accordingly, concepts such as 'alignment', 'culture', and 'sustainability' are widely used, yet remain insufficiently linked to comparable patterns

of concrete people management practices across organizations. All members of sustainable and successful organizations should possess a combination of competences and competencies that enable them to navigate the challenges of the digital era and contribute to the long-term success of the organization (Wahl and Zernand-Vilson 2025). The research results contribute significantly by addressing why and how people management practices are integrated into strategies and which types of practices are sustainable to fulfil the evolutionary purpose of organizations. This study contributes to people management by developing a typology of people management practices that explains how integration into strategy varies and which practice configurations appear more sustainable in fulfilling the evolutionary purpose.

The paper is organized as follows. Section 2 reviews theories and evidence related to models that explain how to manage and lead people. Section 3 outlines the research methodology, data collection, analysis, and the construction of the typology. Section 4 presents the results and discussion, while Section 5 concludes the paper and offers directions for future research.

2. Theoretical framework of people management practices

The theoretical framework of people management practices is based on strategic human resource management (SHRM) theories and models that explain how to manage and lead people within an organization to achieve both organizational goals and employee well-being. This proactive approach treats employees as a strategic asset to drive sustainability.

A prominent and widely used theory originates from Lepak and Snell (1999): the theory of human capital allocation and development. Allocation refers to how individuals and organizations choose to invest in human capital, while development describes the process of acquiring and enhancing these skills. The theory suggests that such investments yield returns, influencing individual career paths and overall economic growth, and are motivated by a rational pursuit of increased economic benefit. In a post-growth world, growth is never an objective in itself; instead, purpose can be manifested on a larger scale (Laloux 2016). The theoretical foundation for human capital theory is drawn primarily from transaction cost economics and the resource-based view (RBV) of the firm, which are used to discuss various employment modes (Barney 2001). Each theory is presented as evidence that value and uniqueness are fundamental dimensions differentiating most human capital. Value is defined as the ratio of strategic benefits to customers derived from skills relative to the costs incurred. The degree of uniqueness affects transaction costs; as human capital becomes more idiosyncratic to a particular firm, externalization may become infeasible or incur excessive costs (Lepak and Snell 1999). Today, it is recognized that knowledgeable and skilled people are the true assets of most organizations; therefore, the knowledge-based theory (KM) of the firm should also be considered. Knowledge is viewed as the most strategically significant resource of the organization, embedded and carried through multiple entities, including organizational culture and identity, policies, routines, documents, systems, and people (Grant 1996; Nonaka et al. 2000). Furthermore, dynamic capabilities (DC) theory is a newer approach in strategic management that focuses on an organization's capability to adapt and change in response to a rapidly evolving business environment (Teece et al. 1997; Winter 2003). While the RBV emphasizes selecting appropriate resources, DC emphasizes development and renewal. It is also understood that values are based on what is most important to people; values are perceptions that guide attitudes and behaviour, representing both important goals and the appropriate ways to achieve them (Wahl 2012). Stakeholder theory asks managers to articulate the shared sense of value they create, and addresses values and beliefs about the appropriate relationships among the individual, the organization, and the state (Tricker 2015). Artificial intelligence (AI) in people management raises many ethical and legal issues that should be addressed before combining the best of both worlds (Tsiskaridze et al. 2023).

People management practices are activities that directly impact employees and are implemented in line with the intentions set out in organizational strategies (Boon et al. 2019). Sustainable people management practices focus on creating a balance that ensures long-term engagement, well-being, and prosperity for employees while contributing meaningfully to organizational and societal sustainability objectives (Kramar 2022; Lulewicz-Sas et al. 2022). Previous studies have indicated that without the alignment with organizational culture, people management practices cannot reach their full potential (Chan et al. 2004; Harrison and Bazzy 2017; Rhee et al. 2018; Vasumathi et al. 2025). Core values are the principal elements of organizational culture and, together with beliefs and expectations, either hinder or support the achievement of the formulated strategy; the alignment between organizational core values and basic values can enhance resilience and sustainable success (Wahl and Durst 2022). Organizations that clearly define their purpose or mission and activate core values to support it are well positioned for long-term success in a complex and dynamic world (Beehive 2020). It is important to focus more on being authentic than on appearances. In bringing strategy into being, practitioners advance the living construction of their strategy through a four-stage strategy formation process – identification, framing, interpretation, and attainment – as a narrative-driven performative praxis (Prokushenkov 2025). People management practices include the components presented in Fig. 1.

The components of people management practices collectively aim to build a high-performance culture by enhancing employees' ability, motivation, and opportunity to contribute effectively to organizational success (Alqudah et al. 2022). Performance management involves setting objectives, monitoring progress, providing feedback, and evaluating performance aligned with organizational goals. Selective personnel hiring uses rigorous recruitment processes to hire individuals with the right competencies and fit for the organizational culture. Job security provides stable employment to foster loyalty and optimize turnover (Sun et al. 2007). Managers need strong communication skills to convey the purpose or

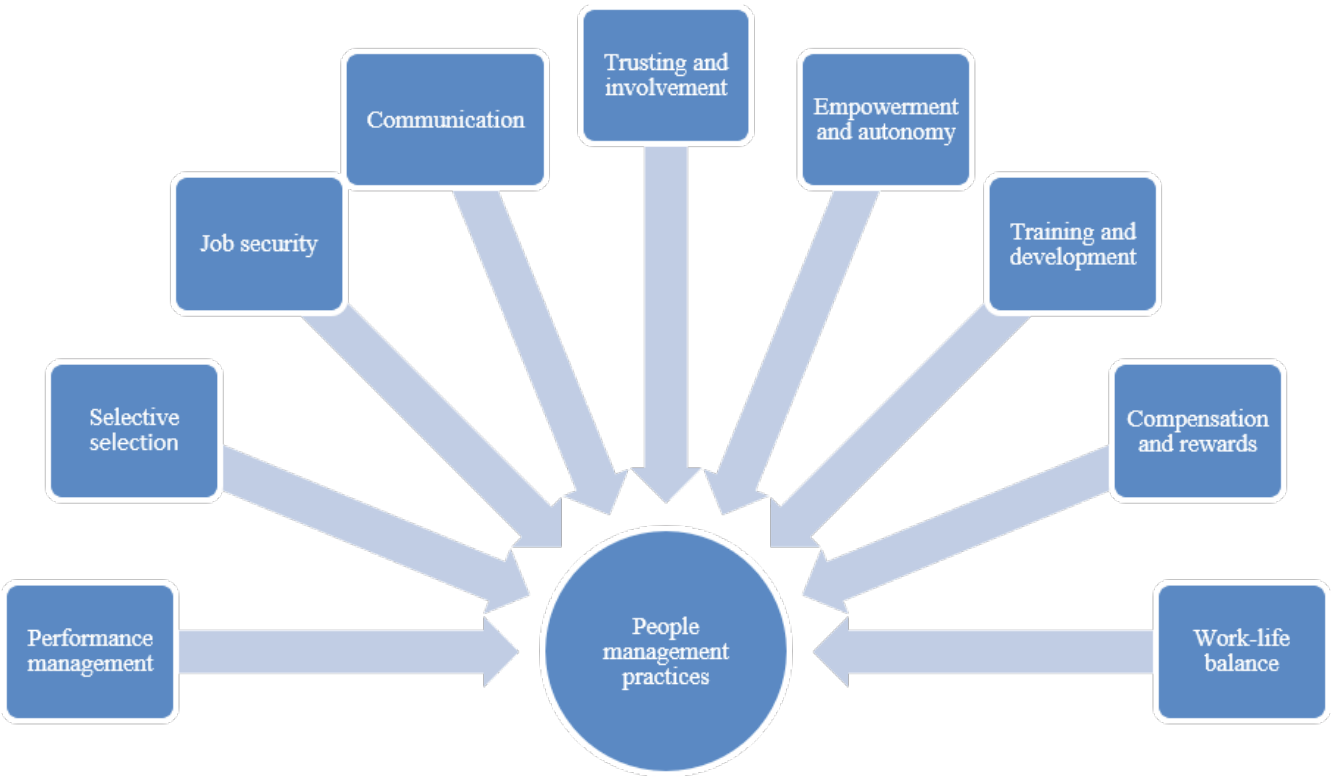

Fig. 1. Components of people management practices.

mission clearly to board members and other stakeholders; open communication ensures transparency throughout the organization. Trust and involvement encourage participation in decision-making, problem-solving, and collaboration to leverage employee expertise and commitment. Empowerment and autonomy allow employees discretion and ownership in their work to boost motivation and innovation (Kim 2023). Training and development provide continuous skill improvement, learning opportunities, and support to help employees perform at their best. Compensation and rewards implement competitive and performance-based pay, bonuses, and incentives that motivate employees. Work-life balance supports flexible work arrangements and initiatives to improve well-being and engagement.

To summarize, the literature reveals notable differences in how the components of people management practices interact within the organization and the external environment. However, sustainability requires a balanced and integrated strategizing process supported by a strong organizational culture. After reviewing the relevant literature, the authors proceed with the research methodology, data collection, analysis, and construction of the typology.

3. Materials and methods

3.1. Research methodology, data collection and analysis

The research uses a qualitative method, and it is categorized as an explanatory, cross-sectional research project. This empirical study is based on a case study strategy following Yin (2009), drawing on general management insights from non-standardized, semi-structured face-to-face interviews with top management from two information and communications technology (ICT) companies in Estonia. Guiding themes and questions were pretested, and the interviews took place in 2023–2025. All empirical material and related documentation were systematically stored in a case database to ensure transparency, traceability, and consistency throughout the research process. In accordance with the multiple-case design, all selected cases (n = 20) were documented and described in detail.

The study included participants from two organizations in Estonia, representing two business contexts: telecommunications (n = 10, 50%) and software development (n = 10, 50%). The sample was predominantly senior, with fifteen top-level participants (75%) and five mid-level participants (25%). Gender distribution was relatively balanced, with 11 female participants (55%) and nine male participants (45%). The largest role groups were heads of division (n = 5, 25%) and heads of function (n = 4, 20%), followed by heads of business (n = 3, 15%), chairmen of the board (n = 2, 10%), heads of department (n = 2, 10%), and product managers (n = 2, 10%). One area manager (5%) and one partner & head of function (5%) were also included. The distribution of participants across hierarchical levels differed between the two case organizations and reflected organizational size and managerial layering. The telecommunications company (approximately 1300 employees) operates with a more differentiated hierarchy, enabling the inclusion of several mid-level managers. In contrast, the software development company (approximately 360 employees) has a comparatively flatter structure, resulting in fewer mid-level roles and a larger proportion of top-level informants. Importantly, across both organizations, participants – regardless of formal level – were directly in-

volved in the design and implementation of people management practices, making them appropriate key informants for addressing the study objectives.

3.2. Constructing a typology

To construct the typology of people management practices, authors mainly relied on Kluge's (2000) four stage model of empirically grounded type construction. The construction of typologies is central to qualitative social research, so it is necessary to clarify the concept of types (e.g. ideal types, real types, prototypes, extreme types, types of structure) and the process of typology construction. Quality can be adequately captured by combining qualitative content analysis (Mayring 2019) with empirically grounded type construction (Lang and Schweizer 2020).

Stage 1: The ideal type helps organize the chaos of practice and is defined as a combination of attributes. In qualitative studies, the properties and their dimensions are elaborated and 'dimensionalized' during the analysis process using the collected data and theoretical knowledge (Kelle and Kluge 2010). Attention is given to the level of interpretation and abstraction of the data, which is expressed in abductive category formation (Lang and Schweizer 2020). Categories were added to the case database during the abductive category formation of interview transcriptions, and subcategories were dimensionalized.

Stage 2: Categories serve as the starting point for identifying empirical regularities in the occurrence of content-bearing elements in the data (Lang and Schweizer 2020). Cases were grouped according to the defined properties and their dimensions, and the identified groups were then analysed for empirical regularities. PAST 5.2 (Hammer et al. 2001) was used for computer analysis. Quantified data were entered as a matrix and recorded using numerical codes. Codes were entered for all data values; existing coding schemes enabled comparisons. Data were checked for errors, cleaned, and preprocessed. As a result of hierarchical (Ward's method) and non-hierarchical cluster analysis (K-means) and non-metric multidimensional scaling (NMDS), the authors were able to group cases into internally homogeneous and externally heterogenous groups. The first cluster k1 contains four cases (n = 4, 20%), the second cluster k2 contains four cases (n = 4, 20%), the third cluster k3 contains four cases (n = 4, 20%), and the fourth cluster k4 contains eight cases (n = 8, 40%). The identified groups were analysed for empirical regularities. The groups were compared to determine whether there is sufficiently high external heterogeneity at the 'level of the typology' and to assess whether the resulting typology contains sufficient heterogeneity and variation in the data.

Stage 3: The meaningful relationships that form the basis of the empirically founded groups must be analysed to move from description to understanding and explanation. The combinations of content-bearing elements were analysed to determine how they are related in a meaning-generating way within the data, to deduce the supra-individual commonalities of subjective argumentative structures, and to make the semantic connections of these combinations visible (Lang and Schweizer 2020). Extensive contrasting analyses within and between the groups ultimately lead to a reduction of the attribute space and to a typology. The examined social phenomena should not only be described but also 'understood' and 'explained'; therefore, the meaningful relationships that form the basis of the empirically founded groups and combinations of attributes were analysed.

Stage 4: The constructed ideal types were described by their combinations of attributes and by the meaningful relationships among them. The differences and similarities between the ideal types, based on their characteristic content-bearing elements and the meaning-generating elements that connect them, were not simply described but were exaggerated to make their characteristics more visible (Lang and Schweizer 2020).

These four stages represent sub-goals of the type-construction process and can be achieved using different analysis methods and techniques, depending on the research questions and the type and quality of the data.

4. Results and discussion

This section presents the empirically grounded four-type typology of people management practices and discusses its implications for strategic integration and sustainability. The authors constructed a preliminary typology of people management practices, which includes four ideal types: Sustainable & Integrated, Unsustainable & Unintegrated, Unsustainable & Integrated, Sustainable & Unintegrated (Fig. 2).

Authors place types of people management practices within a two-dimensional space. The x-axis represents sustainability, ranging from unsustainable to sustainable, and the y-axis represents integration, ranging from unintegrated to integrated. Types 1 and 4 are considered sustainable because

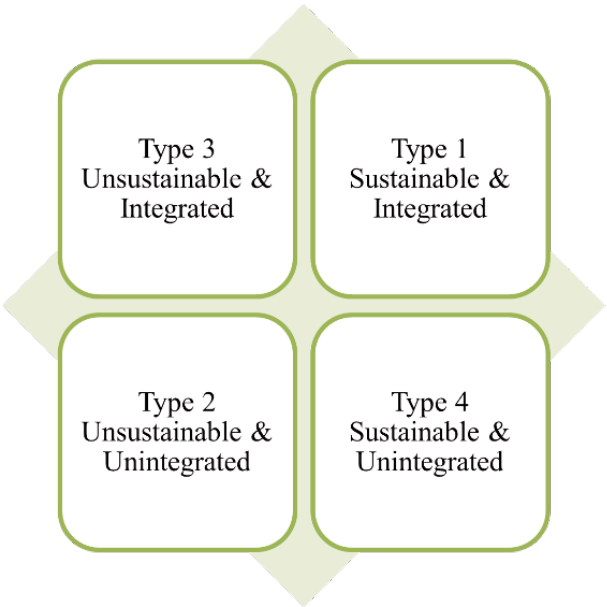

Fig. 2. Preliminary typology of people management practices (sustainability and integration).

they support ongoing equilibrium in people management, fostering long-term engagement, well-being, and prosperity while aligning with organizational sustainability goals. Types 1 and 3 are considered integrated because people management is embedded in strategy and demonstrates system-level complementarity among strategy, organizational culture, and people management practices, capturing vertical fit, horizontal fit, and cultural alignment.

Type 1: Sustainable & Integrated

This type represents a systemic human resource architecture in which people management practices form a mutually reinforcing bundle aligned with strategic intent and cultural expectations. Integration occurs through coordinated routines, decision structures, and feedback loops that translate people-related information into concrete adjustments, with implementation supported by cross-functional coordination. Sustainability is enacted primarily as a long-term, employee-centred equilibrium – well-being, flexibility, learning, engagement, and balanced performance – supported by fair reward principles and long-term investments. Empirically, the pattern is strong in alignment and control mechanisms, while participation (employee co-creation) and strong line-manager enablement are not the main drivers, and sustainability is less often framed as an explicit societal or environmental purpose.

Type 2: Unsustainable & Unintegrated

This type reflects a fragmented people management logic: practices are not designed as a coherent system and are weakly linked to strategic goals and cultural alignment. Integration is limited because responsibility is often shifted to the line without sufficient enablement, and employee voice does not function as a corrective mechanism. Sustainability is weak because the foundations of sustainable people management – psychological safety and inclusion, well-being supports, and longer-term retention logic – remain underdeveloped, and broader sustainability aims are not connected to people decisions. Empirically, this configuration is best understood as reactive and disjointed rather than a deliberately balanced system.

Type 3: Unsustainable & Integrated

This type is integrated primarily through enactment and participation: people issues are present in strategizing, cultural expectations are reflected in how practices are interpreted, and employees and managers actively shape ways of working. Integration is achieved through shared meaning, manager enactment, and voice-based feedback loops, rather than formal governance routines. However, sustainability is undermined because key social infrastructure is missing or unstable – most notably psychological safety and inclusion – and retention is not secured through long-term systemic levers; reward fairness may also be weak. Empirically, this configuration combines high integration in practice with fragile sustainability conditions, creating tension between involvement and long-term equilibrium.

Type 4: Sustainable & Unintegrated

This type demonstrates strong sustainability outcomes but limited systemic embedding: practices support well-being, engagement, retention, and long-term investment (e.g. community or education), yet integration into strategy and consistent implementation across units remains uneven. Integration is partial; some alignment and monitoring may be present, but cross-unit consistency, employee co-creation, and strong line-manager enablement are not the main integration mechanisms, making the system more patchwork than fully institutionalized. Sustainability is maintained through selected commitments and practices rather than a tightly integrated HR architecture, and it is only weakly anchored in broader societal or environmental purpose. Empirically, the defining feature is sustainability without full integration – that is, sustainable outcomes are achieved despite uneven system-level coherence.

Taken together, the typology highlights two theoretically important tensions and thereby advances research on people management in the digital era. First, integration into strategizing does not automatically imply sustainability: Type 3 shows that even when people management is enacted through participation in strategizing, sustainable foundations may remain fragile (Prokushenkov 2025). Second, sustainability does not require full integration: Type 4 indicates that organizations may sustain people outcomes through selected commitments even when system-level embedding remains uneven, refining SHRM arguments that emphasize equilibrium and long-term employee prosperity (Kramar 2022; Lulewicz-Sas et al. 2022). By treating culture–practice alignment as a key differentiator, the typology also strengthens culture-based explanations of people management effectiveness by linking values and expectations to how practices are enacted (Chan et al. 2004; Wahl 2012; Harrison and Bazzy 2017; Rhee et al. 2018). Overall, the typology provides a structured vocabulary for comparing people management configurations and clarifies where 'fit' and 'sustainability' diverge in practice.

The typology can be used as a diagnostic tool for people management leaders and other top management to identify their current people management configuration and prioritize development efforts. For Type 2 (Unsustainable & Unintegrated), the immediate priority is to create minimum system coherence by clarifying strategic people priorities, strengthening line manager enablement, and establishing basic well-being and psychological safety practices. For Type 3 (Unsustainable & Integrated), the key task is to stabilize sustainability foundations by improving inclusion and psychological safety, strengthening fair reward principles, and building longer-term retention levers without losing the existing participatory integration. For Type 4 (Sustainable & Unintegrated), the focus should be on reducing fragmentation by improving cross-unit consistency and establishing employee voice mechanisms that support shared practices. For Type 1 (Sustainable & Integrated), the main opportunity is refinement: maintaining strong alignment and sustainability while

strengthening participation and managerial enactment, so the system remains adaptive over time.

5. Conclusion

This study presents an empirically grounded four-type typology that distinguishes people management practices by their integration into strategizing and their sustainability orientation. The typology enables systematic comparison of people management configurations and provides a basis for testing how different configurations relate to sustainability-relevant outcomes in the context of digital-era complexity. Future research could refine and test an advanced version of the typology through multidimensional international studies and by examining the explanatory hypotheses associated with Types 1–4. Additionally, a fuzzy-set qualitative comparative analysis (fsQCA) could identify alternative configurations of people management practices sufficient for achieving sustainability outcomes.

Data availability statement

Data are available upon request due to privacy and ethical restrictions.

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Inimeste juhtimise praktikad digiajastul: üldjuhtimise arusaamu

Mike Franz Wahl ja Maria Kütt

Artikkel käsitleb inimeste juhtimise keskseid väljakutseid ja võimalusi digiajastul, lähtudes üldjuhtimise ja kestliku juhtimise vaatenurgast. Digitaalne transformatsioon sunnib organisatsioone ümber mõtestama oma eesmärke, strateegiaid ja juhtimispraktikaid, kusjuures inimeste juhtimine mängib võtmerolli organisatsiooni evolutsioonilise eesmärgi (*purpose*) täitmisel. Autorite eesmärk on luua empiiriliselt põhjendatud tüpoloogia inimeste juhtimise praktikate kohta ning selgitada, kuidas need on strateegiatesse integreeritud ja kui kestlikud need on.

Uuring põhineb kvalitatiivsel juhtumiuuringul, mille käigus viidi läbi 20 poolstruktureeritud intervjuud Eesti IKT-sektori kahe ettevõtte tipp- ja keskastme juhtidega. Eesmärgi saavutamiseks rakendati Kluge neljaastmelist empiiriliselt põhjendatud tüpoloogia loomise mudelit, kombineerides kvalitatiivset sisuanalüüsi ja klasteranalüüsi. Töötati välja inimeste juhtimise praktikate nelja ideaaltüübiga tüpoloogia. Tüpoloogia eristab praktikaid kahe mõõtme alusel: kestlikkus ja strateegiline integratsioon. Esimene tüüp – kestlik ja integreeritud – esindab süsteemset ja tasakaalustatud lähenemist, kus inimeste juhtimine toetab pikaajalist heaolu, õppimist ja organisatsioonilist tulemuslikkust ning on tugevalt seotud strateegiaga. Teised tüübid peegeldavad kestlikkuse ja integratsiooni erinevat taset või puudumist, tuues esile pingeid töötajate kaasatuse, psühholoogilise turvalisuse ja pikaajalise tasakaalu saavutamisel.

Uuringu tulemused annavad olulise panuse arusaama, kuidas inimeste juhtimise praktikad aitavad organisatsioonidel digiajastul luua kestlikku väärtust, ning rõhutavad vajadust siduda need praktikad teadlikult strateegia, organisatsioonikultuuri ja väärtustega.

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Sustainability paradox of platform companies: mediated legitimacy in public discourse

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ABSTRACT

This study examines how sustainability claims of a platform company are constructed, contested, and evaluated through mediated public discourse. Drawing on a qualitative media analysis of Estonian media coverage, reader comments, and corporate sustainability communications related to the Estonian mobility platform company Bolt between 2019 and 2024, the paper adopts a sustainability paradox perspective to analyze tensions between corporate narratives and public legitimacy judgments. The findings reveal three interrelated paradoxes. First, environmental sustainability initiatives framed as contributions to green mobility are frequently interpreted as symbolic or cosmetic, generating accusations of greenwashing. Second, social sustainability claims emphasizing flexibility and opportunity are contradicted by lived experiences of platform workers and users, producing friction between responsibility rhetoric and everyday service realities. Third, governance-related sustainability narratives are undermined by perceived accountability gaps, as platform self-positioning clashes with public expectations of regulation and responsibility. Together, these findings demonstrate that sustainability in platform companies is not assessed solely through performance indicators but is continuously negotiated in public discourse, where media framing and reader-commenters play a constitutive role in shaping legitimacy. The study contributes to sustainability and platform economy research by highlighting mediated legitimacy as a central discursive process through which sustainability paradoxes emerge and persist.

Introduction

Sustainability has become a central yet contested imperative for platform companies operating in urban service ecosystems (Zarra et al. 2019; Kolk and Ciulli 2020; Beverland et al. 2022). Digital platforms increasingly frame themselves as contributors to environmental efficiency, social inclusion, and responsible governance, positioning sustainability as a core element of corporate identity rather than a peripheral concern (Wang et al. 2023; Plugge et al. 2025). At the same time, these claims are subject to intense public scrutiny, particularly in media environments where platform practices intersect with everyday experiences of work, mobility, and urban life (Reilly and Hynan 2014; Ben-David and Soffer 2019; Reimer et al. 2023). This tension raises a fundamental question: how is sustainability legitimacy constructed and challenged when platform companies' narratives encounter public interpretation and evaluation?

Prior research on corporate sustainability has emphasized the strategic integration of environmental, social, and governance (ESG) principles into organizational practices, often focusing on performance indicators, reporting frameworks (European Union 2022), or managerial intent (Elkington 1998; Luo et al. 2020; Celone et al. 2022; He et al. 2022; Hellemans et al. 2022; Sinkovics et al. 2022; Plugge et al. 2025). However, such approaches tend to underplay the discursive and mediated nature of sustainability legitimacy. Sustainability claims do not operate in a vacuum; they circulate through media representations, journalistic framing, and public commentary, where they are interpreted, contested, and re-signified (McCombs 2002; Dawkins 2005; Meijer and Kleinnijenhuis 2006; Kiousis et al. 2007; Signitzer and Prexl 2007; Reilly and Hynan 2014; Kelley and Thams 2021; Beverland et al. 2022; Reimer et al. 2023). This is particularly salient for platform companies whose business models externalize risks and responsibilities across dispersed users, workers, and municipalities, making accountability both diffuse and publicly visible (Hein et al. 2020; Vallas and Schor 2020).

From a paradox perspective (Jay et al. 2017; Smith et al. 2017), sustainability in platform firms is inherently tension-laden (Acquier et al. 2017; Beverland et al. 2022;

Bunders and De Moor 2024). Environmental efficiency may coexist with increased consumption; flexibility and autonomy narratives may conflict with experiences of precarity (Schor et al. 2020); and claims of innovation-driven responsibility may clash with public expectations of regulation and accountability (Lanamäki and Tuvikene 2022). Rather than being resolved, these tensions persist and are continuously reproduced through public discourse. Media coverage and reader commentaries thus function not merely as observers of sustainability practices but as arenas in which legitimacy is actively negotiated.

Despite growing interest in platform sustainability, limited attention has been paid to the role of mediated public discourse in shaping how sustainability claims are evaluated and legitimized. Existing studies have largely examined sustainability from the perspectives of firm strategy, regulation, or stakeholder management, leaving underexplored how public counter-discourses challenge, reinterpret, or delegitimize corporate narratives (Meijer and Kleinnijenhuis 2006; Kiousis et al. 2007). Addressing this gap is particularly important in small, digitally advanced societies, where platform companies are deeply embedded in everyday life and public debate.

To address this gap, this study examines how sustainability claims of a platform company are constructed, contested, and evaluated in mediated public discourse. Drawing on a qualitative analysis of Estonian media coverage, reader comments, and corporate communications related to the platform company Bolt, the paper adopts a sustainability paradox (Jay et al. 2017) lens to explore tensions between corporate narratives and public legitimacy judgments. By foregrounding mediated legitimacy, the study contributes to sustainability and platform economy research by demonstrating how sustainability paradoxes emerge not only from organizational practices but also from their interpretation within public discourse.

Theoretical background

This study draws on three complementary theoretical perspectives to examine how sustainability claims of platform companies are constructed and contested in public discourse. First, sustainability is approached as a paradoxical phenomenon characterized by persistent tensions rather than resolvable trade-offs. Second, legitimacy is understood as socially and discursively constructed, with media and public commentary playing a constitutive role in shaping how corporate sustainability claims are interpreted and evaluated. Third, the analysis foregrounds authenticity and greenwashing as key evaluative dimensions through which sustainability narratives are morally assessed. Together, these perspectives provide an integrated framework for analyzing how sustainability legitimacy in platform companies emerges, destabilizes, and is renegotiated through mediated public discourse.

Sustainability as paradox

Sustainability is increasingly conceptualized as a paradoxical phenomenon, characterized by persistent tensions between competing yet interrelated demands rather than resolvable trade-offs (Jay et al. 2017). Drawing on paradox theory, such tensions are understood as contradictory yet interdependent elements that coexist over time and resist resolution, requiring ongoing management rather than elimination (Smith and Lewis 2011). In organizational contexts, sustainability initiatives often generate contradictions between environmental ambitions, social responsibilities, and economic imperatives, which coexist over time without stable resolution (Reilly and Hynan 2014; Jay et al. 2017). From a paradox perspective, such tensions are not temporary challenges to be managed away but enduring conditions that require ongoing navigation. This lens is particularly relevant for platform companies whose business models amplify interdependencies across multiple stakeholder groups while externalizing costs and responsibilities, thereby intensifying sustainability-related tensions (Zarra et al. 2019; Kolk and Ciulli 2020; Plugge et al. 2025).

Mediated legitimacy and public discourse

Legitimacy refers to the perceived worthiness of an actor, institution, or governance arrangement to be recognized as appropriate and acceptable, grounded simultaneously in normative justifications and empirical evaluations by relevant audiences (Wiesner and Harfst 2022; Buelow et al. 2025). It is not reducible to formal legality or compliance alone but emerges through social interpretation, evaluative judgment, and ongoing public assessment of authority, responsibility, and outcomes. Sustainability legitimacy refers to the extent to which sustainability-related claims, practices, and governance arrangements are perceived as credible, authentic, and justified by relevant stakeholders over time (Silva 2021; Buelow et al. 2025). It emerges through mediated public discourse in which environmental, social, and governance commitments are continuously evaluated against perceived impacts, lived experiences, and expectations of responsibility. Sustainability legitimacy is therefore inherently dynamic and paradoxical, as initiatives intended to strengthen legitimacy may simultaneously intensify scrutiny, skepticism, and contestation.

Organizational legitimacy is not solely derived from formal compliance or performance outcomes but is socially constructed through communication and interpretation (Kostova and Zaheer 1999; Dawkins 2005; Deephouse and Carter 2005; Johnson et al. 2006; Golant and Sillince 2007). Media discourse plays a central role in this process by framing corporate actions, attributing meaning, and shaping public expectations (McCombs and Shaw 1972; Koller 2005; Liu and McConnell 2013; He et al. 2022). In digitally mediated environments, reader comments and online discussions further extend this process by generating counter-narratives that challenge, reinterpret, or reinforce corporate claims (Ben-David and Soffer 2019; Lodhia et al. 2020; Bontempi et al. 2023; Reimer et al. 2023; Larios-Hernandez 2025). Mediated legitimacy refers to the discursive construction and evaluation of organizational legitimacy through media framing and public interpretation, where legitimacy emerges as an out-

come of communicative interaction rather than direct organizational control. For platform companies embedded in everyday services, mediated public discourse thus functions as a key arena in which sustainability legitimacy is continuously negotiated rather than passively received.

Authenticity, greenwashing, and evaluative judgment

Sustainability claims are not evaluated solely on their technical merits but through moral and authenticity-based judgments regarding intent, credibility, and responsibility (Ha-Brookshire 2017; Carrier 2018; Lengyel et al. 2019; Ahsan 2020; Tripp et al. 2023). Public assessments often hinge on whether sustainability initiatives are perceived as substantively embedded in organizational practices or merely symbolic gestures aimed at reputation management (Boiral and Heras-Saizarbitoria 2020; Moreno and Kang 2020; Xiao and Shailer 2022). Accusations of greenwashing emerge when discrepancies between communicated commitments and perceived impacts become salient, particularly in highly visible platform contexts. These evaluative judgments intensify sustainability paradoxes by transforming corporate sustainability narratives into potential sources of legitimacy loss rather than gain.

Methodology

This study adopts a qualitative media discourse analysis (Stemler 2001, 2015; Harwood and Garry 2003) to examine how sustainability claims of a platform company are constructed and contested in public discourse. The empirical material consists of articles from four major Estonian outlets, *ERR*, *Postimees*, *Delfi*, and *Äripäev*, as well as reader comments and corporate sustainability-related communications concerning Bolt published between 2019 and 2024.

The media corpus was constructed through systematic keyword-based searches in the Estonian news outlets, focusing on sustainability-related themes such as environmental impact, labor conditions, urban mobility, and platform responsibility. From the initial pool of 4951 articles, texts were retained for detailed analysis if they contained explicit references to sustainability-related issues. This filtering resulted in a focused corpus of 428 articles. Reader comments were included where available and selected based on their relevance to sustainability evaluations, rather than volume or representativeness. The final dataset thus consists of a purposive sample of media texts and associated public commentary that directly engage with sustainability-related legitimacy claims.

Bolt originates from Estonia, remains headquartered in Tallinn, and functions as a nationally salient platform firm. As a result, Estonian media offers unusually dense, continuous, and critical coverage, making it a privileged site for observing how legitimacy expectations evolve as a firm grows. Crucially, media attention prior to 2019 – when the firm operated under the Taxify brand – was limited and largely instrumental, focusing on funding rounds, market entry announcements, and competitive positioning. Following the 2019 rebranding to Bolt, media coverage has expanded sharply in volume, thematic scope, and critical scrutiny. This shift has coincided with Bolt's transition into a mature multinational enterprise, service diversification, and explicit sustainability positioning. Accordingly, the data collection period spans March 2019 to August 2024, capturing the phase in which sustainability paradoxes have become empirically visible through intensified media and public scrutiny.

The analysis followed an iterative, multi-stage qualitative coding procedure designed to trace how sustainability claims are constructed and evaluated across discursive layers. The unit of analysis was not the article as a whole but meaningful text segments (e.g., paragraphs, statements, or individual reader comments) that explicitly addressed sustainability-related claims, evaluations, or controversies. This approach was necessary because media texts frequently contain multiple themes, and sustainability-related content often appears in dispersed and context-dependent fragments.

In the first stage, corporate communications were analyzed to identify recurring sustainability claims across environmental, social, and governance dimensions. These claims served as sensitizing concepts guiding subsequent analysis. In the second stage, media articles and associated reader comments were coded inductively, focusing on how sustainability claims were framed, supported, questioned, or contested. Codes were assigned to segments capturing distinct evaluative or interpretive patterns rather than entire documents. In the third stage, first-order codes were iteratively compared and grouped into higher-order categories by identifying recurring tensions between corporate narratives and public interpretations. These tensions were not treated as isolated discrepancies but as persistent patterns across the dataset. In the final stage, these patterned tensions were theorized as sustainability paradoxes, interpreted through a paradox theory lens as enduring and interdependent contradictions rather than resolvable inconsistencies.

Table 1 presents an illustrative excerpt of the hierarchical coding structure, showing how first-order empirical codes were systematically aggregated into second-order analytical categories and subsequently into overarching theoretical dimensions. First-order codes reflect recurring expressions and evaluations identified in the data, preserving the language and meanings present in media texts and reader comments. These were grouped into second-order themes that capture broader patterns of interpretation and evaluation. Finally, these themes were aggregated into three overarching dimensions corresponding to environmental, social, and governance sustainability paradoxes. This structure illustrates how the analysis moves from dispersed empirical observations to theoretically grounded interpretations.

To enhance analytical transparency, the findings section presents illustrative excerpts from media coverage and reader comments that exemplify how sustainability claims are communicated, reframed, and contested. These examples are not intended as isolated cases but as representative instances of broader discursive patterns identified through the coding process. The aim of the analysis is not to quantify frequencies

Table 1. Excerpt of the hierarchical coding structure

First-order codes (data-driven)	Second-order themes (analytical categories)	Aggregate dimensions (theoretical)
Electric scooters reduce urban transport emissions compared to cars.	Sustainability as technological solution	Environmental sustainability paradox
Adding more rental cars to the streets leads to increased traffic.	Contestation of environmental impact	
Platform work provides flexible additional income opportunities for workers.	Autonomy and opportunity framing	Social sustainability paradox
Users express distrust and frustration toward sharing-economy practices (e.g., misuse, inconvenience, lack of responsibility).	Limiting the sovereignty of clients	
Platform positions itself as a neutral intermediary between users and service providers.	Platform neutrality narrative	Governance sustainability paradox
Platform engages in active lobbying and attempts to influence regulation.	Platform lobbying narrative	

of opinions but to identify recurring discursive patterns through which sustainability legitimacy is constructed and contested.

Findings

The findings present an interpretive synthesis of dominant patterns and recurring tensions in mediated public discourse surrounding platform sustainability. Rather than offering an exhaustive account of all sustainability-related coverage, the analysis focuses on how corporate sustainability claims are framed, evaluated, and contested across media reporting and reader commentary. By tracing how environmental, social, and governance narratives circulate between corporate communication, journalistic framing, and public counter-discourse, the findings reveal sustainability not as a stable organizational attribute but as a contested legitimacy construct. Empirical excerpts referenced throughout the findings are indicated by numerical identifiers in parentheses, with corresponding source details provided as supplementary material. The following subsections examine how these dynamics manifest across three analytically distinct yet interrelated sustainability dimensions, each characterized by a specific paradoxical tension.

Environmental sustainability

Environmental sustainability emerged in public discourse primarily through highly visible initiatives framed by Bolt as contributions to green mobility and reduced urban emissions (9, 10) (Bolt Technology OÜ 2024). Media coverage frequently highlighted the company's promotion of shared mobility (1, 3, 9, 12, 119), electrification efforts (4, 12, 13, 75), and environmental commitments (5, 11, 14, 15, 16), often positioning these initiatives as part of a broader transition toward more sustainable urban transport (6, 126) (e.g., media coverage emphasizing emissions reduction, fleet electrification, and climate responsibility) (5, 13). In these representations, environmental sustainability functioned as a forward-looking narrative that aligned technological innovation with ecological progress (7, 8, 14, 15, 126).

> *"We work every day to move towards energy-efficient modes of transport – whether that is making electric cars, scooters, or other yet-to-be-invented modes of transport more accessible," he said. Villig hopes that Bolt's example will also motivate other companies to set ambitious goals for reducing their carbon footprint. "Bolt is in a unique position – we can act independently and show others the way. We hope that our initiative will act as an encouragement," he said. The company's goal of reducing carbon emissions is part of an initiative called Bolt Green Plan, which aims to reduce Bolt's carbon emissions in the European transport sector by at least five million tons by 2025; reduce carbon emissions in the European transport sector by providing people with new opportunities for more sustainable urban transport; make cities more sustainable by expanding the availability of electric scooters to new cities and allowing Bolt users to donate to sustainable initiatives. To achieve these goals, Bolt is cooperating with the international environmental expert National Capital Partners, which has developed a carbon neutrality protocol. The protocol provides companies with a transparent opportunity and assurance to meet climate goals in both business operations and products.* (10)

However, reader comments and critical media interventions repeatedly challenged the substantive impact of these initiatives (17, 18, 19, 20, 24, 30, 31, 32, 37). Public discourse questioned whether promoted environmental measures produced meaningful reductions in emissions or primarily served reputational purposes (26, 33, 34, 38, 39, 40, 91). Commentators frequently juxtaposed sustainability claims with concerns about increased traffic density (23, 36), short vehicle life cycles (21), battery waste (27, 28), and the indirect environmental costs of platform-based mobility (29, 35). These critiques reframed environmental initiatives as partial, selective, or insufficient when assessed against broader ecological impacts.

> *So in real life, rental cars tend to end up the same way as electric scooters – instead of three nicely parked private cars, there are now five vehicles lying around the city. Instead of three drivers and three vehicles, there are now six drivers, and those who are late will go without.*

And surely those worn-out rental cars will eventually be sold off as private vehicles to someone. (21)

Accusations of greenwashing (24) were a recurring feature of this discourse. Environmental sustainability claims that relied on symbolic markers – such as green branding, offsetting schemes, or pilot projects – were often interpreted as visibility-driven strategies rather than indicators of systemic environmental responsibility (17, 24, 25, 26, 38, 40). In this context, heightened public visibility amplified scrutiny: the more prominently sustainability initiatives were communicated, the more intensively they were evaluated for authenticity and coherence.

Greenwashing. (24)

It seems like a blatant BOLT DRIVE advertisement. (38)

Bolt could start offering grave digging services, a herd of cyclists and everyone with a shovel named Bolt on their shoulder and a hole ready with almost zero CO emissions. (40)

This dynamic reveals an environmental sustainability paradox. While environmental initiatives are intended to strengthen legitimacy by signaling responsibility and innovation, their public visibility simultaneously exposes perceived inconsistencies between communicated commitments and lived environmental realities. As a result, environmental sustainability narratives operate as a double-edged discursive dynamic: they generate legitimacy claims while also creating discursive conditions under which those claims are contested and potentially delegitimized.

Social sustainability

Social sustainability in public discourse was predominantly articulated through narratives emphasizing flexibility, opportunity, and user-centered service provision (41, 43). Media coverage frequently reflected Bolt's framing of platform work as offering autonomy to drivers and couriers (43, 54) while highlighting the convenience (47, 50), safety (45, 48, 49, 73), accessibility (44, 51), and affordability (76, 77, 78) of platform-mediated services for users. These representations positioned social (53, 61, 62, 64) and environmental sustainability (46) as a function of individual choice and technological enablement rather than as a collective labor or welfare concern.

The company's goal is to provide customers the opportunity to order food from their favorite restaurants and shops in smaller cities as well. In all the cities, local residents can choose from a dozen shops and restaurants. (47)

Bolt is launching a global campaign worth 2.5 million euros aimed at encouraging more women to offer ride services and helping them earn extra income. (53)

In contrast, reader comments and critical reporting foregrounded everyday experiences that challenged these narratives (20, 22, 25, 31, 37, 74, 80, 81, 84, 85, 89, 106, 107). Platform workers were frequently described as operating under conditions characterized by income instability (58), algorithmic control (56, 59), and limited avenues for recourse, undermining claims of autonomy and flexibility (88, 90, 92). User experiences also entered social sustainability evaluations (63, 67, 83, 111), with discussions linking service quality (66, 116), safety concerns (69, 72, 79, 82, 83, 87, 113), and urban disorder (65, 67, 71, 86, 109, 114, 115) to the working conditions of platform labor (108, 140). In this sense, social sustainability was assessed not through policy statements but through lived encounters with platform services (52, 56, 70, 97, 98, 105, 110).

Sell your house or apartment to us and we will give you a rental apartment in return :) (20)

Bolt's food couriers organized a protest in Georgia because the company changed the terms to their disadvantage, reports Georgia 1TV. (58)

Scooters left on the street cause headaches every day for the visually impaired, parents with strollers, and those using wheelchairs. (65)

A recurring theme in public discourse concerned the asymmetry of responsibility (83, 102, 103, 104) and algorithmically enabled power asymmetry (56, 57, 59) embedded in platform arrangements. While social sustainability claims emphasized opportunity and inclusion, commentators questioned the distribution of risks between the platform, its users, and its workers, particularly in relation to insurance, social protection, and accountability in cases of conflict or harm (93, 94, 95, 96, 99, 100, 101, 112). These critiques reframed flexibility as conditional and unevenly distributed, benefiting the platform while transferring uncertainty to workers (55, 58).

Bolt's taxi drivers in London are protesting today, accusing the Estonian technology company of unfairly low pay and manipulation of the ride-sharing app's algorithms, which mocks drivers. (56)

This pattern reveals a social sustainability paradox rooted in experience. Corporate narratives seek to establish legitimacy by framing platform work and services as socially enabling, yet public evaluations are grounded in concrete, everyday interactions that expose tensions between promised autonomy and perceived precarity. As a result, social sustainability legitimacy is continually negotiated through experiential judgments that challenge abstract responsibility claims.

Governance sustainability

Governance-related sustainability claims in public discourse centered on the platform's positioning as a technologically innovative intermediary rather than a conventional service provider (42, 120). Media coverage frequently reflected Bolt's framing of itself as a neutral platform that connects users and workers, emphasizing innovation, efficiency, and regulatory adaptability (118, 120, 121). Within this narrative, governance sustainability was implicitly associated with compliance (117, 139), self-regulation, and cooperation with public authorities (119, 122, 126, 138, 140, 142), rather than with direct responsibility for service outcomes or *platform labor* conditions, as HQ labor-related highlights were presented from the positive side (55, 60, 144).

Villig noted that full unlocking of the potential of shared transport solutions requires cooperation between service providers, legislators, and cities, enabling a significant

reduction in the use of private cars and a considerable acceleration of sustainable urban planning. (119)

Reader comments and critical media perspectives, however, consistently challenged this framing by foregrounding perceived accountability gaps (42, 123, 124, 125, 145). Public discourse questioned who bears responsibility when conflicts arise – whether related to worker protection, user safety, pricing practices, or urban externalities (79, 82, 86, 88, 89, 90, 92, 95, 96, 112, 132). Commentators frequently highlighted the tension between the platform's economic centrality and its claims of limited responsibility, interpreting this asymmetry as a deliberate governance strategy rather than a neutral organizational characteristic (146, 148, 149).

The taxi company Bolt confirms that it does not organize taxi transportation in Estonia. Bolt has established mandatory ride tariffs for taxi drivers and their clients in its mobile application, pays taxi drivers for providing rides, provides its own branded leased vehicles for taxi rides, offers customer information services, and enters into client contracts with companies. Nevertheless, it believes that all this does not constitute organizing taxi services. (42)

The Latvian tax office demands that Bolt pay unpaid taxes in the amount of 1.4 million euros, reported the Latvian news program De Facto *on Sunday. This is Bolt's second fine for tax evasion in Latvia. The previous fine was 200 000 euros.* (124)

Riding on the street with such small-wheeled equipment at a speed of 25 km/h is life-threatening both for the rider themselves and for others. (79)

Regulatory debates further intensified this dynamic. Media discussions of lobbying activities (127, 128, 129, 130, 131, 161), legal classifications (134), and negotiations with municipalities (136, 137, 141, 143) were often interpreted by commenters as attempts to shape governance conditions in the platform's favor while avoiding corresponding obligations (93, 147, 148, 149, 150, 151, 152, 158, 160). In this context, governance sustainability claims were evaluated not by formal compliance alone but by perceived fairness, transparency, and willingness to assume responsibility proportionate to the platform's societal impact (133, 135, 147, 153, 154, 155, 156, 157, 159).

*Since 2021, Bolt founders Markus Villig and Martin Villig have consistently (*Eesti Ekspress*) donated money to the parties that currently form the governing coalition. In the fourth quarter of 2022, the two donated a total of 100 000 euros to the parties forming the government (*Postimees*), and in the first quarter of this year, Martin Villig donated nearly 50 000 euros to the new coalition parties (*Delfi*). The three parties supported consistently by the Villig brothers quickly began to devise the car tax plan that clearly helps fulfill Bolt's grand mission and advance their business interests.* (127)

It is dear that Bolt's drivers in their homeland all agree that any driver who does not speak the local language is perfectly okay. And the authorities nod in agreement. (147)

The point of the party financing law is not about paying taxes. The purpose of the law is to prevent corruption, so that companies cannot buy favorable laws for themselves... (148)

This is called lobbying. You don't always have to order something directly. Once again, the people are being treated like fools. (152)

This pattern reveals a governance sustainability paradox characterized by an accountability deficit. While platform self-positioning emphasizes innovation-driven legitimacy and regulatory flexibility, public evaluations increasingly demand clearer responsibility structures and stronger institutional accountability. As a result, governance-related sustainability narratives intended to stabilize legitimacy instead become focal points of contestation, reinforcing skepticism toward the platform's broader sustainability claims.

Navigating paradoxical tensions

Table 2 summarizes the reconstructed narrative categories through which sustainability claims, media framings, and public counter-discourses interact, highlighting the para-

Table 2. Reconstructed narrative categories of sustainability discourse

Sustainability dimension	Corporate sustainability narrative	Dominant media framing	Public counter-narratives (comments)	Core paradoxical tension
Environmental sustainability	Green mobility, electrification, emissions reduction, innovation-driven environmental responsibility	Future-oriented transition narrative emphasizing technological solutions and climate goals	Skepticism toward actual environmental impact; critiques of symbolic actions, production and traffic increase, and greenwashing	Environmental initiatives enhance legitimacy claims while simultaneously intensifying scrutiny and accusations of symbolic sustainability
Social sustainability	Flexibility, autonomy, opportunity for workers; affordable and convenient services for users	Individualized responsibility framing focusing on choice, efficiency, and service accessibility	Experiential accounts of precarity, income instability, safety concerns, urban disorder, and uneven risk distribution between platform and workers	Abstract responsibility narratives conflict with lived experiences that shape social sustainability evaluations
Governance sustainability	Platform neutrality, innovation, regulatory adaptability, self-regulation	Procedural compliance framing emphasizing legality and cooperation with authorities	Perceived responsibility avoidance, lobbying skepticism, demands for clearer accountability and regulation	Governance narratives undermine legitimacy when public expectations of responsibility remain unmet

doxical tensions that structure sustainability legitimacy in the platform context. Corporate narratives originate from company communications (in media), media framing reflects journalistic interpretation, and public counter-narratives capture audience evaluation. These are analytically distinct but dynamically interconnected layers of mediated discourse.

Table 2 synthesizes the reconstructed narrative categories by illustrating how corporate sustainability narratives, dominant media framings, and public counter-narratives interact to produce distinct paradoxical tensions. While the table presents dominant patterns, each discursive layer contains internal variation and competing viewpoints; the table abstracts from this plurality to highlight recurring and analytically significant configurations. Together, the three categories demonstrate that sustainability legitimacy in platform contexts is shaped less by isolated initiatives than by the interaction between scrutiny and contestation, lived experience, and accountability expectations. This synthesis highlights how sustainability narratives intended to stabilize legitimacy may simultaneously generate skepticism and contestation, reinforcing the paradoxical nature of sustainability in platform-mediated environments.

Discussion

This study set out to examine how sustainability claims of a platform company are constructed, contested, and evaluated in mediated public discourse. By applying a sustainability paradox lens to media coverage, reader comments, and corporate communications related to Bolt, the findings demonstrate that sustainability legitimacy in platform contexts is neither stable nor exclusively performance-based. Instead, it emerges through ongoing public interpretation, where corporate narratives encounter journalistic framing and readers' counter discourses that actively reshape their meaning. While this discursive construction of legitimacy is likely characteristic of platform-mediated environments more broadly, its specific expression in this study is shaped by the Estonian media context and Bolt's position as a prominent national platform.

Across environmental, social, and governance dimensions, the analysis reveals a common underlying dynamic: sustainability initiatives intended to strengthen legitimacy simultaneously create conditions for intensified scrutiny and contestation. This tendency – where increased visibility generates heightened public evaluation – is likely applicable across platform companies. However, the particular forms of critique identified here, including the framing of green initiatives as symbolic, the emphasis on local labor conditions, and concerns about governance and accountability, are shaped by Estonia's regulatory environment, media practices, and Bolt's role as a nationally significant firm. These dynamics illustrate sustainability paradoxes not as organizational dilemmas to be resolved but as enduring tensions reproduced through public discourse.

Theoretically, the study contributes to sustainability and platform economy research by foregrounding mediated legitimacy as a central discursive process through which sustainability paradoxes emerge and persist. While prior research has often treated sustainability paradoxes as internal organizational challenges or strategic tensions (Jay et al. 2017; Luo et al. 2020), this analysis shows that paradoxes are co-produced externally, in arenas where media and publics interpret, evaluate, and morally assess corporate claims. This shift toward discursive interaction as a site of paradox formation is analytically transferable beyond the focal case, even though the empirical manifestations observed here remain context-dependent. This shifts analytical attention from managerial intent to discursive interaction, highlighting the constitutive role of public communication (Liu and McConnell 2013; Boiral and Heras-Saizarbitoria 2020; Moreno and Kang 2020) in shaping sustainability outcomes.

From a practical perspective, the findings suggest that sustainability communication in platform companies entails inherent reputational risks. Increased transparency and visibility do not automatically enhance legitimacy; instead, they amplify evaluative scrutiny and expose inconsistencies between narratives and perceived realities. This dynamic is likely relevant across platform firms operating in highly visible digital environments, although its intensity may vary depending on national media systems and institutional contexts. For platform firms, this implies that sustainability strategies cannot rely solely on symbolic initiatives or communication efforts but must be aligned with experiences and accountability structures that resonate with public expectations.

Several limitations should be acknowledged. The study focuses on mediated discourse within a single national context and does not assess sustainability performance or public opinion quantitatively. Reader comments reflect active and often polarized voices rather than representative populations. Nevertheless, these limitations are consistent with the study's interpretive aim, which is to illuminate discursive dynamics rather than measure impact. Future research could extend this approach by comparing mediated sustainability discourses across platform sectors or national contexts, or by integrating ethnographic or survey-based methods to further explore how sustainability legitimacy is experienced and internalized.

Conclusion

The study demonstrates that sustainability in platform companies is not a fixed organizational attribute but a contested and publicly negotiated phenomenon. Sustainability paradoxes arise not only from competing strategic demands but from the interaction between corporate claims and mediated public evaluation. Recognizing mediated legitimacy as a central dimension of platform sustainability is therefore essential for understanding why sustainability efforts often generate both support and skepticism simultaneously.

Data availability statement

Translated quotes used in the study are provided as supplementary material. The analyzed media articles are publicly available, although some are accessible only behind paywalls.

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Supplementary material

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Platvormiettevõtete jätkusuutlikkuse paradoks: vahendatud legitiimsus avalikus diskursuses

Artur Toikka

Uurimus näitab, kuidas platvormiettevõtete väited kestlikkuse kohta kujunevad, saavad hinnanguid ja seatakse kahtluse alla meedia vahendatud avalikus diskursuses. Empiiriline analüüs keskendub Bolti juhtumile ning põhineb meediakajastustel, lugejakommentaaridel ja ettevõtte ametlikul kommunikatsioonil. Uurides fenomeni läbi kestlikkuse paradoksi prisma, ilmneb, et kestlikkusega seotud legitiimsus ei ole stabiilne ega tulene üksnes ettevõtte tegelikust tegevusest, vaid kujuneb pideva avaliku tõlgendamise protsessis.

Tulemused osutavad, et keskkonna-, sotsiaal- ja juhtimise valdkonnas ilmnevad pinged, kus kestlikkusele orienteeritud algatused, mis peaksid tugevdama ettevõtte legitiimsust avalikkuse silmis, loovad samal ajal tingimused ka kriitikaks ja vaidlustamiseks. Näiteks võivad keskkonnaalased algatused, mida esitletakse roheinnovatsioonina, kutsuda esile süüdistusi sümboolses kestlikkuses, paindlikkust rõhutavad sotsiaalsed narratiivid põrkuda töötajate kogetud ebakindlusega ning platvormi neutraalsust rõhutavad väited tekitada nõudmisi suurema korporatiivse vastutuse järele. Selle tagajärjel ilmnevad kestlikkuse paradoksid püsivate pingetena, avaldudes avalikus diskursuses.

Uurimuse teoreetiline panus seisneb platvormiettevõtte legitiimsuse kontseptualiseerimises vahendatud diskursiivse protsessina, mille kaudu tuvastatud kestlikkuse paradoksid tekivad ja püsivad. Kui üldjuhul uuritakse nimetatud pingete juurpõhjust organisatsioonisisese strateegia perspektiivist, siis analüüsist ilmneb, et need tekivad ka korporatiivse kommunikatsiooni, meedia tõlgenduste ja avalikkuse hinnangute vastastikmõjus. Kestlikkusele orienteeritud väljundite loomisel liigub tähelepanu ettevõttesiseselt strateegiliselt juhtimiselt avaliku diskursuse rollile.

Kuigi uurimus tugineb ühe riigi kontekstile, tuvastati mustrid, kuidas avalikkus tõlgendab ja kritiseerib platvormiettevõtete väiteid kestlikkuse kohta ning kuidas need väljenduvad püsivate pingetena. Tulemused on analüütiliselt ülekantavad ja rakendatavad muudes platvormide vahendatud kontekstides. Samal ajal jäävad spetsiifilised kriitika ja interpreteerimise vormid sõltuma konkreetsest kontekstist ja tingimustest, sh meediasüsteemidest, regulatsioonidest ja platvormiettevõtete avalikust positsioneerimisest. Ka selle uurimuse tulemusi mõjutavad suurel määral Eesti-spetsiifiline meediakeskkond ja Bolti positsioon rahvusliku eduloona. Vahendatud legitiimsuse käsitlemine platvormiettevõtete ühe kestlikkuse mõõtmena aitab mõista, kuidas kestlikkuse püüdlused, tekitades avalikkuses samal ajal nii toetust kui ka skepsist, mõjutavad ettevõtte legitiimust.

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MANAGERIAL WELL-BEING

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How does sustainable human resource management contribute to managerial well-being?

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ABSTRACT

This study examines how sustainable human resource management (HRM) contributes to managerial well-being in the Estonian public sector, addressing the gap that HRM–well-being research remains largely employee-centric and provides limited insight into managers' well-being under high demands. Using a mixed-method design, we combined a 2023 survey of 120 public-sector managers across four sectors (internal security, education, health care, and social services) with 11 semi-structured interviews conducted in 2024–2025. The framework integrates sustainable HRM with the job demands-resources (JD-R) model, psychosocial safety climate (PSC) model, and the dynamics of well-being perspective, capturing both hedonic and eudaimonic well-being. Results indicate substantial job demands (sustained concentration, time pressure, emotional demands, and overtime-related fatigue), yet relatively low stress symptoms and no gender differences in demand ratings. High demands were balanced by resources, corresponding with generally good mental well-being. Interviews showed that stress was pervasive but manageable through deliberate recovery practices and meaning-making tied to societal impact and accomplishment, underscoring the role of eudaimonic well-being, while hedonic restoration was mainly supported through off-job recovery. Overall, the findings suggest that sustainable HRM supports managerial well-being by strengthening job and organizational resources and fostering a psychosocially safer climate that legitimizes participation, support, and recovery, enabling sustainable performance under persistent demands.

1. Introduction

In recent years, leadership has become a central concern in organizational research and practice, particularly in the public sector, where managers operate under escalating complexity, intensified accountability, and continuous change. Public organizations must simultaneously deliver public value, implement reforms, and respond to crises under constraints such as tightening budgets and evolving stakeholder expectations (Spaner et al. 2025). These conditions increase the psychological and relational demands placed on managers. Although the harmful effects of chronic pressure and resource exhaustion on leadership quality and well-being are well established, less is known about how sustainable human resource management (HRM) can actively preserve and regenerate managers' resources in high-demand public-sector contexts. This gap is important because managers are not only responsible for implementing people-centred human resource (HR) practices, but their own well-being is also a precondition for sustaining those practices over time. Accordingly, managerial well-being should be understood not as a secondary or individual concern but as a core condition for organizational sustainability. In order to support healthy leadership, commitment, and sustainable performance, organizations should adopt sustainable HR practices that strengthen managers' proactivity, well-being, and performance over time (Villajos et al. 2019).

Sustainable HRM refers to organizational activities that enable goal attainment while simultaneously renewing the human resource base over the long term and generating positive outcomes for multiple stakeholders (Ehnert 2009). With work patterns transforming and well-being and sustainability becoming central management priorities (Kane 2022), sustainable HRM provides a useful lens for examining how organizations can protect and strengthen the human resources on which sustainable performance depends. From this perspective, managerial well-being is not a soft HR concern but part of the organizational infrastructure required for continuity, resilience, and responsible public-sector leadership. This is particularly

relevant for public-sector middle managers who mediate competing expectations between strategic directives and operational realities (Boureston 2019). The present study examines how sustainable HRM contributes to managerial well-being in the Estonian public sector using a mixed-method design.

2. Sustainable HRM and managerial well-being

Sustainable HRM provides an integrative framework for understanding how organizations can achieve performance objectives while simultaneously preserving and regenerating the human resource base over time. Foundational work argues that employees are limited and vulnerable resources and that excessive work demands, stress, and burnout undermine long-term organizational viability. Accordingly, employee well-being becomes a precondition for sustainability rather than a secondary or 'soft' HR outcome (Ehnert 2009; Ehnert et al. 2016). This perspective is reinforced by Kramar (2014), who emphasizes that sustainable HRM requires attention to long-term consequences of HR practices, including well-being and equity. In parallel, well-being-oriented HRM research conceptualizes employee well-being as a central outcome and ethical imperative, highlighting the need to avoid the exploitation of HR for short-term performance gains (Van De Voorde et al. 2012). Employee well-being has been extensively studied through models of job stress, psychological health, burnout, and engagement, with seminal contributions highlighting the role of job design (Karasek 1979), job resources (Demerouti et al. 2001), and leadership (Kelloway and Barling 2010). Empirical syntheses further suggest that sustainable HRM is positively associated with well-being outcomes at work, including for managerial groups, and that practices such as flexibility, ethical leadership, and inclusive cultures can strengthen psychological and emotional well-being (Qamar et al. 2024). More recent conceptual work positions well-being as a core sustainable HRM outcome through the PERMA (positive emotions, engagement, relationships, meaning, and accomplishment) framework, arguing that HR practices should actively support employees' emotional, relational, and psychological needs to enable sustainable work performance (Bai 2025).

However, sustainable HRM is often articulated at a normative and system level, whereas the processes through which it becomes meaningful in day-to-day working life are enacted at the operational level. This makes middle managers particularly important: they translate sustainability intentions into concrete practices, routines, and decisions that shape employees' lived experiences of HRM. At the same time, middle managers themselves are exposed to high demands, especially in public sector contexts characterized by public scrutiny, political influence, and institutional complexity, which makes their own well-being a critical sustainability issue. If sustainable HRM depends on the capacity of managers to implement people-centred practices, then managerial health and resource preservation are not merely outcomes but conditions for sustainable HRM performance. This creates a theoretical need to link sustainable HRM more explicitly to the mechanisms that explain managerial well-being and leadership behaviour under demanding conditions.

To specify these mechanisms, the study integrates sustainable HRM with job stress and resource theories, starting from the job demands-resources (JD-R) model (Bakker and Demerouti 2014). The JD-R model proposes that job characteristics can be grouped into job demands and job resources, offering an overarching framework that applies across occupations. Job demands are aspects of work requiring sustained cognitive and/or emotional effort and are associated with physiological costs. Demands become stressors particularly when high effort is required without adequate recovery. Job resources, in turn, are aspects of the job that help achieve work goals, reduce the costs of demands, and stimulate growth and development. In high-pressure public sector environments, the importance of organizational resource provision becomes especially pronounced: sustainable HRM can be interpreted as a resource-regenerative system that reduces unnecessary depletion and strengthens resource reservoirs (e.g. development opportunities, health-promoting practices, supportive structures).

While JD-R explains how demands and resources translate into strain or motivation, Dollard and McTernan's psychosocial safety climate (PSC) (Dollard and McTernan 2011) model specifies why some organizations systematically create healthier demand-resource configurations than others. Dollard and McTernan position PSC as a 'cause of the causes', arguing that senior management priorities, communication, and participation shape work design and thereby predict demands/resources and downstream outcomes such as psychological health and engagement. PSC is theorized to extend the JD-R logic by functioning as an upstream predictor of job demands and job resources (i.e. causing both the health erosion and motivational paths). In sustainable HRM terms, PSC can be interpreted as a key organizational-level indicator that sustainable HRM is not only present as policy rhetoric but enacted as a psychologically safe, resource-supportive climate through which human resources are preserved and regenerated.

Finally, Sonnentag's dynamics of well-being (Sonnentag 2015) model strengthens the framework by emphasizing that well-being is not static but changes over time and fluctuates within persons, shaped by job stressors, job resources, personal resources, and the work-home interface. Sonnentag also clarifies that well-being includes both hedonic experience (feeling good) and eudaimonic experience (fulfilment and purpose): a distinction particularly relevant for managers whose work can be simultaneously demanding and meaningful. By treating well-being as dynamic and linked to work experiences and performance, this perspective aligns with sustainable HRM's long-term orientation: sustainable HRM should not merely reduce immediate strain but support ongoing resource renewal and sustainable functioning over time.

In summary, this integrated framework positions sustainable HRM as the overarching system that (a) shapes the resource architecture of managerial work (JD-R), (b) is enabled or constrained by the organization's PSC, and (c) influences

managers' hedonic and eudaimonic well-being dynamically over time through work and recovery processes.

This approach also directly supports the study gap: managers should be analysed not only as implementers of HRM but as an important target group whose well-being is both an outcome of sustainable HRM and a condition for sustainable HRM enactment under high public-sector demands.

3. Methods of empirical study

The study utilized a mixed-method approach. A quantitative survey was conducted in 2023. From the total sample, 120 managers responded, including 100 women and 20 men. More than half of all respondents were in the 40–59 age group (59.2%, $n = 71$). Four sectors were selected (internal security, education, health care, and social services) where changes in work organization have occurred in recent years in order to ensure the provision of services to the population in times of major crises. Convenience sampling was used in selected public sector organizations. The questionnaire was based on two established measurement scales. First, the job demands-resources scale (JDRS) developed by Jackson and Rothmann (2005) was used to assess job demands and resources. Additionally, Galy's (2020) multidimensional scale of job satisfaction, based on the individual-workload-activity (IWA) model, was included. This scale was selected to examine the psychosocial aspects of work satisfaction and professional fulfilment. Lastly, the survey incorporated custom questions designed by the researchers to evaluate workplace conditions, including changes in workload, overtime, remote work, and organizational strategies for maintaining employee well-being. The collected responses were initially coded in Microsoft Excel before being analysed using IBM SPSS Statistics (version 29.0.0.0). The statistical analysis included descriptive statistics such as mean, mode, median, and standard deviation calculations.

The qualitative study – in-depth semi-structured interviews with 11 managers (7 female and 4 male) in the public sector – was conducted in 2024–2025. To achieve the representation of information, the selection of interviewees was based on purposive sampling following different organizations, locations, and managers' age and gender. The emphasis was on the middle-level managers' behaviours and resources. The semi-structured interview themes were inspired by Sonnentag's (2015) dynamics of well-being model, Bakker and Demerouti's (2007) JD-R model, and Dollard and McTernan's (2011) PSC model. The interviewees were selected from all regions of Estonia to consider the differences in working conditions. The length of interviews varied from 46 to 74 minutes. Data were analysed using thematic analysis. Coding and data organization were conducted manually by the authors.

4. Results

The quantitative survey showed that managers' primary job demands were associated with the need for sustained concentration, intense time pressure, and emotional demands requiring continuous emotion regulation (see Table 1).

High workload and overtime were identified as the strongest contributors to fatigue, and the broader assumption that managerial roles deplete psychological resources through exposure to psychosocial risk factors was partially supported. More than half of the managers reported experiencing stress at work; however, despite frequent exposure to stressful situations, managers assessed the prevalence of typical stress symptoms – such as nervousness, mood disturbances, concentration difficulties, and physical complaints – as comparatively low. No gender differences emerged in managers' assessments of job demands.

At the same time, the results indicated that high managerial demands were counterbalanced by job-related resources, particularly autonomy, development options, and colleague support and engagement, which coincided with generally good mental well-being at work. From a JD-R perspective embedded in the study design, these patterns suggest that demanding managerial roles in the public sector may remain sustainable when adequate resources are available to buffer strain and support ongoing functioning.

The results of the survey also showed that organizational well-being support for managers is predominantly development-oriented and relies most strongly on competence-

Table 1. Descriptive statistics of job demands and resources

Composite indicator	N	Minimum	Maximum	Mean	SD
Demands					
Emotional situations	120	1.00	5.00	3.69	0.70
Time pressure	120	1.00	5.00	4.01	0.72
Health-related complaints	118	1.00	5.00	3.17	0.74
Concentration problems	120	1.00	5.00	4.58	0.47
Resources					
Immediate supervisor's support	120	2.00	5.00	3.91	0.78
Colleague support	120	2.00	5.00	4.15	0.54
Decent pay	119	1.00	5.00	3.15	1.02
Engagement	117	2.00	5.00	4.07	0.71
Autonomy	117	2.00	5.00	4.02	0.55
Development options	120	2.00	5.00	4.15	0.60
Job security	120	1.00	5.00	3.19	1.08

building interventions. The most frequently reported measure was access to training (reported by 100 respondents; training was also explicitly framed as relevant for well-being maintenance by a large majority), followed by more individualized professional support formats such as supervision (n = 32), coaching (n = 23), and mentoring (n = 21). Less frequently, managers referred to collective and relational measures, including joint events (n = 6), peer consultation/co-vision (n = 5), and leadership collaboration practices (e.g. leadership meetings), as well as developmental conversations (e.g. appraisal/development discussions) and individualized agreements. A small minority reported that no supportive measures were available or that opportunities were insufficiently communicated. Work-organization practices also emerged as a relevant, but unevenly available, well-being support mechanism. Over half of the managers reported that remote work was not accessible to them, despite expressed interest in occasional use. Where available, remote work was evaluated as beneficial for satisfaction and productivity and showed positive associations with indicators such as perceived job security and social support.

The qualitative interviews provided further insight into the mechanisms underlying the balance between job demands and resources. Managers described stressful situations as pervasive and normalized, reflecting the routine nature of high workload, time pressure, emotional demands, and continuous problem-solving in their roles. Nevertheless, stress was typically framed as manageable rather than incapacitating. Interviewees emphasized the deliberate use of personal recovery and coping resources outside working hours, including spending time in nature, physical activity, long walks, yoga, and meditation. These practices were presented as consciously maintained routines that supported recovery and increased stress resistance, complementing job resources by replenishing depleted personal resources.

Beyond recovery behaviours, managers' accounts highlighted the central role of meaningfulness in sustaining well-being and persistence in demanding roles. Interviewees frequently linked their continued engagement in stressful managerial work to the perceived societal impact of public sector leadership, strong collaboration with teams, managerial competence, and a pronounced sense of mission. Leaders who had developed internally were described as displaying higher self-confidence and being perceived as more trustworthy within organizational hierarchies; moreover, trust and support from top management were portrayed as important foundations for confident decision-making and fulfilling the organization's mission. Additionally, managers described the presence of clear long-term goals and plans as a contextual advantage that supported direction and continuity.

In parallel, managers also identified persistent sources of strain that were largely located in the external environment. The primary tensions were attributed to external instability, compounded by high responsibility and accountability to the public, including challenges related to inter-organizational coordination. In the healthcare and education sectors, workforce shortages were described as a particularly significant structural pressure.

Overall, the findings suggest a consistent pattern: managers operate under substantial job demands, yet report comparatively limited stress symptomatology when supported by a combination of job resources (e.g. autonomy and control), sustainable HRM-related organizational practices (e.g. participation, development, and health-promoting policies), and strong personal recovery resources. In this sense, the results point toward a resource-based mechanism through which sustainable HRM may contribute to managerial well-being by cultivating durable resources and a psychosocially safer climate that helps balance demands and enables sustainable performance.

5. Discussion

Taken together, the mixed-method findings can be interpreted as a resource-based mechanism through which sustainable HRM contributes to managerial well-being under high demands. Based on the theory and our results, we have created an extending conceptual model of sustainable HRM and managerial well-being (Fig. 1).

The survey results suggest that managers experience substantial job demands but relatively low intensity of stress symptoms and overall good mental well-being when job-related resources are available. The interviews deepen this notion by showing how managers actively regulate their well-being over time through recovery routines and meaning-making, consistent with the theoretical framing of the qualitative design (dynamics of well-being, JD-R, PSC). From a JD-R lens, demanding managerial work (time pressure, emotional demands, responsibility) is not inherently detrimental if adequate resources are available and replenished: job resources (e.g. autonomy, participation, support, and development opportunities) facilitate coping and motivation, while personal resources and recovery practices buffer strain and enable sustained performance.

Importantly, the qualitative accounts highlight that eudaimonic well-being, experienced through purpose, contribution, competence, and growth, can convert high-effort episodes into psychologically rewarding experiences, thereby supporting persistence in stressful roles, whereas hedonic well-being operates more strongly through off-job recovery and restoration. Previous research has proved that eudaimonic well-being is shown to be protective against psychopathology and can predict better physical health outcomes, including lower levels of cortisol, a stress hormone (Heller et al. 2013), which means that individuals with higher eudaimonic well-being are better equipped to handle stress. This dual emphasis resonates with sustainable HRM arguments that well-being is not a 'soft' by-product but a prerequisite for long-term viability, requiring HR systems that regenerate (rather than deplete) human resources.

Finally, the PSC perspective usefully explains why some managers can sustain these dynamics: climates characterized by participation, support, and health-promoting priorities likely legitimize recovery, encourage help-seeking, and reduce the hidden costs of stress, thereby protecting both well-being and individual work performance. This is in line with

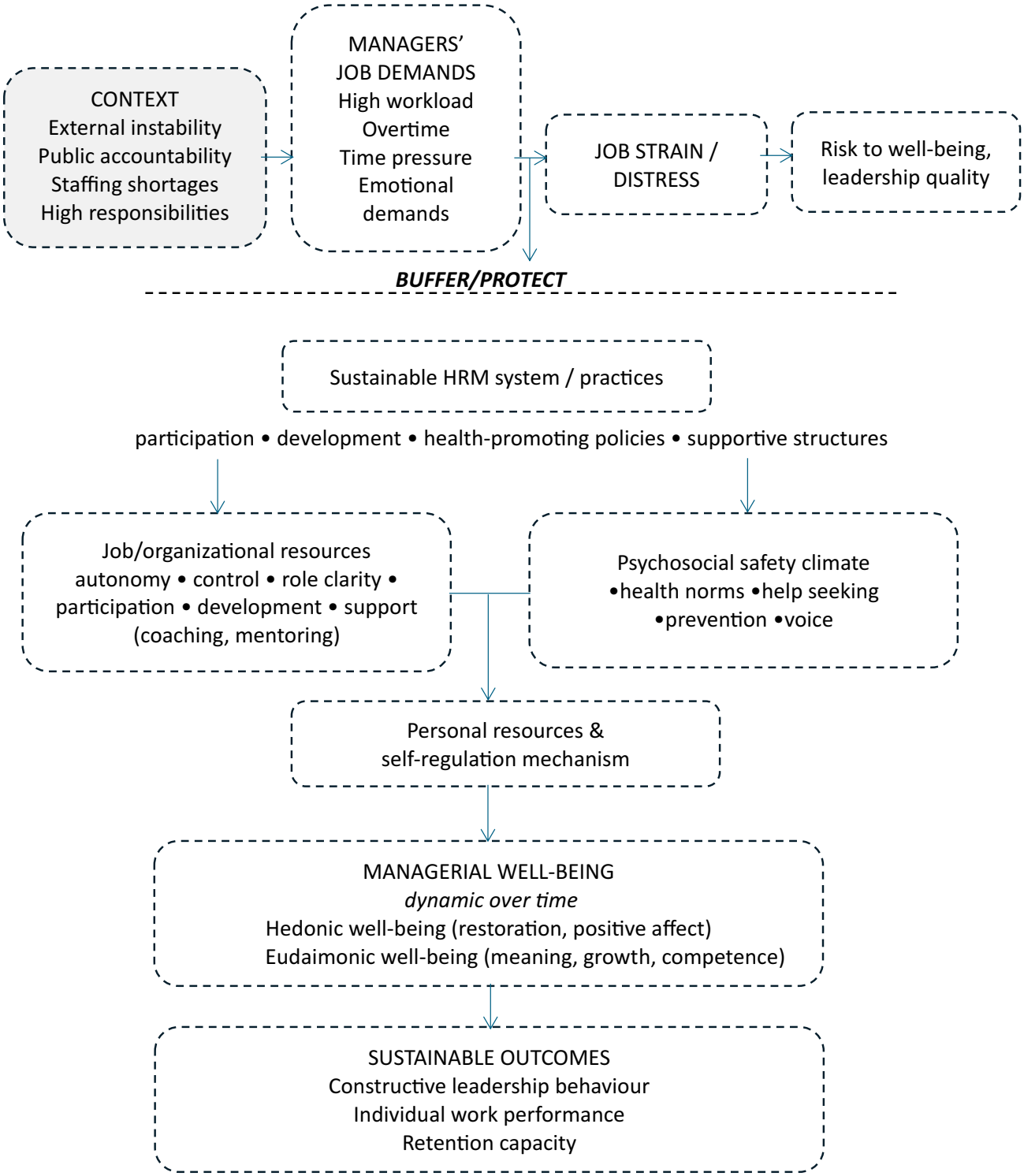

Fig. 1. Conceptual model of sustainable HRM and managerial well-being.

previous research (Biron et al. 2018; Mirza et al. 2022; Ji et al. 2025).

In practical terms, employee well-being should not be understood as a secondary or 'soft' HR outcome but as a necessary condition for organizational sustainability. In high-pressure contexts, depleted well-being undermines employees' capacity to maintain performance, adapt to change, and support long-term organizational functioning. The findings suggest that sustainable HRM can strengthen managerial well-being by simultaneously (a) reducing unnecessary demands where possible, (b) expanding job resources and psychosocial safety, and (c) enabling recovery and meaning-focused pathways that foster eudaimonic well-being – while acknowledging that hedonic well-being remains crucial for restoration, primarily outside work.

6. Conclusion

The study extends the sustainable HRM literature by shifting attention from a predominantly employee-centric view toward managerial well-being as both an outcome of sustainable HRM and a prerequisite for its implementation.

Practically, the results imply that public-sector organizations seeking sustainable performance should treat managerial well-being as a core sustainability capability: reducing avoidable demands where possible, strengthening autonomy and control, investing in participation and development, and actively building psychosocial safety, so that recovery and help-seeking are normalized rather than stigmatized. As the organizations with a high external pressure context were selected for the study, the results are applicable to all mid-level managers, predicting their situation in more critical conditions.

This study is limited by its cross-sectional survey design and a modest qualitative sample size within one national context. The results enable to frame patterns, but there is potential for additional information from extra interviews. Future research could test the proposed model longitudinally, examine sector-specific pathways, and evaluate which bundles of sustainable HRM practices most effectively enhance managers' resource gain cycles and long-term well-being.

Data availability statement

The data supporting the findings of this study are not publicly available due to privacy and ethical restrictions related to the protection of participant confidentiality.

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Kuidas kestlik inimressursside juhtimine toetab juhtide heaolu?

Maris Zernand-Vilson, Karin Reinhold ja Ave Karu

Uuring vaatleb, kuidas kestlik inimressursside juhtimine (*human resource management*, HRM) mõjutab juhtide heaolu Eesti avalikus sektoris. Teema on oluline, sest senine HRM-i ja heaolu seost käsitlev teaduskirjandus on olnud pigem töötajakeskne ning juhtide heaolule on vähem tähelepanu pööratud.

Uuringus kasutasime segameetodit: 2023. aastal viisime läbi ankeetküsitluse 120 avaliku sektori keskastmejuhiga neljas sektoris (sisejulgeolek, haridus, tervishoid ja sotsiaalteenused) ning 2024.–2025. aastal tegime juhtidega 11 poolstruktureeritud intervjuud. Analüüs tugineb HRM-i alustele, töö nõudmiste ja ressursside (*job demands-resources*, JD-R) mudelile, psühhosotsiaalse ohutuskliima (*psychosocial safety climate*, PSC) käsitlusele ja heaolu dünaamika vaatele. Käsitletakse nii hedoonilist kui ka eudaimoonilist heaolu.

Tulemused näitavad, et juhtidel on palju tööalaseid nõudmisi. Kõige enam koormavad neid püsiv keskendumise nõue, ajasurve, emotsionaalsed nõudmised ja ületööst tingitud väsimus. Samas olid stressisümptomid suhteliselt tagasihoidlikud ning meeste ja naiste hinnangud nõudmistele statistiliselt oluliselt ei erine. Peamiselt aitab negatiivse fooni teket tasakaalustada töö- ja organisatsiooniline ressurss. See omakorda seostub üldiselt hea vaimse heaoluga. Intervjuudest selgus, et stress oli küll levinud, kuid sellega tuldi toime teadliku taastumise ja töö tähenduslikkuse kaudu. Eriti oluline oli ühiskondliku mõju ja saavutuste tajumine. See rõhutab eudaimoonilise heaolu rolli. Hedoonilist heaolu toetas eelkõige tööväline taastumine.

Kokkuvõttes näitavad tulemused, et kestlik HRM toetab ka juhtide heaolu. Seda tehakse töö- ja organisatsiooniliste ressursside tugevdamise ning psühhosotsiaalselt turvalisema kliima kujundamise kaudu. See omakorda soodustab osalemist, toetust ja taastumist ning aitab hoida tulemuslikkust ka püsivate kõrgete nõudmiste korral.

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Drivers and challenges of environmental, social, and governance adoption: aligning corporate strategies with stakeholder expectations

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ABSTRACT

This study examines the drivers, stakeholder engagement mechanisms, and challenges influencing the adoption of environmental, social, and governance (ESG) strategies among European Union-based companies. Using semi-structured interviews with 16 firms across diverse sectors, supplemented by sustainability report analysis, the research applies stakeholder theory and institutional theory to explain ESG adoption patterns. Findings reveal that ESG adoption is primarily driven by external forces, including regulatory requirements, market trends, and stakeholder expectations, with internal factors such as corporate values also playing a role. Notably, only one-third of the sampled companies have established formal stakeholder engagement mechanisms, suggesting a potential decoupling between ESG reporting obligations and the substantive integration of stakeholder voice into strategic decision-making. Stakeholder engagement practices vary widely, with formal mechanisms more common in larger, publicly listed organizations. Key challenges include regulatory complexity, data-collection difficulties, cost pressures, and limited stakeholder awareness. The study contributes to understanding how stakeholder engagement and expectations shape ESG adoption, highlights persistent ESG challenges across industries, and identifies a "middle-squeeze" dynamic whereby medium-sized firms face disproportionate regulatory burden relative to their capacity. Insights offer guidance for policymakers and managers seeking to align sustainability strategies with both institutional requirements and stakeholder demands.

1. Introduction

In modern corporate landscapes, environmental, social, and governance (ESG) factors are becoming vital in shaping strategic decisions and forecasting organizational performance. Recent studies highlight that ESG adoption can elevate a firm's cumulative abnormal returns (Li et al. 2023) while also improving stock liquidity (Krueger et al. 2024). ESG factors have become a key concern among diverse stakeholder groups, who are paying closer attention to how companies address these issues. Modern investors look for ESG disclosures to pinpoint sustainable options before finalizing investment decisions. Consequently, ESG elements are progressively integrated into strategic planning, performance assessments, and risk management. This trend reflects rising expectations from a range of stakeholders – employees, shareholders, customers, and regulators – who call for greater openness and responsibility regarding ESG concerns. Corporations that advance ESG measures and provide enhanced payouts are more likely to strengthen ties with their stakeholders (Zahid et al. 2023). Therefore, ESG considerations have steadily become a focal point in the modern corporate world (Khamisu et al. 2024).

The environmental aspect advocates for enhanced performance through environmentally mindful practices and cost reduction (Brooks and Oikonomou 2018), including the adoption of renewable energy, effective waste disposal, pollution prevention, and climate change mitigation strategies. The social component emphasizes adherence to moral standards, compliance with legal obligations, and the cultivation of positive connections across a global context (Lee et al. 2016). Meanwhile, the governance aspect focuses on matters such as the quality of disclosures, political influences, corruption risks, business ethics, and organizational governance structures (Khan et al. 2016). If firms neglect ESG reporting criteria issued by organizations such as the Global Reporting Initiative (GRI), they may face significant unrest, prompting

them to implement safeguard measures that address stakeholder issues (Deloitte n.d.). At the same time, rising demands from investors, policymakers, and consumers have led to stricter regulations and heightened calls for openness and accountability, further driving ESG's expansion (Dwekat et al. 2022; Kräussl et al. 2024; Deloitte n.d.).

The European Union has implemented stringent regulations to promote sustainable business practices, including the EU Taxonomy for sustainable activities, the Sustainable Finance Disclosure Regulation (SFDR), and the Corporate Sustainability Reporting Directive (CSRD), which mandates comprehensive ESG reporting for large companies. However, there are limited studies that have explored how evolving regulations and varying cultural and national contexts impact the adoption of ESG strategies. Multiple studies have explored the drivers influencing ESG strategies in broad and single-country contexts; however, the specific impact of EU frameworks across different member states remains underexplored (La Torre et al. 2018; Aureli et al. 2020; Shi and Mai 2025). Moreover, most previous research has mainly focused on large companies, failing to address the motivations and outcomes of voluntary ESG adoption by small and medium-sized enterprises (SMEs) (Gjergji et al. 2021; Huynh et al. 2024). In terms of exploring how stakeholders influence companies to adopt ESG practices, previous studies have either focused on specific stakeholder groups or been limited to specific regions (Tsoi 2010; Boudreau 2023). Moreover, only a few studies have examined how companies evaluate the expectations of different stakeholders towards their ESG strategies (Rathobei et al. 2024; Xu et al. 2024).

This article aims to explore the key drivers and challenges influencing companies' adoption of ESG principles in business strategies that engage stakeholder groups. To address the gaps in existing literature, the following research questions guide this study: (1) What motivates companies to integrate ESG factors into their core strategies? (2) How do companies identify and collaborate with various stakeholders when developing ESG strategies? (3) What obstacles do companies encounter when implementing and refining their ESG activities?

By answering these questions, the study contributes to current debates in both academic literature and corporate practice. First, it clarifies how external forces and internal drivers encourage or hinder ESG adoption not only in large listed firms but also in SMEs with different ESG drivers. Second, it emphasizes the significance of stakeholder relationships, with a key finding that only one-third of sampled companies have formal engagement mechanisms, which suggests that many organizations treat stakeholder dialogue as a regulatory formality rather than a strategic necessity. Finally, the findings can help organizations better align their sustainability strategies with varying stakeholder expectations and emerging regulatory standards.

The study employs a qualitative research approach, drawing on interviews with 16 European Union-based companies spanning various industries. In addition, ESG or sustainability reports published by these companies were examined to support and enrich the interview data. Two theoretical lenses, institutional theory and stakeholder theory, were used to interpret how firms respond to external pressures and stakeholder demands to ensure a comprehensive view of the motivations, processes, and challenges associated with ESG initiatives.

The paper is organized into several sections. Following this introduction, the literature review discusses existing research on ESG, highlighting gaps this study aims to address. Next, the materials and methods section explains the data collection methods and analytical procedures in detail. The findings section presents the results, organized around the three research questions: factors driving ESG adoption, stakeholder engagement, and implementation challenges. The discussion reflects on how these findings relate to institutional and stakeholder theories, and the conclusion summarizes key insights, notes limitations, and suggests directions for future research.

2. Literature review

One of the key drivers that push companies to adopt ESG strategies is evolving regulatory requirements. In 2022, the governments in the European Union implemented CSRD, which mandates large companies based in or operating within EU countries to report detailed information about their ESG activities (Leal Filho et al. 2025; Deloitte n.d.). Apart from these regulatory requirements, market forces also drive companies to adopt ESG practices. Multiple studies have revealed that an increasing number of investors view strong ESG performance as a foundation for good governance and risk management, and companies with strong ESG performance are considered less risky and more sustainable by investors (Amel-Zadeh and Serafeim 2018; Baker et al. 2022; Kräussl et al. 2024). This shift in investors' attitude toward ESG disclosure creates pressure on companies to adopt robust ESG strategies (Chen and Xie 2022; Velte 2023).

Companies also consider ESG initiatives for securing reputational benefits in the market. Multiple studies have found that companies involved in ESG practices gain a competitive advantage, secure a brand image, and build trust with stakeholders (Kwarteng et al. 2016). Additionally, previous research has pointed out that companies adopt ESG strategies as a response to employee expectations, since many employees, especially Millennials and Generation Z, seek to work in companies that embed ESG activities as core values (Ng et al. 2010; Deloitte n.d.).

This study utilizes two major theoretical frameworks, i.e., stakeholder and institutional theories, to understand the factors that drive the adoption of ESG strategies and the way companies engage with different stakeholders.

Stakeholder theory: Freeman (1984) defines stakeholders as any individual or group who affects or is affected by the operations of organizations and their objectives. Firms must produce value for multiple stakeholder groups to become sustainable and successful (Freeman 1984). From this perspective, implementing ESG principles can play an important role in enhancing corporate performance through balancing interests and expectations between management and different groups of stakeholders (Alsayegh et al. 2020).

Institutional theory: Proponents of institutional theory assert that the primary forces influencing a firm's strategic

choices are external influences, specifically the sociological and cultural environment (Galbreath 2013). Businesses ultimately adopt tactics that determine their level of legitimacy based on the pressures they encounter at the macro level – coercive, normative, or imitative isomorphism (Daddi et al. 2016; Cassely et al. 2021). Neo-institutional theory further states that because social norms and cultural ideas impact organizational behavior, businesses in various nations could have varying corporate social responsibility (CSR) objectives (Ortas et al. 2015).

Overall, the literature highlights that ESG adoption is shaped by the interplay of external regulatory and market pressures with internal corporate values and governance structures. While the theoretical foundations for understanding these dynamics are well established, empirical evidence on how companies, particularly SMEs and voluntarily reporting firms, navigate the tension between institutional demands and authentic stakeholder integration within the EU context remains limited. This study addresses that gap.

3. Materials and methods

This study uses a qualitative approach to explore the motivations, stakeholder engagement mechanisms, and challenges related to ESG strategy adoption in EU-based companies (Eisenhardt and Graebner 2007). A descriptive qualitative approach was adopted, drawing on primary data from semi-structured interviews with ESG officers and managers and on secondary data from sustainability reports of selected firms. Semi-structured interviews are well suited for gathering data in complex studies where understanding can only emerge through direct interaction with participants (Yin 2017).

3.1. Sample selection

Purposive sampling was employed to select information-rich cases of EU-based companies (Patton 2002). The European Union context was chosen because the EU leads in sustainability policy (e.g., the European Green Deal) and offers diverse cultural and market settings, allowing examination of how various institutional pressures and stakeholder demands drive ESG strategy adoption across sectors. Companies of all sizes and industries were included to capture a broad range of drivers and challenges. Only firms that publish a sustainability report and explicitly engage in sustainability strategies were selected, as such commitment – whether voluntary or mandated – ensures rich qualitative insights (Patton 2015). Applying these criteria, 130 candidate companies were identified, and each firm's sustainability manager or ESG officer was contacted. Sixteen managers (one per company) agreed to participate. Although the final sample was determined by these selection criteria and participants' willingness rather than by a predefined saturation target, by the fourteenth interview no new themes were emerging and each thematic code had appeared in at least two companies, indicating that sufficient thematic saturation was achieved. A sample of this size aligns with comparable qualitative studies in business sustainability (Zhao and Patten 2016).

3.2. Data collection

Semi-structured interviews were conducted following a standardized protocol, with all participants assured of confidentiality. The protocol covered three areas aligned with the research questions: (1) motivations for ESG adoption, (2) how the company engages with stakeholder groups and assesses their expectations, and (3) challenges in implementing ESG initiatives. The protocol was pilot-tested with a company outside the sample to refine questions and eliminate ambiguities. All interviews were conducted via a video conference between November 2024 and March 2025, lasting approximately 30–60 minutes, and were recorded with consent and transcribed in full. Member checks were performed by returning coded transcripts to interviewees for verification (Lincoln and Guba 1985). Key details of the 16 interviews are summarized in Table 1. In addition, each company's most recent sustainability or ESG report was collected for data triangulation. The selected companies were categorized by size:

Table 1. Characteristics of the companies and interviews

Company	GICS* sector	Region	Voluntary/mandatory reporting	Duration (min)	Company size
C1	Communication services	Estonia	Yes	35	Large
C2	Information technology	Sweden	Yes	48	Large
C3	Consumer staples	Sweden	No (voluntary)	35	Small
C4	Consumer staples	Latvia	Yes (listed)	30	Small
C5	Financials (banks)	Latvia	Yes	27	Medium
C6	Communication services	Estonia	Yes	50	Large
C7	Industrials	Estonia	No (voluntary)	30	Small
C8	Consumer staples	Latvia	No (voluntary)	60	Small
C9	Financials	Latvia	No (voluntary)	55	Small
C10	Financials (insurance)	Belgium	Yes	60	Medium
C11	Industrials (transport)	Estonia	Yes	30	Large
C12	Utilities	Latvia	Yes	35	Large
C13	Materials	Latvia	Yes	40	Medium
C14	Financials (banks)	Latvia	Yes	50	Large
C15	Consumer staples	Estonia	No (voluntary)	33	Small
C16	Consumer staples	Finland	Yes (listed)	60	Medium

* GICS – Global Industry Classification Standard

large (> 500 employees), medium (50–500 employees), and small (< 50 employees).

3.3. Data analysis

The data were analyzed using thematic analysis (Braun and Clarke 2006), combining deductive and inductive coding of interview transcripts and sustainability reports. A deductive coding framework based on Martiny et al. (2024) was used as a starting point, distinguishing between internal determinants (factors under a firm's direct control, such as governance structures, resource allocation, and innovation capacity) and external determinants (arising from the broader business environment, such as regulatory requirements, market dynamics, and stakeholder expectations). As the data were reviewed, new themes were also allowed to emerge inductively, integrating additional sub-themes when patterns arose that were not captured by the initial codes.

Following recommended qualitative procedures (Saunders et al. 2016), all transcripts and reports were read thoroughly for familiarization. Each meaningful segment was coded with a descriptive label capturing its essence. For ESG adoption motivations, the predetermined deductive codes were primarily applied, whereas for stakeholder engagement processes and implementation challenges, open inductive coding was used. This hybrid approach yielded 16 distinct factors motivating ESG adoption and 19 distinct challenges to ESG implementation, which were subsequently grouped into six driver themes and nine challenge themes. Supporting documents are available as supplementary material.

4. Findings

4.1. Motivating factors driving ESG adoption

The analysis revealed that ESG adoption across the sampled companies is predominantly shaped by external determinants – a pattern consistent across all sectors and firm sizes. Regulatory frameworks, market dynamics, and stakeholder expectations emerged as the most frequently cited drivers, while internal factors such as corporate values and leadership commitment played a supporting but meaningful role.

Regulatory and institutional pressures. Figure 1 shows a clear pattern: in every industry, the normalized frequency for external determinants exceeds that for internal determinants. Companies in the financial and technology sectors reported mandatory reporting requirements and global sustainability initiatives as their foremost motivators. The CSRD was consistently identified as a key catalyst, particularly among large and listed firms. As one respondent noted, global reporting frameworks such as CSRD serve as guidance to prioritize ESG topics that *we haven't considered before* (C2). Companies in heavily regulated sectors such as industrials and financials placed higher importance on compliance to avoid potential legal and financial consequences (C7, C12). Several respondents pointed to the expanding scope of EU regulations as a factor that compels even previously exempt firms to begin formalizing their ESG practices.

Market forces and stakeholder demands. Pressure from stakeholders plays a crucial role in driving ESG adoption. The majority of companies confirmed that their ESG activities are mainly driven by the interests and demands of customers and

Table 2. Classification of internal and external determinants (adapted from Martiny et al. 2024)

Internal determinants	External determinants
Firm strategy (e.g., R&D, sustainability governance)	Regulations (e.g., CSRD, EU Taxonomy)
Financial performance (e.g., profitability, cash flow)	Industry pressures (e.g., sector benchmarks)
Corporate governance (e.g., board diversity)	Stakeholder demands (e.g., investors, customers)
Firm characteristics (e.g., size, resources, culture)	Country governance (e.g., political stability)
Technology/innovation (e.g., digital transformation)	Economic shocks (e.g., COVID-19)

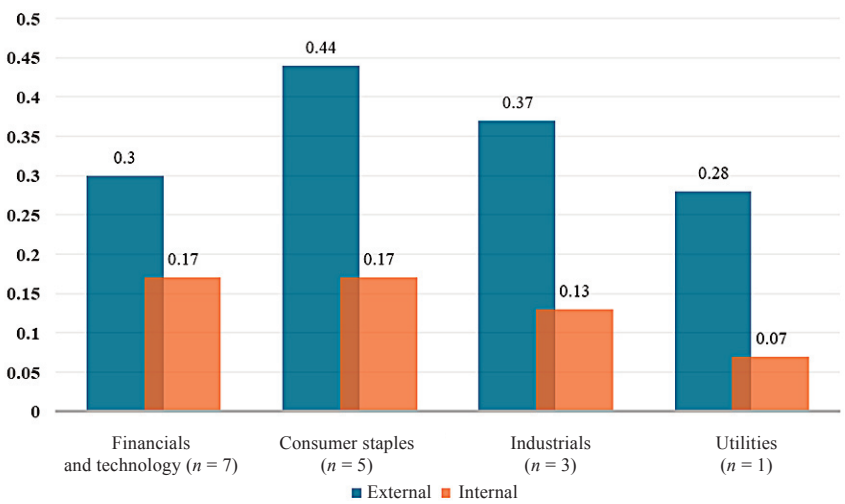

Fig. 1. Variation in ESG determinants by sector.

investors. Consumer-facing sectors, particularly consumer staples, emphasized market positioning and brand reputation as crucial drivers alongside regulatory compliance (C1, C3). One participant in the cosmetics industry noted: *Customers and the media really keep a close eye on us when it comes to sustainability. They notice every detail, and they're quick to criticize if something doesn't align with their expectations* (C4). Over half of the respondents confirmed that evolving market dynamics push them to adapt their ESG strategies, especially to stay competitive. As one participant observed: *We initially worried that sustainability might just be a passing trend. However, it's quickly turning into a basic expectation* (C8).

Internal determinants. While external pressures dominate, many interviewees pointed to top management priorities and corporate culture as decisive drivers. Some companies view ESG reporting not as an obligation but as a reflection of values already embedded in their operations: *Sustainability, environmental responsibility, and actively putting these values into practice have always been at the core of who we are. For over 30 years, we've been committed to producing the best products possible while using the fewest resources. This ESG report is really just a formal document for us* (C7). Notably, small companies showed somewhat greater reliance on internal values compared to larger firms, which were more strongly shaped by external compliance pressures. One telecoms respondent illustrated the shareholder dimension: *We're a publicly traded telecommunications company, and one of our largest shareholders is the Swedish state. Given their stake, ESG issues are definitely important from their perspective* (C6).

Size-based patterns. Figure 2 shows that large companies were most strongly motivated by regulatory and mandatory pressures, while medium-sized enterprises balanced regulatory requirements with market-driven factors, including customer expectations and strategic positioning. Small companies often cited aligning ESG initiatives with core corporate values as key motivators, though they also placed significant emphasis on market positioning and customer demands. These patterns confirm that ESG adoption motives vary systematically with both industry context and firm size, shaped by a mix of external pressures and internal priorities.

4.2. Stakeholder engagement and evaluation

A central finding of this research is the limited prevalence of formal stakeholder engagement mechanisms. Of the sixteen companies interviewed, only five (approximately one-third) reported having a formal, structured mechanism for engaging stakeholders in ESG strategy development. This finding is striking given that these firms operate under the EU's dense sustainability ruleset. Figure 3 shows the companies and the key stakeholders mentioned by the companies either during the interviews or in their ESG reports.

Sectoral and size-based patterns. Formal engagement was most common in the financials and technology group and present to a lesser extent among industrials, whereas consumer staple firms showed markedly lower adoption of formal mechanisms. A similar pattern appeared across firm sizes: large and medium companies were equally likely to have formal engagement processes, while none of the small firms employed such mechanisms. Among the eleven companies subject to mandatory ESG reporting, formal engagement was substantially more common than among voluntarily reporting firms, none of which used a structured engagement process.

Variation in engagement practices. The five companies with formal mechanisms demonstrated considerable sophistication. C2 reported a multi-layered engagement process involving employees, academia, civil society, customers, investors, suppliers, and regulators through mechanisms such as employee surveys, resource groups, union dialogues, training sessions, and structured NGO dialogues. The interviewee stated: *We hold regular discussion and dialogue exchanges with our customers to understand their needs and interests regarding our ESG strategies, and we are proud to say that our company has implemented numerous changes to align with the interests of our customers.* C14 used multiple formal channels: ESG goal surveys, quarterly pulse and employee net promoter score (eNPS) surveys, and quarterly live ses-

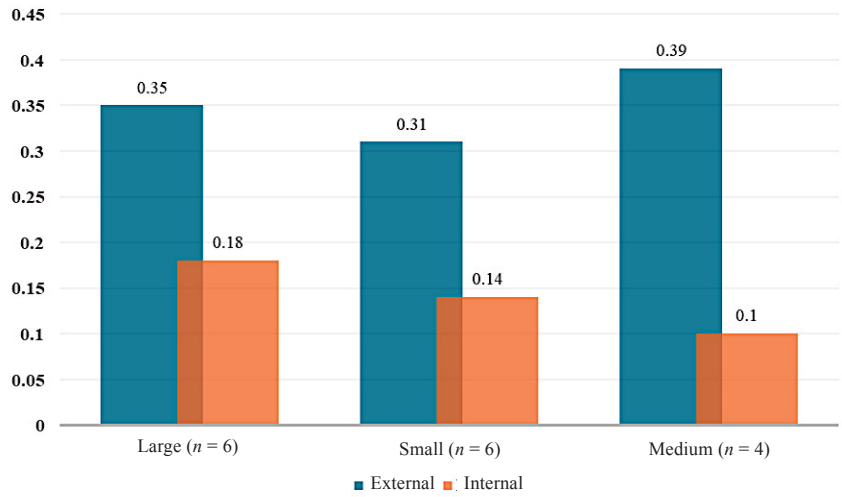

Fig. 2. Variation in ESG determinants by firm size.

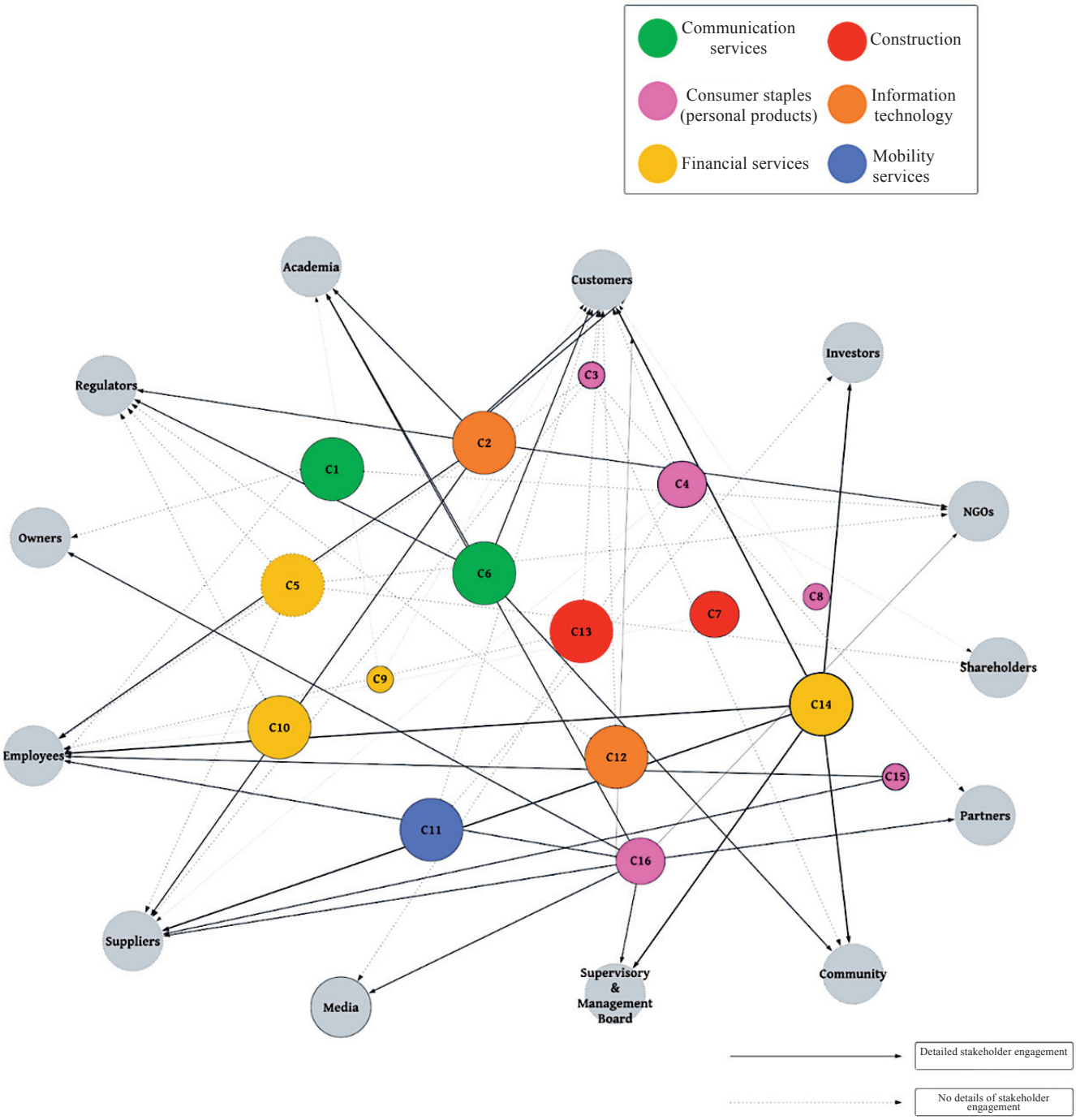

Fig. 3. Stakeholder engagement network analysis.

sions for employees; individual meetings, satisfaction surveys, and complaints monitoring for customers; and public disclosures, one-on-one meetings, and supervisory board interactions for investors. Regarding investor engagement, the interviewee noted: *We have an investor relations team, and they speak a lot directly with the investors.* C6 described how stakeholder input is integrated: *We ensure the interests of diverse stakeholder groups are balanced by regular and close conversations with each group. We then prioritize and integrate this feedback into our sustainability activities.*

By contrast, the eleven companies without formal mechanisms reported relying on informal monitoring of market trends, occasional feedback from customers, or general awareness of stakeholder expectations rather than structured dialogue (C8, C9, C11, C12). Even companies that acknowledged numerous key stakeholders such as customers, employees, investors, regulators, and NGOs often lacked a formal process to systematically capture and act on their input.

Despite these differences, most participants agreed that effective stakeholder engagement is key to maintaining organizational legitimacy, with several pointing to regulatory bodies and investors as particularly influential in driving transparency on ESG targets (C2, C11, C14). These findings highlight an important gap between the breadth of acknowledged stakeholders and the depth of mechanisms used to engage them.

4.3. Challenges in ESG implementation

The challenges reported by interviewees cluster into four broad areas: stakeholder awareness gaps, data and supply-

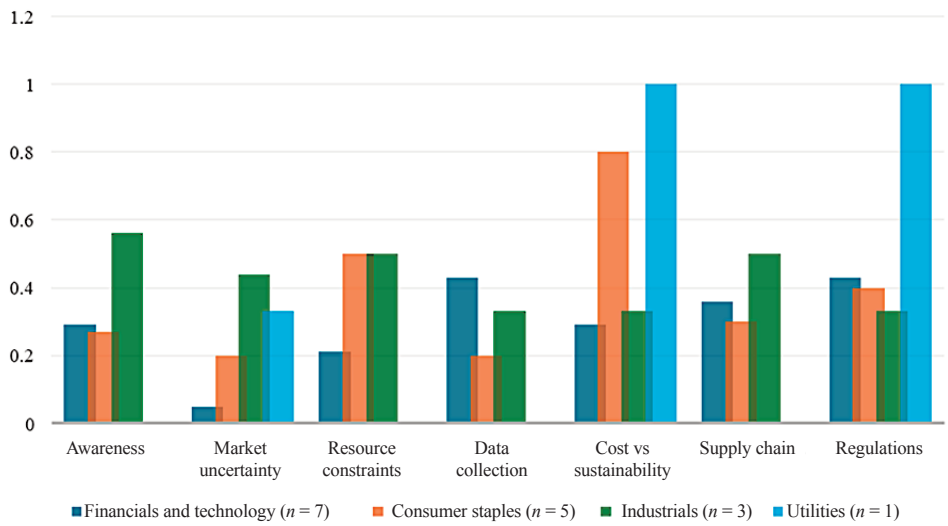

Fig. 4. ESG integration challenges.

chain complexity, regulatory burden, and cost pressures. Their relative salience varied by sector and firm size. Figure 4 provides detailed information about sector-specific ESG challenges.

Stakeholder awareness and skepticism. Most interviewees identified limited customer awareness of ESG benefits as a major challenge. Many customers prioritize short-term benefits over long-term sustainability value. Financial and technology companies reported consumer skepticism around "green" claims: *One of the issues is the assumption that if a product or service is more ESG-friendly, it inevitably comes with a higher price tag. That's a concern for consumers, because they want something good for nature but also good for their wallet* (C6). In consumer staples, communicating sustainability as an upgrade rather than a trade-off proved difficult: *How do we explain to the customer that this is actually an upgrade in sustainability, not a downgrade because it's not super white?* (C16). Multiple interviewees also pointed out that although resources exist to support worker health and safety, many workers are unaware of how to use them, leading to serious incidents. One participant noted that lack of risk awareness, poor supervision, and unsafe behaviors are major contributors to such incidents (C2).

Data collection and supply-chain complexity. A shortage of reliable information, particularly regarding Scope 3 emissions (indirect value-chain emissions) and indirect supply-chain effects, emerged as a critical barrier. Interviewees frequently mentioned difficulty obtaining standardized, verifiable data from suppliers across multiple regions. One company illustrated the scale of the problem: its own operations account for only approximately 1% of the total emissions, with approximately 99% originating from the supply chain, making it *really hard to get down the supply chain emissions* (C1). Complex supply networks in telecoms, cosmetics, and construction made tracking materials, ensuring ethical sourcing, and quantifying environmental impacts considerably more complicated. Companies described these challenges not merely as data gaps but as fundamental barriers to setting evidence-based targets and conducting meaningful stakeholder conversations about environmental performance.

Regulatory complexity and standards volatility. Evolving regulatory requirements, including the CSRD, SFDR, and broader EU Taxonomy frameworks, pose significant challenges. Respondents noted tight deadlines, misaligned reporting cycles, and the need to adapt to shifting standards. One participant acknowledged that understanding each mandatory key performance indicator (KPI) disclosure in the new CSRD report is a challenge in itself (C5). Companies also pointed to the burden of reconciling multiple international reporting standards (e.g., GRI, TCFD, SASB) with EU-driven frameworks, describing duplication of effort and methodological inconsistencies that drained time and resources. The instability of the regulatory environment was a particular concern: *Changing and unstable political environment and regulatory framework will increase challenges for enterprises to plan long-term investment for green transition* (C13). Another respondent warned that *inefficient application of EU regulatory framework at the national level might negatively affect competitiveness* (C13).

Cost pressures and the "middle-squeeze." Cost-versus-sustainability trade-offs were salient across all sectors but varied in intensity. Consumer-goods manufacturers, operating on thin margins and facing volatile commodity prices, experienced every new data requirement as a direct hit to profitability, while capital-light service providers could allocate the same investment over higher margins. Medium-sized firms reported the greatest difficulty in gathering reliable ESG data and the highest incidence of resource constraints. These firms are large enough to fall under expanding EU disclosure requirements and to attract the scrutiny of value-chain partners, but they lack the scale economies and specialist human capital that make compliance routine for larger peers. Large firms assigned lower weight to resource constraints and showed the least concern over market uncertainty, while small companies reported resource limitations comparable to medium firms but attached noticeably less importance to external regulatory compliance. This pattern reveals a "middle-squeeze" dynamic: medium-sized companies face dispropor-

tionate regulatory burden precisely where they have the least margin for absorbing additional complexity.

5. Discussion

5.1. Theoretical implications

ESG adoption across the sampled firms is shaped by the interplay of external institutional pressures and internal corporate drivers, with external forces consistently dominating – a pattern that aligns with institutional theory's emphasis on coercive, normative, and mimetic isomorphism (Bansal and Roth 2000; Daddi et al. 2016). The majority of companies in the sample were obligated to report under CSRD, likely a major reason for their ESG activities. Heavily regulated sectors fear reputational damage and face legal or financial consequences for non-compliance. In consumer-facing sectors such as cosmetics and communications, ESG strategies were driven primarily by competitive advantage and brand reputation, reflecting normative and mimetic pressures rather than coercive ones alone.

Stakeholder theory often assumes that firms gradually internalize stakeholder values, but the findings introduce an important nuance. If engagement starts mainly because of external rules, companies may build formal processes that satisfy auditors and rating agencies yet do little to change day-to-day decisions. Consumer-staples companies illustrate this clearly: although they have set up formal dialogue systems to protect their brands, interviewees indicated that insights from these conversations rarely shape research plans or pricing choices. This suggests a potential decoupling between the visible structures of stakeholder engagement and the substantive integration of stakeholder voice into strategic decision-making, a finding consistent with institutional theory's concept of "ceremonial conformity" (Meyer and Rowan 1977), later extended as "means-ends decoupling" (Bromley and Powell 2012), and with recent evidence that mandatory ESG reporting does not automatically eliminate the gap between symbolic disclosure and substantive practice (Matten and Moon 2008; Bothello et al. 2023; Aboud et al. 2024).

The finding that only five of sixteen companies have formal stakeholder engagement mechanisms is particularly notable given the dense EU regulatory environment. In institutional-theory terms, the field appears to be in a transitional phase: expectations are articulated by legislators and standard-setters but have not fully diffused into corporate routines. The sectoral contrast – higher formalization in finance and technology versus none in utilities – points to reputational exposure and investor scrutiny as critical accelerants of engagement codification. Finance and information and communications technology (ICT) companies face continuous monitoring by socially responsible investors and manage largely intangible assets whose value hinges on legitimacy, whereas utilities operate in capital-intensive, monopoly-like environments where legitimacy is mediated through regulatory licenses rather than market sentiment. This pattern refines institutional arguments that emphasize regulation alone: it suggests that visibility to powerful audiences, not just legal coercion, drives the formalization of stakeholder voice.

The "middle-squeeze" dynamic complements existing literature on size and sustainability by showing that regulatory exposure does not map neatly onto capacity. Medium-sized companies have made visible investments in engagement architecture, yet interview evidence reveals acute resource and data-collection bottlenecks. Mid-sized firms often lack the specialist capacity of larger organizations, compelling ESG teams to manage both reporting duties and stakeholder engagement simultaneously, making the institutionalization of meaningful dialogue more difficult.

5.2. Practical implications

From a practical standpoint, the findings offer guidance for both corporate managers and policymakers. Companies should adopt more systematic, formal mechanisms to engage stakeholders, including regular surveys, structured feedback sessions, and clearly defined KPIs, to ensure stakeholder expectations are explicitly captured and integrated into strategy refinements. The distinction between symbolic and substantive engagement identified in this study underscores the importance of designing mechanisms that genuinely inform decision-making rather than merely satisfy compliance requirements.

Policymakers and regulators could use these insights to further standardize ESG reporting requirements and ensure consistency across sectors. Specifically, efforts should focus on streamlining methodologies and clarifying expectations within frameworks such as the CSRD and EU Taxonomy, reducing ambiguity and helping companies overcome barriers related to data availability, resource constraints, and regulatory complexity. Furthermore, firms should invest in educating consumers about the benefits and long-term value of ESG initiatives. Effective consumer awareness campaigns and transparent communication strategies can mitigate skepticism and increase market acceptance of sustainable products.

6. Conclusions

This study provides a comprehensive understanding of the factors influencing ESG adoption and stakeholder engagement across companies operating in the European Union. The findings show that external institutional forces such as regulations, investor expectations, and market pressures remain the dominant motivators, while internal values and leadership commitment also play a meaningful role in shaping genuine sustainability integration. The analysis revealed that formal stakeholder engagement remains limited, suggesting that many organizations view stakeholder dialogue as a regulatory formality rather than a strategic necessity.

Sectoral and size-based comparisons indicate that heavily regulated industries and large firms are more likely to institutionalize ESG practices due to higher scrutiny and better resource availability, while medium-sized enterprises experience a "middle-squeeze" dynamic, facing strong compliance pressures but lacking the capacity to manage them effectively. The study also highlights how data unavailability, cost constraints, and constantly evolving standards continue to hinder

firms from translating compliance into substantive ESG performance.

The results emphasize that effective ESG integration depends on both external accountability and internal commitment. When sustainability becomes embedded in corporate culture, driven by leadership conviction and employee advocacy, it moves beyond symbolic compliance and generates long-term value for all stakeholders.

Limitations

The findings are subject to several limitations. The relatively small sample size, driven by a low response rate, limits the breadth of applicability and generalizability. While including multiple sectors enhances breadth, it also makes it difficult to delve deeply into sector-specific nuances. The study is set within the EU, which has robust sustainability regulations, and findings may not be transferable to non-EU regions facing different institutional pressures. Companies that agreed to participate were likely those more willing to discuss ESG issues, potentially skewing the sample toward firms further advanced in sustainability practices. Reliance on interviewees' self-reported data may introduce bias, and the interviews did not capture the views of other stakeholder groups, such as employees, suppliers, or local communities.

Future research should consider expanding sample sizes and focusing in-depth on single industries to capture nuanced sector-specific challenges. Researchers could extend beyond EU settings to examine how varied institutional and regulatory conditions influence sustainability strategies in other regions. To mitigate self-selection and reporting bias, further studies could triangulate multiple data sources such as employee surveys, customer focus groups, or community consultations alongside manager interviews.

Data availability statement

The data supporting the findings of this study are available within the article. Due to confidentiality agreements, full transcripts and company identifiers cannot be shared publicly. Summarized and anonymized data are available from the corresponding author upon reasonable request.

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Supplementary material

Supplementary online data to this article can be found at https://doi.org/10.3176/proc.2026.3.S04.

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Keskkonna-, sotsiaal- ja juhtimispõhimõtete rakendamise ajendid ja väljakutsed: ettevõtte strateegia kooskõla sidusrühmade ootustega

Amit Gupta, Merle Ojasoo ja Karin Reinhold

Artiklis uuritakse ettevõtete sisemisi praktikaid keskkonna-, sotsiaal- ja juhtimispõhimõtete (ESG) ja eesmärkide seadmisel ning ESG rakendamisega ja sidusrühmade kaasamisega seotud mehhanisme ja probleeme. ESG rakendamise mustrite väljaselgitamiseks tugineti sidusrühmateooriale ja institutsionaalsele teooriale. Autorid viisid läbi 16 poolstruktureeritud intervjuud eri sektorites tegutsevate ettevõtete esindajatega.

Tulemused näitavad, et ESG rakendamist kujundavad peamiselt välised tegurid, sealhulgas regulatiivsed nõuded, turusuundumused ja sidusrühmade ootused, kuid rolli mängivad ka sisemised tegurid, näiteks ettevõtte väärtused. Uuringust selgub, et sidusrühmade kaasamine on ettevõtetes pigem ebaühtlane ning strateegilisi ja formaalseid kaasamismehhanisme kasutatakse piiratud määral. See viitab võimalikule lahknevusele ESG eesmärkide seadmise, sidusrühmade tegeliku kaasamise ja strateegilise vaate vahel.

Sidusrühmade kaasamise praktikad erinevad ettevõtetes märgatavalt. Formaalsed kaasamismehhanismid on levinumad suuremates ja börsil noteeritud ettevõtetes. Peamiste probleemidena tuuakse välja regulatiivne keerukus, andmete kogumise raskused, kasvav kulusurve ning sidusrühmade piiratud teadlikkus ESG teemadest.

Uuring aitab paremini mõista, kuidas sidusrühmade kaasamine ja nende ootused kujundavad ESG rakendamist ettevõtetes. Samuti toob see esile ESG-ga seotud püsivad väljakutsed ning kirjeldab survet nn keskmise suurusega ettevõtetele, kes seisavad silmitsi ebaproportsionaalselt suure regulatiivse koormusega võrreldes oma turupositsiooni ja organisatsioonilise võimekusega. Tulemused pakuvad suuniseid poliitikakujundajatele ja juhtidele, kes soovivad viia kestlikkusega seotud strateegilised eesmärgid kooskõlla nii regulatiivsete nõuete kui ka sidusrühmade ootustega.

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Firefighter well-being in the Baltics: a comparative study of physical activity, psychosocial risks, and management strategies in Estonian and Latvian fire services

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ABSTRACT

Firefighting demands exceptional physical and cognitive capacity in hazardous, unpredictable environments. This comparative study examined firefighter well-being in Estonia and Latvia using the job demands-resources (JD-R) model. A mixed-methods approach (2020–2024) included questions from the COPSOQ II questionnaire (N = 400 Estonian firefighters in 2020, N = 408 Estonian firefighters in 2023, and N = 804 Latvian firefighters in 2024) and focus group interviews conducted in Estonia. Rising body mass index (BMI) trends were linked to high job demands, irregular shifts, sleep disruption, physical activity, health behaviours, psychosocial stressors, and constrained recovery. Consistent with the JD-R model, organisational resources (health promotion, supportive supervision, scheduling flexibility) significantly influenced well-being and health behaviours across both countries. Although occupational hazards and risks were comparable, differences in resource allocation and organisational support were decisive for engagement and sustainability. These findings provide an evidence-based framework for fire service leadership to develop targeted health promotion and preventive strategies that enhance firefighter retention and operational effectiveness.

Introduction

Firefighters face unique challenges due to the nature of their work, resulting in significant implications for their mental and physical well-being. Firefighters are routinely exposed to extreme physical exertion, hazardous environments, irregular working hours, traumatic incidents, and high levels of responsibility for public safety (Andrews et al. 2019; Soteriades et al. 2022). These demands place firefighters at an increased risk of musculoskeletal disorders, cardiovascular disease, sleep disturbances, psychological strain, post-traumatic stress disorder and depression symptoms, fatigue, burnout, and a variety of chronic diseases and long-term reductions in work ability (Macfarlane et al. 2009; Lang et al. 2012; Meyer et al. 2012; Igboanugo et al. 2021). However, trauma severity alone does not predict psychological outcomes; demographic factors, organisational context, and personal attributes also play significant roles (Meyer et al. 2012; Zegel et al. 2023). Despite their demanding roles, firefighters often demonstrate high cardiovascular risk and low fitness levels (Risavi et al. 2016; Li et al. 2017; Moffatt et al. 2021). This underscores the critical need for exercise programmes to mitigate health risks and injuries (Storer et al. 2014; Sokoloski et al. 2020). However, research into how exercise influences firefighters' mental health and well-being is currently lacking. Ensuring the sustainability of fire and rescue services therefore requires systematic attention to both physical and psychosocial aspects of employee well-being. Regular physical activity is linked to a wide range of physiological and psychological benefits. Extensive research has consistently demonstrated positive health outcomes associated with exercise, including a robust correlation with psychological well-being in the general population (Kandola et al. 2019; Malm et al. 2019). Greater engagement in physical activity is linked to a reduced risk of cardiovascular morbidity (Blond et al. 2019). For firefighters, the implementation of

regular aerobic and resistance training is critical, as it has numerous physiological benefits, including enhanced aerobic capacity and superior levels of strength, endurance, and power (Andrews et al. 2019). Research further indicates that higher activity levels among firefighters correlate with a decrease in cardiovascular disease risk factors (Soteriades et al. 2011; Strauss et al. 2021). Additionally, exercise improves respiratory performance (Gendron et al. 2015; Kesler et al. 2018). Crucially, firefighters with the highest fitness levels demonstrate the lowest incidence of occupational injuries (Poplin et al. 2016). Estonian and Latvian fire services operate in similar socio-economic and climatic conditions but differ in organisational structure and management practices. While both countries share comparable operational mandates, research comparing firefighter well-being between them is limited.

Guided by the job demands-resources (JD-R) model (Demerouti et al. 2001), this comparative study investigates the well-being of firefighters in Estonia and Latvia by analysing their physical activity, health indicators, psychosocial risks, and the influence of management practices on overall workforce well-being and sustainability. In high-stakes occupations such as firefighting, well-being is a multidimensional construct encompassing physical, mental, and social health (Soteriades et al. 2022). Within the JD-R model, it is viewed as a dynamic balance between job demands, such as physical exertion and irregular shifts, and available resources, such as social support and physical fitness. In these environments, physical and mental health are inextricably linked; chronic physiological strain and sleep deprivation deplete cognitive resources, increasing vulnerability to anxiety, burnout, and post-traumatic stress (Igboanugo et al. 2021). Conversely, strong organisational resources can buffer the impact of extreme physical demands. Achieving sustainable well-being thus requires an integrated approach addressing cardiovascular health, musculoskeletal integrity, and psychosocial stability as reinforcing components of workforce sustainability. Previous research applying the JD-R model to emergency services has demonstrated that excessive demands, when not balanced by adequate resources, contribute to burnout, reduced engagement, and adverse health outcomes (Crowe et al. 2020; Roşca et al. 2021; Arenas et al. 2025). Physical activity and recovery opportunities are increasingly recognised as critical personal and organisational resources, particularly in physically intensive professions such as firefighting. Nevertheless, organisational constraints, shift systems, and cultural norms may limit firefighters' ability to maintain sufficient physical activity, healthy lifestyles, and well-being.

The aim of this study is to provide a comparative analysis of firefighter well-being in Estonia and Latvia by examining the interplay between physical activity, psychosocial risks, and organisational resources. Guided by the JD-R model, the research seeks to identify how differences in management practices and resource allocation influence health behaviours and occupational sustainability in these two Baltic fire services.

Materials and methods

Study design and context

A mixed-methods comparative study design was employed to examine firefighter physical and psychosocial well-being in Estonia and Latvia. Data collection took place between 2020 and 2024. The quantitative component used a cross-sectional survey design, while the qualitative component consisted of semi-structured focus group interviews conducted in Estonia. The study was framed by the JD-R model, which guided both the selection of variables and the analytical strategy. Psychosocial factors were operationalised as job demands and job resources, while physical activity and selected health indicators were treated as behavioural and outcome-related variables.

Participants and sampling

The quantitative sample comprised 804 employees of the Latvian State Fire and Rescue Service (VUGD) (78% men, 22% women) in 2024 and employees of the Estonian Rescue Services Agency (Päästeamet): 400 in 2020 (82% men, 18% women) and 408 in 2023 (80% men, 20% women). Participation was voluntary and anonymous. Inclusion criteria were active employment in operational or support roles within the fire and rescue services. The response rates were considered satisfactory for organisational research in uniformed services. Psychosocial working conditions as well as health and well-being were evaluated using questions from the Copenhagen Psychosocial Questionnaire (COPSOQ II) (Kristensen et al. 2005), specifically focusing on job demands (quantitative and emotional), work organisation (influence and development), interpersonal relations (leadership quality and social support), and health and well-being (self-rated health and burnout). Items were scored on a 5-point Likert scale and transformed to a 0–100-unit scale for standardised analysis, where higher scores represent higher levels of the construct. COPSOQ II was selected due to its validated use in European occupational settings and to ensure comparability with the 2020 Estonian dataset. The use of version II ensured longitudinal consistency and direct comparability with the baseline data collected from Estonian firefighters in 2020, allowing for the identification of reliable trends in psychosocial risks over the four-year study period. Additional questions assessed firefighters' engagement in physical exercise, perceived physical fitness, dietary habits, and sleep duration and disturbances, as well as self-reported height and weight for the calculation of body mass index (BMI). Quantitative data were analysed using descriptive and comparative statistical methods to identify trends and differences between the Estonian and Latvian samples.

For the qualitative study in 2020, nine focus group semi-structured interviews were conducted in Estonia across different regions, involving a total of 81 professional firefighters. Group sizes ranged from 5 to 11 participants, selected purposively to reflect variation in regions, age, work experience, and operational roles. Interviews lasted between 70–120 minutes and focused on perceived job demands, available resources, management practices, health promotion

initiatives, and barriers to maintaining physical and psychological well-being. Qualitative data were analysed using thematic analysis guided by the JD-R model and management dimensions from Gunther et al. (2019), applying the NVivo15.0 software. Participant anonymity was maintained, and findings were reported at the group level. The qualitative study (focus groups) was conducted only in Estonia; therefore, the comparative analysis of management practices for Latvia is based solely on quantitative data, which limits the depth of cross-country comparison.

Results

The study sample comprised professional firefighters from Estonia (2020, 2023) and Latvia (2024). Table 1 presents the demographic characteristics of the firefighters.

The Latvian sample had a higher proportion of women (22.4%; 18%–20.3% in Estonia) and less seniority (48.9%; 60% in Estonia with more than 10 years of service). Multiple jobholding was more common in Latvia (55.7%) than in Estonia (40%), as were smoking rates (30% in Latvia; 19.3%–20.9% in Estonia). BMI distributions were similar (around 55% overweight/obese), though obesity increased in Estonia (from 10% in 2020 to 15.2% in 2023). These differences, particularly additional employment and smoking, are relevant when interpreting cross-country variations in workload and recovery.

Physical activity and health indicators. The results revealed elevated BMI among firefighters, attributed to insufficient physical activity, irregular eating patterns, shift work, sleep disruption, psychosocial stress, and traumatic exposure, all those factors reflecting high job demands and constrained recovery. The majority of employees in both countries regularly engaged in sports or physical activities during and after working time. Approximately 63% of Estonian firefighters reported having time for physical activity in both 2020 and 2023, whereas only 54.9% of Latvian firefighters reported the same (Table 2). Latvian firefighters faced significantly greater time constraints for exercise, likely driven by secondary employment and work-life strain, representing a key resource deficit in the JD-R model.

Figure 1 presents the distribution of daily physical activity among firefighters in Estonia (2020) and Latvia (2024).

Estonian firefighters showed an even distribution across activity durations, with approximately half engaging in physical activity more than 30 minutes daily. In contrast, Latvian firefighters concentrated in shorter durations (66.5% reporting less than 30 minutes), with only one-third exceeding 30 minutes daily. These differences likely reflect variations in organisational support, training facilities, and health promotion strategies between the two services. The interview results revealed a generally high level of physical engagement among firefighters in Estonia.

Table 1. Demographic characteristics of the study sample

Characteristic	Estonia 2020	Estonia 2023	Latvia 2024
Gender			
Male	82.0	79.7	77.6
Female	18.0	20.3	22.4
Years of service / work experience			
over 10 years	58.0	62.2	48.9
6–10 years	13.4	12.4	21.9
1–5 years	22.4	21.9	22.1
up to 1 year	6.2	3.4	7.1
Additional job			
3 and more	n/a	1.7	3.4
2	4.6	4.4	15.0
1	36.6	34.3	37.3
No extra work	58.4	59.6	44.3
Smoking			
Yes	19.3	20.9	30.0
No	80.7	79.1	64.8
Body mass index (BMI)*			
≤25	45.3	45.3	44.8
25–30	44.8	39.5	45.7
≥30	10.0	15.2	9.5

* BMI was calculated using an updated formula (BMI Oxford), often called the Trefethen formula

Table 2. Time available for physical activity (%)

	Estonia 2020	Estonia 2023	Latvia 2024
Do you have time to do physical activities?	62.69 [60.27, 65.12]*	63.42 [61.09, 65.75]	54.89 [53.31, 56.47]

* 95% confidence intervals (CI) are presented in square brackets

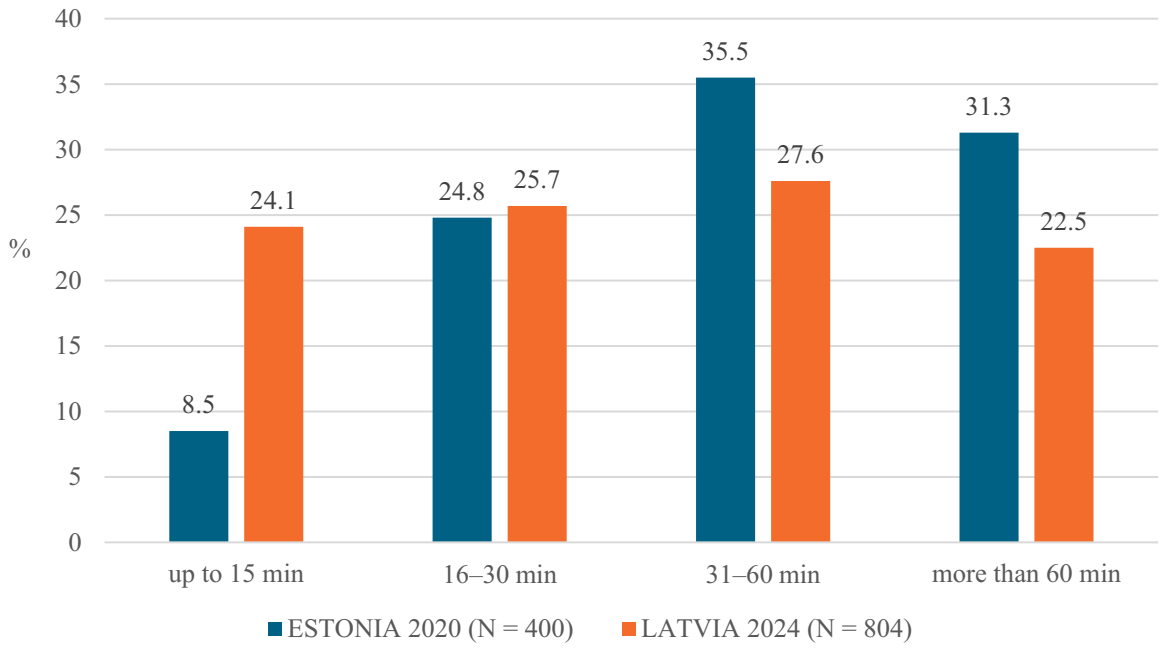

Fig. 1. Daily duration of physical activity.

Table 3. Relationships between BMI and physical fitness

	BMI Oxford			Do you have time to do physical activities?		
	Estonia 2020	Estonia 2023	Latvia 2024	Estonia 2020	Estonia 2023	Latvia 2024
How would you rate your state of health?	–0.166**	–0.095	–0.162**	0.186**	0.197**	0.261**
Do you have time to do physical activities?	–0.182**	–0.009	–0.067			

** Correlation is statistically significant at p = 0.01 (2-tailed), Spearman's coefficient ρ

Table 4. Relationships between sleep, time for physical activity, and physical fitness

	How often do you sleep badly and restlessly?			How would you rate your current physical fitness / physical abilities?		
	Estonia 2020	Estonia 2023	Latvia 2024	Estonia 2020	Estonia 2023	Latvia 2024
How would you rate your current physical fitness / physical abilities?	–0.186**	–0.128**	–0.366**			
Do you have time to do physical activities?	–0.118*	–0.119*	–0.195**	0.460**	0.320**	0.307**

** Correlation is statistically significant at p = 0.01 (2-tailed), Spearman's coefficient ρ
* Correlation is statistically significant at p = 0.05 (2-tailed), Spearman's coefficient ρ

The correlation analysis revealed a weak negative association between BMI and physical fitness in both countries (Table 3). Firefighters with elevated BMI reported poorer self-rated health and perceived insufficient time for physical activity.

Although most firefighters reported sleeping 6–9 hours before shifts, only 8%–10% in Estonia and 9% in Latvia felt consistently refreshed, while 52% reported frequent refreshment. Some acknowledged needing extended sleep to recover from occupational demands, but this was often constrained by family responsibilities, sleep disturbances, or secondary employment. Poor sleep was negatively associated with both perceived physical fitness and available time for exercise across all samples (Table 4).

Self-reported health complaints. Firefighters who reported lower levels of physical activity also tended to report higher fatigue, reduced perceived work ability, and more frequent musculoskeletal complaints. These patterns were evident in both national samples, although the prevalence and intensity varied. The results suggest that while musculoskeletal and psychosocial problems are consistently prevalent in both countries, there exist some notable cross-national differences (Table 5).

Latvian firefighters reported higher emotional and anxiety symptoms, while Estonian firefighters reported more cognitive difficulties and digestive complaints (2020). Back pain was most common in both countries, with slightly higher prevalence in Latvia (53.9%, 95% CI [50.4, 57.3]) than in Estonia (49.8%, 95% CI [44.8, 54.7]). Muscle pain was comparable (Estonia 26%, 95% CI [21.7, 30.3]; Latvia 24%, 95% CI [21.2, 27.1]). These differences may reflect variations in job demands, organisational support, or health promotion programmes, highlighting the need for targeted physical and psychosocial interventions in both services.

Table 5. Prevalence of self-reported health complaints among firefighters

	Estonia		Latvia
	2020	2023	2024
Back pain	49.8	55.5	53.9
Anger and irritability	14.0	19.0	25.1
Muscle pain	26.0	32.0	24.1
Constant fatigue	18.3	28.8	20.4
Difficulty in concentrating	20.8	28.8	13.6
High blood pressure	11.0	12.0	12.9
Frequent headache	10.5	13.3	10.0
Depression	9.0	12.0	10.0
Panic attacks and anxiety	7.8	11.3	21.8
Difficulty in breathing	1.5	1.8	2.4
Digestive tract disorders	7.3	11.3	0.2

Table 6. Perceived quality of leadership and social support from supervisors

	Cronbach's alpha		No.	Mean (SD*)		Mean difference	p-value	Cohen's d
	Estonia 2020	Latvia 2024	of items	Estonia 2020	Latvia 2024			
Quality of leadership	0.86	0.74	4	62.5 (24.2)	70 (27)	7.4	0.0001	0.296
Social support from supervisor	0.79	0.66	3	69.9 (25.6)	75.7 (21.8)	5.8	0.0001	0.238

* Standard deviations are presented in parentheses

Latvian firefighters reported nearly double the rates of anger and irritability compared to Estonia (25%, 95% CI [22.1, 28.1] and 14%, 95% CI [11.2, 15.9], respectively) and more than double panic attacks and anxiety (Latvia 21.8%, 95% CI [18.9, 24.8], Estonia 7.8%, 95% CI [5.12, 10.4]), along with slightly higher fatigue (Latvia 20.4%, 95% CI [17.6, 23.2], Estonia 18.3%, 95% CI [14.5, 22.1]). Estonian firefighters reported concentration difficulties more frequently (20.8%, 95% CI [16.8, 24.7]) than Latvian firefighters (13.6%, 95% CI [11.2, 15.9]). Somatic and cardiovascular complaints were relatively similar in both countries. Depression prevalence was also comparable (9%, 95% CI [6.2, 11.8] in Estonia and 10%, 95% CI [7.9, 12.0] in Latvia). In contrast, digestive tract disorders were markedly more common among Estonian firefighters (7.3%, 95% CI [4.7, 9.8]) than among Latvian firefighters (0.2%, 95% CI [0, 0.6]), which may reflect differences in lifestyle, diet, stress expression, or reporting practices.

Psychosocial job demands, organisational resources, and work-life balance. Leadership-related resources were evaluated positively in both countries, although Latvian firefighters reported slightly higher levels of support (Table 6). The mean score for leadership quality was 62.5 (SD 24.2) in Estonia and 70.0 (SD 27.0) in Latvia, representing a statistically significant difference ($p = 0.0001$). Social support from supervisors followed a similar pattern, with Estonian firefighters scoring 69.9 (SD 25.6) and Latvian firefighters 75.7 (SD 21.8), which is also statistically significant. Cohen's d indicated a moderate effect size. These findings suggest that, despite the demanding nature of the work, firefighters in both settings perceive leadership and supervisory support as important organisational resources, with somewhat stronger leadership-related resources reported in Latvia.

Both fire services demonstrated strong relational and informational resources, reflected in high levels of perceived respect, supportive management practices, and clear communication (Estonia 85%–90%; Latvia 81%–90%). However, notable differences emerged in workload autonomy. In Latvia, 45.2% of firefighters reported limited ability to influence the amount of work assigned to them, indicating that strong interpersonal support does not fully compensate for structural constraints. Work-life balance indicators further highlighted elevated strain in Latvia, where 39%–43% felt they worked too much and 24.9% reported that work-related problems affected their personal life. In Estonia, 42.8% reported no work-life conflict, although more than half acknowledged occasional difficulties. Correlation analyses confirmed that work-life conflict was significantly associated with both physical exhaustion ($\rho = 0.318$) and emotional exhaustion ($\rho = 0.399$), underscoring its role in the health impairment process. Despite these pressures, both fire services maintained relatively safe psychosocial environments, with low exposure to violence, harassment, and bullying, and high awareness of available psychological support. These findings indicate that while relational resources are strong across both countries, structural demands, especially in Latvia, continue to constrain autonomy and recovery opportunities, thereby elevating psychosocial strain.

Management strategies for enhancing firefighter well-being

Firefighter well-being is shaped not only by operational demands but also by the strategic actions of organisational leadership. Based on the JD-R model and the empirical findings of this study, a set of targeted management strategies can

be proposed to strengthen both physical and psychosocial health in Estonian and Latvian fire services. First, workload and recovery management should be prioritised. The results indicate that irregular shifts, secondary employment (particularly in Latvia), and limited recovery time constrain opportunities for physical activity and sleep. Fire service management should therefore implement scheduling practices that ensure adequate rest periods, limit excessive overtime, and support work-life balance. Introducing protected recovery time between shifts and monitoring cumulative workload would directly address key job demands identified in this study. Second, structured physical activity support should be embedded into daily operations. Although many firefighters reported engaging in physical activity, time constraints remained a major barrier. Management can strengthen this resource by allocating protected on-duty training time, improving access to fitness facilities and implementing structured exercise programmes tailored to different age and fitness levels. Such initiatives would contribute to reducing BMI, improving cardiovascular health and lowering injury risk. Third, health promotion and behavioural interventions should be expanded. The prevalence of smoking, overweight, and fatigue highlights the need for integrated health programmes focusing on nutrition, sleep hygiene, and stress management. Preventive health screenings and personalised feedback could further support early identification of health risks. Fourth, strengthening psychosocial resources through leadership is essential. The findings demonstrate that leadership quality and supervisory support are important protective factors in both countries. Management training should therefore focus on developing supportive, communicative, and health-oriented leadership practices. At the same time, increasing employee autonomy, particularly in relation to workload and task planning, would help balance high job demands, especially in the Latvian context. Fifth, enhancing work-life balance policies is critical. A substantial proportion of firefighters, particularly in Latvia, reported that work interferes with personal life. Family-friendly policies, flexible scheduling options where feasible, and organisational recognition of off-duty recovery needs can reduce psychosocial strain and emotional exhaustion. Finally, institutionalising a culture of health and well-being should be a strategic priority. Building on the *Why-Who-What-How* framework (Reinhold et al. 2024), fire services should integrate health promotion into organisational policies, leadership practices, and everyday routines. This includes clear communication of health priorities (*Why*), engagement of leadership and employees (*Who*), targeted interventions (*What*), and systematic implementation and evaluation (*How*). These management strategies highlight that improving firefighter well-being requires not only individual-level interventions but also systemic organisational changes that enhance resources and reduce excessive demands. Such an approach is essential for ensuring long-term workforce sustainability and operational effectiveness.

Discussion

To the authors' knowledge, this study is one of the first to provide a cross-national comparative analysis of firefighter well-being in Estonia and Latvia by integrating physical activity, health behaviours, psychosocial risks, and management practices within the JD-R framework. The findings confirm that while firefighting is characterised by persistently high job demands, organisational resources vary significantly and are decisive in shaping well-being outcomes.

The finding that more than half of firefighters in both Estonia and Latvia engage in minimal or no regular physical activity is consistent with a troubling international pattern, suggesting a systemic global occupational health challenge. The high prevalence of physical inactivity in our study aligns with global trends reported in the US (Li et al. 2017; Barry et al. 2020), South Africa (Achmat et al. 2019; Ras et al. 2024), and Europe (Soteriades et al. 2022; Vancampfort et al. 2024), where roughly half of firefighters fail to meet exercise standards. This cross-continental convergence suggests a systemic occupational health challenge, further compounded by age-related declines in training duration (Baur et al. 2012). In our study, over half of firefighters reported chronic back pain, while 11%–13% suffered from hypertension and up to 20% experienced constant fatigue. Elevated anxiety symptoms, particularly in Latvia, suggest that physical inactivity is closely linked to psychosocial strain. These health complaints, combined with age-related fitness declines and rising BMI, underscore the urgent need for structural interventions to address exercise barriers. While both fire services provide safe environments and supportive leadership, Latvian firefighters experience greater work-life strain and lower autonomy. This suggests that high job demands in Latvia are not adequately buffered by available organisational resources. Conversely, firefighters with access to high-quality leadership and social support demonstrated healthier behaviours and better well-being, reinforcing the JD-R assumption that resources mitigate health impairment and foster engagement.

Building on the Estonian evidence-based model for a culture of physical and mental health (Reinhold et al. 2024) and the corporate health framework of Gunther et al. (2019), our comparative findings suggest how such a framework can be applied across Estonian and Latvian fire services, structured around four strategic dimensions: *Why*, *Who*, *What*, and *How*. This provides a strategic roadmap for both countries. The *Why* dimension is grounded in documented increases in BMI, physical inactivity, sleep disruption, and psychosocial strain, particularly anxiety and work-life conflict in Latvia. The *Who* dimension leverages existing relational resources: supportive line managers and psychological support services. The *What* dimension prioritises weight management, structured physical activity opportunities, nutrition, and recovery, with emphasis on time for exercise in Latvia. The *How* dimension requires leadership-driven implementation addressing staffing, scheduling, protected training time, and family-

centred policies to embed health promotion into daily operations.

Limitations

This study has several limitations. The qualitative study was conducted only in Estonia, limiting deeper insight into Latvian managerial context and cross-country comparability. Because this is a cross-sectional study, it cannot show cause and effect, only associations. In addition, the use of self-reported data may introduce reporting bias, particularly for health behaviours and physical activity. Despite these limitations, the study provides valuable comparative evidence and directions for future research.

Conclusion

This comparative study demonstrates that firefighter well-being in Estonia and Latvia is shaped by the interaction between physical activity, psychosocial risks, and organisational resources. Although occupational hazards are broadly similar, differences in management practices and resource availability significantly affect health behaviours and outcomes. Building on the Gunther et al. (2019) framework, structured around *Why*, *Who*, *What*, and *How*, we propose a systematic approach to strengthening organisational cultures that prioritise mental and physical health. The findings indicate that enhanced organisational support, targeted health promotion, and resource allocation aligned with the JD-R model are essential for sustaining firefighter health, engagement, and operational effectiveness in both countries.

Data availability statement

Data are available upon request due to privacy and ethical restrictions.

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Päästetöötajate heaolu Baltimaades: füüsilise aktiivsuse, psühhosotsiaalsete riskide ja juhtimisstrateegiate võrdlev uuring Eesti ja Läti päästeteenistustes

Marina Järvis, Karin Reinhold, Jelena Hartšenko, Tatjana Tambovceva, Jeļena Pundure ja Evija Liepa-Hazaleja

Päästetöö eeldab ohtlikes ja muutlikes olukordades väga head füüsilist ja vaimset vastupidavust. Käesolevas võrdlevas uuringus vaadeldi tuletõrjujate heaolu Eestis ja Lätis töö nõudmiste ja ressursside ehk JD-R mudeli abil. Uuring põhines segameetodil ja hõlmas nii COPSOQ II küsimustiku andmeid kui ka Eestis tehtud fookusgrupiintervjuusid. Kokku osales uurimuses 2020. aastal 400 Eesti päästetöötajat, 2023. aastal 408 Eesti päästetöötajat ja 2024. aastal 804 Läti tuletõrjujat/päästjat.

Tulemused näitasid, et kehamassiindeksi kasvutrendid olid seotud suure töökoormuse, ebaregulaarsete vahetuste, unehäirete, vähese kehalise aktiivsuse, tervisekäitumise, psühhosotsiaalsete pingete ja piiratud taastumisvõimalustega. Murettekitav oli ka see, et üle poole päästetöötajatest nii Eestis kui ka Lätis liikus regulaarselt väga vähe. See sobitub laiemasse rahvusvahelisse mustrisse ja viitab sellele, et tegemist ei ole pelgalt kohaliku, vaid pigem töötervishoiu süsteemse probleemiga. Sarnast kehalise aktiivsuse vähesust on täheldatud ka mujal maailmas, sealhulgas USAs, Lõuna-Aafrikas ja Euroopa riikides. Vanuse kasvuga vähenevad ka treeningu kestus ja üldine füüsiline võimekus, mis teeb olukorra veelgi keerulisemaks. Need tulemused näitavad selgelt, et vaja on struktuurseid lahendusi, mis aitaksid liikumist ja taastumist paremini toetada ning vähendada tervisliku eluviisi takistusi.

Kuigi mõlemas päästeteenistuses hinnati töökeskkonda üldiselt ohutuks ja juhtkonda oma töötajaid toetavaks, kogesid Läti tuletõrjujad suuremat töö- ja eraelu konflikti ning väiksemat iseseisvust. See tähendab, et olemasolevad organisatsioonilised ressursid ei tasakaalusta kõrgeid töönõudmisi piisavalt. Samas näitasid tulemused ka seda, et hea juhtimine ja tugev sotsiaalne tugi on seotud parema tervisekäitumise ja suurema heaoluga, kinnitades JD-R mudeli põhimõtet: ressursid aitavad töökoormuse mõju leevendada ja toetavad pühendumust.

Eesti varasemast tõenduspõhisest tervise- ja heaolumudelist ning rahvusvahelistest töökoha tervise raamistikest lähtudes pakuvad meie tulemused välja ka praktilise tegutsemisraamistiku nii Eesti kui Läti päästeteenistusele. Seda saab käsitleda nelja küsimuse kaudu: miks, kellele, mida ja kuidas. „Miks" põhineb selgelt nähtavatel probleemidel — kasvav kehamassiindeks, vähene liikumine, unehäired ja psühhosotsiaalne pinge. „Kellele" rõhutab olemasolevaid tugisüsteeme, näiteks toetavaid vahetuid juhte ja psühholoogilist abi. „Mida" keskendub regulaarsele liikumisele, toitumisele ja taastumisele, eriti võimalustele leida aega treenimiseks. „Kuidas" eeldab juhtkonnapõhist teostust, kus arvestatakse töökorralduse ja peresõbralike lahendustega, et tervise edendamine oleks osa igapäevasest tööst, mitte eraldi lisategevus.

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Rethinking sustainability strategy in Estonian wood manufacturing firms

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ABSTRACT

Sustainability-oriented innovation (SOI) is an increasingly important means for manufacturing firms to address environmental and social challenges while securing economic returns. Manufacturers exposed to similar sustainability pressures respond to them in strategically different ways. In this study, we examine this variation through the lens of behavioral strategy, focusing on the cognitive foundations of strategic reasoning about SOI. More specifically, we ask what mental representations underlie decision-makers' reasoning about SOI, how these are updated, and how they are associated with patterns of strategic search. Drawing on a qualitative analysis of interview data from export-oriented wood manufacturing firms in Estonia, we identify three recurring representations of sustainability: inherent and operationally settled, externally prescribed, and evaluatively unsettled. In turn, these representations are translated into judgments about specific alternatives through three evaluative filters: definition, relevance, and feasibility. As new pressures arrive, they typically reinforce the criteria already in use rather than alter the representations themselves, so firms' search for new options remains incremental. This study operationalizes insights from behavioral strategy for SOI, locating the source of its incrementalism less in what firms attend to but in the evaluative criteria through which decision-makers judge possible responses.

1. Introduction

Sustainability challenges can be reframed as a source of innovation (Hansen et al. 2009). Sustainability-oriented innovation (SOI) integrates environmental and social aspects at the level of products, processes, and organizations (Klewitz and Hansen 2014). Yet many opportunities for SOI lie beyond dominant ways of thinking (Gavetti 2012; Adams et al. 2016), and its uptake remains limited in manufacturing (Markard et al. 2020; Harsanto et al. 2024). This constrains the radical changes that sustainable development requires (Kennedy et al. 2017).

Previous research has addressed this problem along several lines of inquiry. Work on barriers to radical innovation suggests that restrictive mindsets foster resistance to change and limit the willingness to take risks (Sandberg and Aarikka-Stenroos 2014). A closely related strand of literature locates the difficulty in cognition itself. Hansen et al. (2022) show that sustainability-oriented exploration becomes fragile when exploitative routines and cognitive representations spill over into exploratory spaces. Matoh et al. (2024) find that cognitive frames shape how unfamiliar circular business models are understood and which elements become central in their design. Hartung-Geyer et al. (2026) similarly demonstrate that decision-makers' mental models shape sustainability-oriented opportunity recognition. Taken together, these studies indicate that cognitive structures matter for SOI. What remains less well specified, however, is how these structures are stabilized or updated and how they are associated with particular patterns of strategic search for sustainability responses.

We address this issue by examining the behavioral foundations of strategic reasoning about SOI. In line with behavioral strategy research (Powell et al. 2011), strategic reasoning in this study refers to how decision-makers interpret sustainability-related problems, consider alternatives, and evaluate responses. From a behavioral strategy perspective, decision-makers' search and evaluation depend on the mental representations through which they interpret the firm's environment (Gavetti and Levinthal 2000; Csaszar and Levinthal 2016). This is especially important in sustainability contexts, where firms confront uncertainty, complexity, and long time horizons (Afeltra et al. 2023; Taneja et al. 2023), rendering decision-making particularly sensitive to the cognitive constraints emphasized in behavioral strategy (Simon 1947; Powell et al. 2011). Because decision-makers are bounded in their rationality and rely on established evaluative frameworks (Cyert and March 1963; Eisenhardt and Zbaracki 1992), they may interpret novel sustainability challenges

through familiar categories and criteria, thereby narrowing the range of alternatives considered (Csaszar and Levinthal 2016). When such representations remain stable, decision-makers are more likely to search locally and rely on familiar solution patterns, thus reinforcing incremental change (Gavetti 2012). By contrast, changes in representations can expand the range of perceived alternatives and alter how novel challenges are interpreted, opening up possibilities for departure from established trajectories (Raffaelli et al. 2019).

This perspective directs attention to both the content of sustainability-related representations and the processes through which they are stabilized or updated, thereby clarifying how strategic alternatives enter consideration and are evaluated (Csaszar and Levinthal 2016; Becker et al. 2026). Whereas Küttim et al. (2024) identify efficiency, compliance, governance, and market access as motivations for sustainability engagement in the Estonian context, this study reads them as indicators of distinct representations of what sustainability means, what counts as an appropriate response, and which evaluative criteria guide reasoning about SOI. This shift in analytical lens matters because motivations explain why firms act, whereas representations explain how decision-makers frame the problem and evaluate possible responses. Understanding the latter is necessary for explaining why SOI remains incremental even when motivations to act are present. Doing so makes it possible to investigate how different representations are associated with different patterns of strategic search, and whether updating tends to expand the range of perceived alternatives or instead refine evaluative criteria within an existing frame. Accordingly, this paper asks: What sustainability-related representations underlie decision-makers' strategic reasoning about SOI? How are these representations updated? What patterns of strategic search are associated with them?

To address these research questions, we analyze interview transcripts as secondary data from export-oriented wood manufacturing firms in Estonia. The setting is analytically relevant for three reasons. First, wood manufacturing accounts for a substantial share of global industrial activity (Dalalah et al. 2022), making the sector consequential for sustainability transitions. If SOI remains incremental in this sector, the implications extend beyond the focal industry to broader efforts to transform manufacturing systems. Second, the industry is often regarded as inherently green because it relies on renewable resources, yet it involves energy-intensive production processes and faces scrutiny regarding waste, certification, and supply chains (Iritani et al. 2015; De Vass et al. 2023). This tension makes sustainability open to competing interpretations and, in turn, brings decision-makers' representations more clearly into view: it reveals whether sustainability is framed as already achieved, as a matter of compliance, or as a prompt for broader innovation search. Third, in Estonia, sustainability requirements are shaped largely by EU legislation (Ministry of Climate of the Republic of Estonia 2025) and by the country's integration into global trade, making the external cues that inform decision-makers' reasoning relatively traceable. The traceability of these cues allows us to examine how they are translated into decision-makers' representations of what sustainability entails and which responses are regarded as relevant.

This study makes two contributions. Theoretically, it identifies recurring sustainability-related mental representations among decision-makers in Estonian wood manufacturing firms and offers exploratory evidence on how these representations are associated with distinct patterns of strategic search. The analysis suggests that representational updating in this context is predominantly externally cued and tends to refine evaluative criteria within the frame already in use, pointing to a reinforcing dynamic in which external feedback may reproduce incremental search. Because these patterns are grounded in the specific conditions of Estonian wood manufacturing, where firms operate as export-oriented suppliers and where wood can be framed as inherently sustainable, their transfer to other sectors and settings remains a question for further research. Managerially, the findings suggest that intensifying external pressures alone may be insufficient to widen the range of sustainability responses firms consider, because such pressures are filtered through existing understandings of what sustainability is and what counts as a worthwhile response. Expanding the range of perceived alternatives may require managers first to diagnose how sustainability is being defined and evaluated inside the firm.

2. Literature

2.1. Sustainability-oriented innovation as strategic search

As ecological challenges intensify (Richardson et al. 2023), firms face growing pressure to incorporate environmental and social considerations into strategy (Afeltra et al. 2023; Trizotto et al. 2024). SOI is defined as "intentional changes to an organization's philosophy and values, as well as to its products, processes or practices, to serve the specific purpose of creating and realizing social and environmental value in addition to economic returns" (Adams et al. 2016, p. 181). Prior work conceptualizes SOI as a process unfolding along a continuum from incremental improvements to more radical forms of innovation (Klewitz and Hansen 2014), where radical innovations "are high in novelty and aim for significantly improved sustainability performance of systems" (Kennedy et al. 2017, p. 713).

SOI can therefore be understood as a strategic search problem (Csaszar and Levinthal 2016), in which firms identify and evaluate alternatives under uncertainty. What varies across firms is not only whether they engage in such search, but how broadly they define the set of alternatives perceived as viable (Klewitz and Hansen 2014; Adams et al. 2016).

SOI has been linked to strategic alignment around environmental objectives (Iñigo and Albareda 2016), competitive advantage (Hermundsdottir and Aspelund 2021), and economic performance (Taneja et al. 2023). Realizing these benefits is difficult, however, as sustainability-related decisions involve long time horizons and complex interdependencies across environmental, social, and economic systems (Korteling et al. 2023; Palmucci and Ferraris 2023). Consistent with these difficulties, most manufacturing firms

remain focused on operational optimization, regulatory compliance, and waste reduction rather than deeper reconfiguration of products, processes, or business models (Harsanto et al. 2024). What distinguishes firms is therefore less whether they innovate for sustainability than how they search for and evaluate alternatives.

2.2. Mental representations as cognitive filters for SOI

While SOI research has examined macro and meso levels, the individual level remains relatively underexplored (Sawe et al. 2021). Decision-makers are constrained by cognitive boundaries when setting strategic priorities (Nadkarni and Barr 2008), which may lead them to overlook critical information and alternative courses of action (Barnett 2008). Strategic search is therefore not a direct response to objective conditions but depends on how decision-makers frame problems, allocate attention, and evaluate alternatives (Cristofaro et al. 2022).

Behavioral strategy provides a useful lens for understanding these processes by incorporating realistic assumptions about cognition and decision-making into strategy research (Powell et al. 2011). Central to this perspective is the concept of mental representations, defined as "a model of reality held in the mind of an individual, who can use this representation to generate predictions about reality" (Csaszar and Levinthal 2016, p. 2031). These representations function as lenses that shape attention and constrain strategic search (Gavetti and Levinthal 2000). Related constructs such as schemas, mental models, and cognitive frames overlap in this role, even if they differ in emphasis (Becker et al. 2025).

Csaszar and Levinthal (2016) argue that strategizing involves not only identifying alternative actions but also selecting the dimensions along which they are evaluated. Because these dimensions depend on how situations are interpreted, mental representations shape both the alternatives considered and the criteria used to assess them. In the context of SOI, this raises a concrete question: What form do these evaluative criteria take in practice, and how do they translate a general understanding of sustainability into judgments about specific innovation alternatives?

2.3. Representational updating and evaluative criteria

This directs attention to representational updating: when and how the representations guiding evaluation remain stable or change. Becker et al. (2025) show that representations can be revised through learning, reframing, and exposure to new interpretive cues. Similarly, McKenzie et al. (2009) argue that decision-makers rely on established frames in ambiguous situations, although certain cognitive capacities can keep framing open and enable engagement with contradictory demands. Such shifts can broaden the range of alternatives considered and reshape how they are evaluated. Martins et al. (2015) further show that schemas can be changed proactively through generative processes that reorganize cognitive content. Csaszar and Levinthal (2016) treat the question of what triggers representational change as an empirical and theoretical issue rather than an assumption.

Applied to SOI, this leads to three questions: What sustainability-related representations do decision-makers hold? How are these representations maintained or revised under external pressure? What patterns of strategic search are associated with them? Addressing these questions helps explain why firms rely on incremental responses and under what conditions they move beyond them.

3. Methodology

3.1. Research design and data

The study adopts a qualitative research design (Silverman 2020) based on secondary interview data, namely transcripts originally collected for research projects commissioned by the Estonian Ministry of Economic Affairs and Communications on exporters' motivations for sustainable practices in wood and metal industries (Gerstlberger et al. 2023a, 2023b). These transcripts were previously analyzed in Küttim et al. (2024), who developed a typology of three managerial mindsets based on motivational patterns, and Kotov (2024), who examined factors shaping managerial attention toward circular economy practices in the metal industry. The present study addresses different research questions, applying a behavioral strategy perspective to examine how decision-makers' mental representations shape strategic reasoning about SOI. In total, 10 sessions were conducted in March 2023, including both individual and focus group interviews. Sessions lasted 75 to 90 minutes and were conducted predominantly in Estonian, with two sessions in English. The interview guide covered company profiles, sustainability activities and motivations, resource efficiency, technological innovation, supply chain partnerships, certifications, and the regulatory environment.

Nineteen companies participated, most medium-sized (average 183 employees; range 36 to 558) and operating for 24 years on average. Interviewees were primarily CEOs and managers responsible for operations, production, sustainability, or quality management. This composition fits the research questions, as it captures decision-makers with strategic authority over sustainability-related investments. These are the actors who routinely translate external cues into firm-level action, the level at which representations and evaluative criteria are likely to operate.

The transcripts are suitable for addressing the research questions because participants describe not only what their firms do in the name of sustainability, but also how they understand sustainability, which external cues they consider relevant, and which responses they pursue. This makes it possible to infer recurring representations, the cues through which they appear to be stabilized or revised, and the patterns of strategic search associated with them. At the same time, because the data are cross-sectional and were not collected specifically to elicit cognitive mechanisms, they do not allow direct observation of representational change over time or support strong causal claims about how alternative representations might have produced different patterns of search.

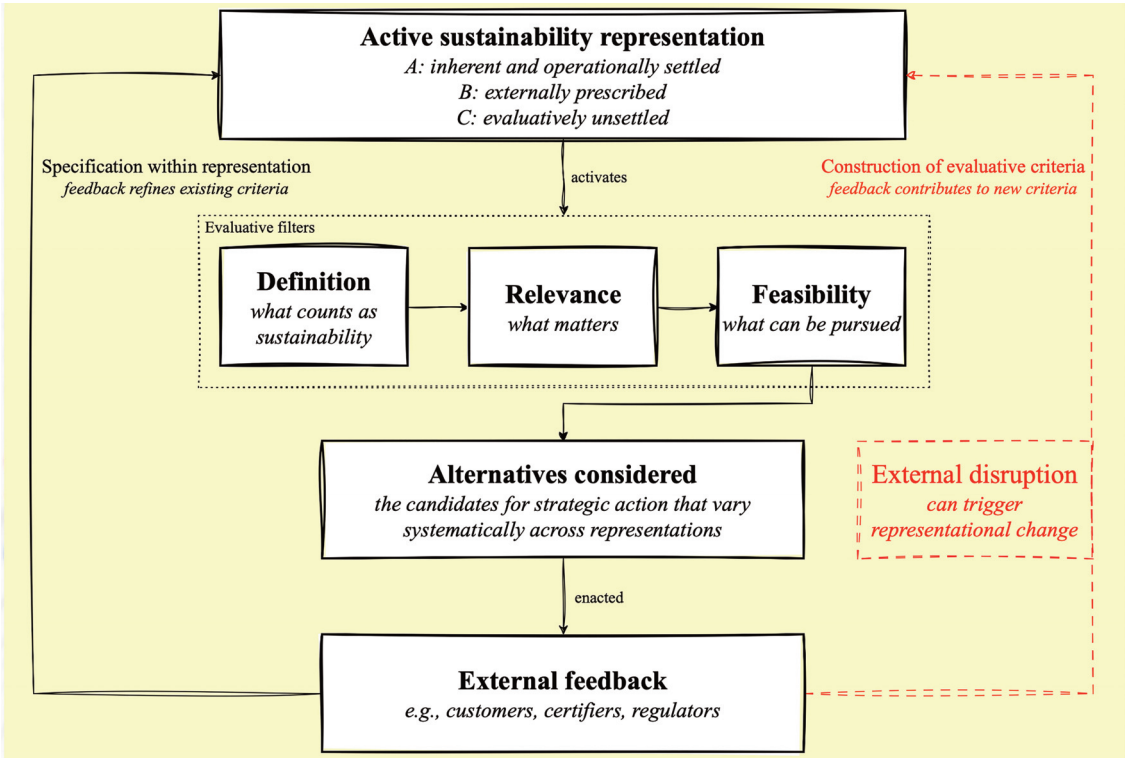

Fig. 1. How sustainability-related representations shape strategic search.

3.2. Analysis

The analysis followed an inductive coding approach informed by the Gioia methodology (Gioia et al. 2013) and adapted for secondary data (Heaton 2008). The first author conducted all coding in MAXQDA (Release 26.2.0). Estonian-language segments used in the analysis were translated into English by the first author, with key analytical quotations cross-checked against the original transcripts. Participants were identified by codes (I-1 to I-22) because the original study's consent terms did not permit naming participants or their firms.

Three iterative coding passes were conducted, each focused on a distinct analytical layer. The first pass identified how sustainability was defined and which evaluative criteria were applied. The second pass identified updating: how participants interpreted external requirements and translated them into feasibility judgments. The third pass traced which sustainability-related alternatives participants described pursuing and what fell outside their consideration. First-order concepts were developed close to participants' own language and subsequently grouped into second-order themes and aggregate dimensions, producing the data structure presented in Fig. S1 (Supplementary material). Because coding was conducted by a single coder on secondary data not originally collected to examine cognitive constructs, saturation and intercoder reliability criteria are of limited applicability. Analytical credibility was pursued through iterative comparison and cross-checking of quotations.

4. Results

The analysis develops an account that links how decision-makers understand sustainability to the alternatives they treat as serious candidates for action. The account has three components: a representation of what sustainability is taken to mean, the evaluative filters it activates, and an updating pattern through which external feedback reinforces or refines those filters. Three filters, definition, relevance, and feasibility, were identified inductively as the recurring moves through which participants reason from their understanding of sustainability to judgments about specific alternatives. They were derived from the data, not imposed from prior theory. Figure 1 shows this account in general form. The composition of the alternatives considered varies with the active representation, as the next subsection shows.

The analysis further identifies three sustainability-related representations in this setting: sustainability as inherent and operationally settled (Representation A), sustainability as externally prescribed (Representation B), and as an evaluatively unsettled question (Representation C). The first subsection describes how representations activate evaluative criteria and how the three filters operate. The second shows how the same external pressures produce different alternatives across representations. The third traces the updating pattern.

4.1. How representations activate evaluative criteria

Participants moved from general statements about sustainability to specific judgments about particular alternatives through a consistent sequence. They first established what counted as a sustainability issue for their firm (definition), then sorted which issues were consequential enough to act on (relevance), and finally assessed whether specific responses could be pursued under technical, economic, organizational, market, or legitimacy criteria (feasibility).

The definition filter sets the boundary of what counts. Across the data, decision-makers typically stated that their industry already qualified as sustainable. For instance, I-1

noted that *the wood industry overall is a very green industry … the product itself is green to the core*. I-3 extended this to production processes: *the wood sector is probably the one where nothing is left over*. I-20 similarly argued that *a large part of the Estonian wood and forest industry is … already very advanced anyway*. I-9 emphasized the same point: *we have a very green profile because we are not using oil or gas*.

The relevance filter determines which issues are treated as consequential. I-13 described a sequencing logic in which *greenness becomes a topic only after you have qualified through two or three earlier rounds on other grounds*. I-7 noted that *no one pays you more for being green*, framing sustainability as a condition for market access rather than a source of premium. I-12 generalized this pattern, observing that *being green is increasingly becoming a hygiene factor*. By contrast, I-15 grounded relevance in personal conviction: *honestly, this is our own wish, our own will*.

The feasibility filter evaluates whether specific responses can be pursued. I-20 weighed a choice between green energy and a wood scanner, judging the scanner to offer measurable value while green energy seemed merely apparent, failing on both economic and legitimacy grounds. I-2 explained that laminated timber had been considered but not adopted due to unresolved fire-safety issues, a technical constraint. I-15 described pursuing eco-leather and water-based adhesives despite the absence of a market premium, with legitimacy outweighing commercial considerations. As I-20 put it: *we have it on the management table whether to buy 100% green energy or invest in a proper scanner … the direction is towards technology rather, for now*.

Taken together, these filters show how representations shape strategic search. Representations provide the frame, while the filters translate that frame into evaluative criteria. As a result, the same alternatives may be accepted or rejected depending on which representation is active.

4.2. Same pressures, different alternatives considered

Across the sample, firms face similar external conditions, including certification demands, EU regulations, and the 2022 energy crisis, yet the alternatives they consider diverge.

In firms operating within the inherent and operationally settled representation, the alternatives considered concentrate on residue valorization, internal energy generation from wood waste, material yield improvements, and technology investments with measurable payback. As I-1 noted: *if you think about production, the footprint is still very small when we compare it to the packaging industry; these are on completely different scales*. The relevance filter screens out footprint-reduction targets that are interpreted as already achieved through the sector's raw material base.

In firms operating within the externally prescribed representation, the alternatives considered center on certifications required for market access, reports prepared for customers (environmental product declarations, carbon footprints, and environmental, social and governance (ESG) disclosures), and the local implementation of targets set by the parent company. I-14 explained that certification requirements specify *which paints, which putties we may use; the entire chemical composition must be calculated, reported, controlled*. I-21 described a similar logic under group ownership: *because we belong to the group … we have quite strict targets*. In both cases, the alternatives considered are defined by external prescriptions that specify where action takes place.

In firms operating within the evaluatively unsettled representation, the alternatives considered are more open and include actions that the other two representations would screen out. I-15 described recyclable sofa components, eco-leather from textile waste, and water-based adhesives developed in the absence of customer demand: *honestly, this is our own wish, our own will*. I-22 described plans for an external green audit and questioned whether their current use of residues qualifies as circular. Both cases illustrate that representational openness allows firms to question and extend their own definitions of sustainability.

This divergence supports the claim that external pressures are not processed directly but through filters that depend on the active representation, which determines what is treated as relevant and feasible. The contrast between I-21 and I-22 illustrates this most clearly. Both discussed renewable-energy certificates in the same focus group session. I-21 treated centralized certificate purchases as a legitimate means of meeting corporate targets. I-22 rejected the same instrument with explicit definitional reasoning: *we do not want to appear green … our electricity is still entirely fossil*. The instrument is identical; what differs is the representation through which it is evaluated.

4.3. Updating as specification within the active representation

External feedback reaches firms continuously but is most often absorbed into the representation already in place, specifying or intensifying existing evaluative criteria rather than prompting representational change. Because the data are cross-sectional, this pattern is inferred from retrospective accounts rather than directly observed over time. The illustrations that follow should therefore be read as patterns that fit the proposed account rather than as direct evidence of change unfolding.

I-1 described years of investment in data infrastructure and supply chain reporting: *where we were two years ago is not comparable with where we are today*. The investments are driven by efficiency, the same criterion the firm has applied for years. Recent activity has sharpened that criterion rather than introduced a new one. I-7 described a similar trajectory for energy. Where energy use had been marginal *a couple of years ago*, the 2022 energy crisis prompted near-daily monitoring. The crisis made an existing concern operationally sharper, not a strategically new one.

I-22 and I-15 illustrated updating under unsettled representations. I-22 explained the firm's refusal to buy green-energy certificates: *we do not want to appear green … our electricity is still entirely fossil*. For I-22, what counts as genuine greenness is still being worked out, and refusing the certificate is part of that ongoing question. I-15's firm sits in a similar position. It pursues new developments ahead of customer demand because its criteria for what counts as a

worthwhile sustainability investment, such as authenticity and long-term fit, are still taking shape. In these cases, external feedback helps build the criteria rather than refine them.

Across the data, external feedback rarely alters representations directly. Instead, it updates the criteria through which they operate. Feedback enters at the feasibility stage, where it is assessed against existing criteria and either confirms or intensifies them. Representations persist because their criteria continue to function. As a result, strategic search remains incremental as long as these criteria are reinforced. Broader strategic search is observed primarily where representations remain unsettled.

5. Discussion

This study examined what sustainability-related representations shape decision-makers' strategic reasoning about SOI, how these are updated, and how they influence patterns of strategic search. The findings identify three recurring representations, show that external feedback most often refines criteria within the active representation rather than replacing it, and demonstrate that firms facing similar sustainability pressures nonetheless consider different alternatives. Together, these findings shift attention from whether firms engage in sustainability to how their search for sustainability responses is cognitively structured.

Strategic search for sustainability responses is not determined by external pressures alone but by the representational filters through which they are interpreted. The firms in this study were not inactive on sustainability. They held certifications, valorized residues, monitored energy use, and in some cases pursued innovation in products and materials. The central variation therefore lies not in whether firms respond, but in how they define what counts as a sustainability issue, what they treat as consequential, and what they judge feasible. By specifying these processes as definition, relevance, and feasibility filters, the study shows how representations structure search before action is taken. In doing so, it operationalizes Csaszar and Levinthal's (2016) argument that strategy operates on representations as much as on actions and provides a more concrete account of attention-based search (Gavetti 2012).

Firms exposed to similar external conditions do not converge on the same alternatives. Despite facing common certification requirements, regulations, and customer expectations, firms generated distinct sets of serious candidates for action. In the inherent and operationally settled representation, strategic search concentrates on residue valorization, yield improvements, internal energy generation, and technology investments with visible payback. In the externally prescribed representation, strategic search is organized around certification demands, reports prepared for customers, and the implementation of targets set by the parent company. In the evaluatively unsettled representation, strategic search extends to exploratory alternatives such as recyclable components, alternative materials, audits, and ongoing questioning of what counts as sustainability. This adds to prior work on cognitive heterogeneity in sustainability innovation (Hansen et al. 2022; Matoh et al. 2024; Hartung-Geyer et al. 2025) by showing that the relevant heterogeneity lies not only in what actors think, but in the evaluative criteria through which they sort possible responses.

The three representations identified in this study cut across dominant sustainability typologies rather than fitting within them. Prior research typically conceptualizes SOI as a progression from reactive to proactive approaches or from operational optimization to more transformative forms (Klewitz and Hansen 2014; Adams et al. 2016), or emphasizes the need to manage tensions between competing sustainability dimensions (Hahn et al. 2014). While these perspectives capture variation in the extent of sustainability engagement, they do not explain why firms facing similar pressures define and evaluate sustainability differently. The representations identified here operate at comparable levels of engagement yet rely on distinct evaluative criteria: sustainability is treated as inherent, as externally prescribed, or as open to reinterpretation. The contribution is therefore to shift attention from how far firms progress toward sustainability to how sustainability is cognitively structured in decision-making, and how this shapes the range of alternatives considered.

The findings also speak to how representational updating operates in practice. Existing work has emphasized the importance of updating but has said less about its effects (Csaszar and Levinthal 2016; Becker et al. 2025). The findings suggest that external feedback rarely alters the active representation. Instead, it is processed through the evaluative criteria already in use, which are refined or intensified. Firms are continuously exposed to customer demands, certification requirements, and crisis conditions, yet the outcome is typically greater activity within the same frame rather than broader strategic search beyond it. Incrementalism persists not because firms ignore feedback, but because feedback is translated through criteria that it helps confirm. Where efficiency dominates, technology investments remain central; where external prescription dominates, certifications and reporting define the alternatives considered. This specifies how representations matter for SOI: feedback stabilizes the evaluative criteria they activate rather than transforms the representations themselves. Organizational identity research points in a similar direction, treating identity as both stable in appearance and responsive to stakeholder interaction (Gioia et al. 2000). The present study contributes to this logic by considering the evaluative criteria through which sustainability-related alternatives are assessed.

These findings qualify accounts that emphasize external interaction as the primary driver of broader strategic search for sustainability responses. Prior work has highlighted sustained interaction with customers, certifiers, and regulators as a key route to expanding search (Klewitz and Hansen 2014; Adams et al. 2016). The firms in this study interact extensively with such actors, yet the dominant outcome is refinement within the active representation rather than expansion into broader forms of SOI. External interaction is therefore necessary but not sufficient, because its effects

depend on how it is cognitively processed. This is consistent with Hansen et al.'s (2022) account of cognitive frames from core business migrating into exploratory spaces and suggests that a similar dynamic may operate across firms within a sector. The wood manufacturing context may make this particularly visible: the renewable raw material positions the inherent and operationally settled representation as the path of least resistance, and external feedback follows familiar patterns.

Broader strategic search appears not as the general consequence of increasing pressure but as a conditional outcome associated with representational openness. The findings suggest that expansion occurs primarily where the representation remains evaluatively unsettled, so that external cues feed into criteria that are still being worked out. Once the representation settles, the dominant pattern becomes refinement within it. Such openness is sometimes associated with moments of external disruption, as crisis conditions can unsettle existing criteria and create space for new ones to emerge. This is consistent with Martins et al.'s (2015) argument that schemas can change under specific generative conditions and suggests that, in the SOI context, one such condition is that the representation remains open to revision.

An alternative explanation is that incrementalism reflects sectoral maturity rather than cognitive filtering. Estonian wood manufacturing firms may already be close to the practical frontier of SOI under current technological, regulatory, and market conditions. However, this account does not explain the variation observed here. Firms facing similar conditions considered different alternatives, and the same alternatives were evaluated differently depending on the criteria in use. The point is therefore not to deny sectoral constraints, but to show that they are cognitively mediated: the sector bounds the space of possibilities, and representations sort within that space.

6. Conclusion, limitations, and future research

Firms facing similar sustainability pressures do not differ only in how much they respond. They consider different alternatives because sustainability is represented differently and filtered through distinct evaluative criteria. In the Estonian wood manufacturing context, external feedback most often refines the active frame rather than broadens it, helping explain why firms that pursue sustainability still display incremental patterns of strategic search. By tracing how representations activate evaluative filters and how feedback specifies criteria within the active frame, the paper offers a behavioral strategy account of how the strategic search for sustainability responses is cognitively structured under continuous pressure.

The findings derive from wood manufacturing firms operating under sustained market and regulatory pressures. The sector's reliance on renewable raw materials makes the inherent and operationally settled representation easy to adopt, while export dependence makes externally prescribed sustainability difficult to ignore. The account may travel to other settings where firms face perpetual sustainability demands and remain active on SOI, although the specific representational content will be context-dependent.

Three limitations should be noted. First, the data are cross-sectional, so the proposed account is inferred from what decision-makers reported rather than traced longitudinally. Second, the study relies on secondary qualitative data collected for a different purpose; the transcripts are rich enough to recover representational content, evaluative criteria, and search patterns, but do not support fine-grained claims about individual cognitive dynamics. Third, the empirical setting is narrow in industrial and geographic terms, which limits claims about the specific representations likely to appear in other sectors or national contexts. Future research could trace these dynamics longitudinally, examine their applicability across sectors, and investigate how representational openness emerges and gives way to settled criteria over time.

Data availability statement

The interview transcripts analyzed in this study cannot be shared openly because the original consent terms do not permit naming participants or their firms. Anonymized illustrative quotations supporting the analysis are presented in the results section. The data structure, including first-order concepts, second-order themes, and aggregate dimensions, is provided as supplementary material.

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Supplementary material

Figure S1, available at https://doi.org/10.3176/proc.2026.3.S07, shows the data structure of first-order concepts, second-order themes, and aggregate dimensions for the three sustainability representations.

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Jätkusuutlikkuse strateegia ümbermõtestamine Eesti puidutööstusettevõtetes

Arseni Kotov, Susanne Durst ja Wolfgang Dieter Gerstlberger

Jätkusuutlikkusele orienteeritud innovatsioon on tootmissektoris üha olulisem, ent sarnase jätkusuutlikkussurve all tegutsevad ettevõtted käituvad sageli erinevalt. Uurime, kuidas otsustajate kujutluspildid sellest, mida jätkusuutlikkus tähendab, suunavad nende strateegilist mõtteviisi ning kuidas need kujutluspildid muutuvad ja mõjutavad seda, milliseid lahendusi otsitakse. Töö tugineb Eesti puidutööstuse ekspordiettevõtetes läbi viidud intervjuudele.

Analüüs toob välja kolm korduvat viisi, kuidas otsustajad jätkusuutlikkust mõistavad: jätkusuutlikkus kui valdkonna olemusest tulenev ja tegevuses juba lahendatud küsimus, jätkusuutlikkus kui väljast ette antud nõue ning jätkusuutlikkus kui veel lahtine, otsustaja enda jaoks kujunev küsimus. Kolme hindamissammu kaudu, milleks on määratlemine, olulisuse hindamine ja teostatavuse kaalumine, jõuavad otsustajad nendelt üldistelt arusaamadelt konkreetsete valikuteni.

Tulemused näitavad, et sarnase välise surve all teevad ettevõtted erinevaid valikuid, sest nad mõtestavad seda survet erinevate kriteeriumide kaudu. Väline tagasiside ei muuda enamasti kujutluspilti, vaid täpsustab kriteeriume selle sees, mistõttu jäävad lahenduste otsingud senistesse raamidesse.

Uuring pakub empiiriliselt põhjendatud käsitlust sellest, kuidas jätkusuutlikkuse üle arutlemine on Eesti puidutööstuses kognitiivselt struktureeritud, ning aitab mõista, miks suurenev väline surve ei pruugi laiendada nende valikute hulka, mida ettevõtted tõsiselt strateegilise sammuna kaaluvad.

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

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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; Lițan 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

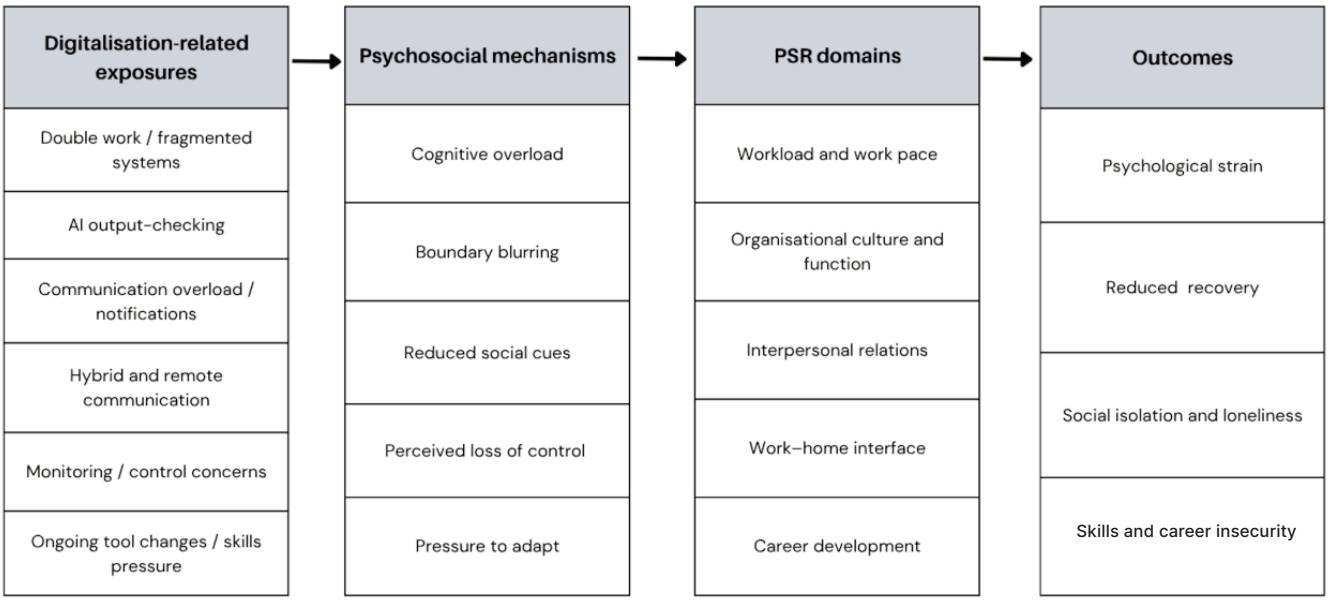

Fig. 1. Digitalisation as a driver of psychosocial risks. A conceptual synthesis of the findings, illustrating how digitalisation-related exposures identified by experts may operate through key psychosocial mechanisms across established PSR domains and contribute to adverse employee outcomes.

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.

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Leading sustainably in the digital era: a pilot study of AI literacy as a leadership competency in Estonian small and medium-sized enterprises

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ABSTRACT

The rapid digitalisation of organisational management has brought artificial intelligence (AI) into core decision-making processes, shaping managerial and human resource functions. Since February 2025, the EU Artificial Intelligence Act has required providers and deployers of AI systems to ensure AI literacy among workers, transforming it from a strategic advantage into a regulatory necessity. Sustainable management in the digital era increasingly depends on leaders who can align technological innovation with organisational values such as environmental sustainability, social responsibility, inclusive growth, well-being, and long-term resilience.

This paper presents an exploratory pilot study examining AI literacy among organisational leaders in small and medium-sized enterprises (SMEs), with a focus on Estonia. Drawing on an original questionnaire and contextualising the pilot findings against results from previous studies (Eurostat, EY, OECD, OSKA), we explore leaders' understanding of AI concepts, ethical and risk awareness, application in decision-making, and how these dimensions of AI literacy relate to leadership roles, sectoral context, and organisational size.

By linking AI literacy with principles of sustainable and ethical management, the paper contributes to the emerging field of AI-enabled leadership studies. It conceptualises AI literacy as a measurable and actionable leadership competency that supports responsible AI governance and aligns with the sustainability goals of the EU AI Act and OECD recommendations. Given the small sample size, the study serves primarily as an instrument validation and feasibility assessment, providing indicative patterns for future scaled research.

Introduction

Digitalisation has accelerated the integration of artificial intelligence (AI) into organisational decision-making, with AI increasingly shaping strategic, operational, and human resource domains (Budianto et al. 2025). AI is now embedded in core managerial functions, including human resource (HR) operations (Thulasidoss et al. 2025; Ali et al. 2026), sustainable talent management (Sowmya et al. 2024), decision-making and business performance (Neiroukh et al. 2024; Hundekari et al. 2025), and financial decision-making, business analytics, and risk management (Chhikara et al. 2025). AI-mediated management also influences leadership development and competencies (Subrahmanyam 2026), particularly in employee engagement, development, and communication (Baran 2025). At the same time, AI-powered management introduces persistent challenges, including ethical dilemmas, complex human–AI interaction dynamics, implementation hurdles, and long-term organisational sustainability risks (Jones 2018; Aziz et al. 2024; Zárate-Torres et al. 2025; Albannai and Raziq 2026).

As AI becomes part of socio-technical decision architectures, leaders must reconcile AI-generated insights with data bias, transparency, accountability, and human judgement (Panduro-Ramirez et al. 2023). This shift is not only technological but epistemological, requiring leaders to understand what AI can and cannot do, how it interacts with organisational value alignment, and how it affects sustainability goals. Leadership increasingly mediates between human and artificial intelligence through transdisciplinary knowledge spanning management, technological ethics, and cognitive science, shaping ethically grounded decision-making architectures (Zárate-Torres et al. 2025). Accordingly, AI literacy emerges as a critical yet still insufficiently examined leadership competency, particularly where decisions have consequences to ethical, sustainable, or social management.

Regulatory developments reinforce this urgency. The EU Artificial Intelligence Act (adopted in June 2024) applies a risk-based approach and establishes obligations to ensure a sufficient level of AI literacy among staff and others operating AI systems on an organisation's behalf (Regulation (EU) 2024/1689). Article 4 of the Act, requiring a sufficient level of AI literacy from providers and deployers of AI systems, entered into force from 2 February 2025, while supervision and enforcement provisions apply from 3 August 2026 onwards, signalling a shift in AI literacy from an optional capability to a legal and ethical requirement in organisations.

Despite this regulatory baseline, evidence suggests that leaders may rely on AI without an adequate understanding of its limitations, ethical implications, or decision logic (Keding and Meissner 2021; Panduro-Ramirez et al. 2023). This gap is particularly salient in small and medium-sized enterprises (SMEs), which represent 99% of European companies (European Commission n.d.a). While the EU frames advanced technologies such as AI as central to SME competitiveness (European Commission 2020), and examples of AI literacy initiatives exist, including in SMEs (European Commission n.d.b), the need to develop generative AI (GenAI) literacy across organisational levels (Tabata et al. 2025) and to connect AI-literate leadership with sustainable management remains.

This paper approaches AI literacy as a social-organisational construct rather than a technical competence, drawing on management science and leadership theory to address the underexplored intersection of AI literacy and value-aligned leadership grounded in sustainability and long-term resilience. In settings where AI systems are often opaque and efficiency-oriented, it is necessary to assess whether leaders can align algorithmic operations with organisational commitments such as sustainability, responsibility, and stakeholder well-being. We present an exploratory pilot study of AI literacy among leaders in SMEs, with a focus on Estonia, and contextualise our findings against established benchmarks by asking:

(RQ1) What patterns of AI literacy, AI use, and AI governance practices are reported by SME leaders in Estonia, who are currently experimenting with or implementing AI, and how do these patterns relate to sustainability-oriented behaviours such as verification practices, transparency to stakeholders, and willingness to override AI outputs?

(RQ2) Under what organisational conditions (e.g. SME resource constraints, time pressure, lack of in-house expertise, presence/absence of policies and training) does AI literacy appear to shape sustainability-oriented AI governance?

AI literacy and managerial functions

AI literacy is typically conceptualised as a composite capability of knowledge, skills, and reflective understanding needed to engage with AI critically and ethically. In academic work, it is often discussed in education and user contexts, emphasising knowledge or understanding, ethics-risk awareness, practical skills of use and application, and experience to evaluate and create AI-related outputs (Ng et al. 2021; Pinski and Benlian 2024). Long and Magerko define AI literacy broadly as 'a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace' (Long and Magerko 2020, p. 598). The European Commission's digital strategy similarly foregrounds understanding of how AI works, alongside bias, risk, and human-rights implications, supporting a multidimensional view spanning cognitive, ethical, and operational components (European Commission n.d.c).

Digital transformation therefore expands leadership competence requirements. AI-powered leadership calls for capabilities in ethical decision-making during AI implementation, managing trust dynamics between human and artificial agents, developing GenAI literacy across organisational levels (Tabata et al. 2025), and integrating AI with organisational structures and governance. AI literacy is increasingly positioned as necessary at all organisational levels, including executives to enable informed decisions, effective workflow integration, and ethical considerations navigation (Benlian and Pinski 2025). In parallel, research on sustainable and value-aligned management highlights AI's role in value creation aligned with the sustainable development goals (SDGs) (Khan et al. 2025) and its potential to support responsible management (Taghikhah et al. 2022). As organisations use AI to optimise processes, the risk is that environmental and social externalities may be discounted unless leaders actively steer AI use through human values and environmental, social, and governance (ESG) frameworks. The convergence of AI governance and sustainability is also central to EU (Regulation (EU) 2024/1689) and OECD (2019, 2024b) strategies, which stress that responsible AI should support sustainable development and align with fundamental rights.

Contextual background

Empirical research on AI adoption consistently shows strong size- and sector-related differences. Across the European Union, AI uptake is substantially higher among large enterprises than among SMEs. In 2025, 55% of large EU enterprises reported using at least one AI technology, compared to 30.4% of medium-sized firms and only 17% of small firms, while the overall average among enterprises with ten or more employees stood at 13.5% in 2024 (Eurostat n.d.a; Eurostat n.d.b). Estonia broadly follows this pattern. In 2023, approximately 5% of Estonian SMEs used AI solutions compared to 23% of large enterprises, with adoption concentrated in digitally intensive sectors (Implement 2024; Statistics Estonia 2024).

Beyond adoption rates, existing studies highlight recurrent qualitative patterns. Previously conducted surveys (Azzopardi et al. 2020; EY 2024; OECD 2024a; OSKA 2025) show that experimentation with AI tools often outpaces the development of AI-specific skills, governance frameworks, and accountability mechanisms, particularly in SMEs. Leaders typically express positive attitudes towards AI and recognise its strategic relevance yet demonstrate uneven conceptual understanding and limited organisational formalisation. Perens (2025) documents similar dynamics in the Estonian

context: AI is framed primarily as a productivity-enhancing support tool, while issues of explainability, bias mitigation, and responsibility remain weakly institutionalised.

Research design and instrument structure

The present study is positioned as an exploratory pilot with contextual benchmarking within this broader research landscape. Whereas much of the existing evidence is aggregated at the organisational level, this study shifts the unit of analysis to managers as pivotal actors who interpret, operationalise, and are accountable for AI-enabled decisions and governance practices. Its purpose is twofold: to validate the feasibility and content adequacy of the questionnaire instrument, and to generate initial leadership-level insights that can be interpreted against existing national and international benchmarks.

Using an applied research design, the study explores leadership AI literacy and responsibility attribution in AI-mediated decision-making contexts. The questionnaire operationalises leadership AI literacy in seven sections: conceptual understanding of AI, ethical and risk awareness, AI use in decision-making, governance and accountability practices, self-assessment of AI competencies, organisational barriers, and future strategic perspective. It examines how leadership roles, organisational size, sectoral context, and AI adoption levels relate to leaders' ability to explain AI-driven decisions, contest algorithmic recommendations, and retain ownership of responsibility. The questionnaire consisted of seven thematic blocks, with 29 questions in total: (1) background and organisational context (6 questions), (2) conceptual AI literacy knowledge and awareness (2 questions), (3) use of AI in management and decision-making practices (5 questions), (4) governance and accountability mechanisms (5 questions), (5) ethical awareness and risk perception (3 questions), (6) self-assessment of competence and learning needs (4 questions), and (7) future outlook and strategic perspective (4 questions). Most items used five-point Likert-type scales or structured multiple-choice formats, allowing numerical description and contextualisation against existing data (EY 2024; Eurostat n.d.b).

Data collection and sample characteristics

The pilot questionnaire was administered online using the LimeSurvey platform. The instrument was finalised in November 2025 and made available in both English and Estonian. Distribution took place via LinkedIn. The first invitation was published on 22 November 2025. Reminder invitations, including personal targeting, were issued until 5 January 2026. Data collection therefore spanned approximately two months, from late November 2025 to mid-January 2026. Respondents accessed the questionnaire link individually and completed it voluntarily and anonymously.

Respondents were included if they held a leadership or senior management role, defined as owner, CEO, department head, or functional manager carrying strategic or operational decision-making authority over AI-relevant processes in an organisation meeting the EU SME definition (fewer than 250 employees), operating in Estonia or with Estonian operations, and had at least some exposure to AI tools in their professional context. The resulting sampling strategy involves a deliberate and acknowledged bias, discussed below.

Recruitment was conducted primarily through LinkedIn, supplemented by personally targeted reminder invitations. This constitutes purposive sampling, deliberately prioritising leaders who are digitally active, professionally networked, and already engaged with AI-related topics. No sector restrictions were applied; however, the recruitment channel introduced a de facto concentration in knowledge-intensive and professional service activities, a profile consistent with patterns reported by OECD (2023) and OSKA (2025), where AI adoption among SMEs is more prevalent in ICT-intensive and professional service sectors.

Despite repeated recruitment calls, we collected only a limited number of responses; therefore, we treat the pilot results as exploratory and contextualise them by benchmarking our findings against results reported in previous studies. Of 8 respondents who started the questionnaire, 4 completed it in full. Two were CEOs of micro-enterprises (up to 10 employees) and two held managerial roles in organisations with 50 to 250 employees, spanning the full SME spectrum. The low completion rate reflects a well-documented challenge in SME-focused research: limited managerial time, competing priorities, and constrained resources reduce participation capacity (OECD 2023; OSKA 2025). This low response volume is itself an empirical indicator of the structural conditions under which SME leaders operate.

The sample is best characterised as self-selected and AI-interested. Self-reported AI familiarity levels were somewhat higher than those observed at the population level, where many SME leaders still report minimal exposure to AI tools (Statistics Estonia 2024; Eurostat n.d.b). The pilot sample therefore represents a more engaged segment of the leadership population rather than the median SME manager. Notwithstanding this limitation, the pilot findings serve as an initial validation of the instrument's feasibility and content validity, while providing indicative evidence about engagement patterns and recruitment constraints among AI-interested SME leaders. The deliberate sampling bias is consistent with the exploratory and instrument-validation purpose of this study.

Results in contextual perspective

The results are organised into five thematic subsections that trace how leaders in SMEs understand, use, and govern AI in practice. Together, these subsections describe reported patterns in AI familiarity and training, managerial use and oversight behaviours, explainability and governance capacity, ethical responsibility orientations, and perceived competence gaps and support needs. Given the small sample, results are presented descriptively and contextualised against established benchmarks rather than treated as statistically generalisable.

1. Across AI familiarity, literacy, and training in core AI concepts, the mean self-reported familiarity scores cluster between moderate and high levels. Respondents report the

greatest confidence with GenAI and general notions of AI systems, while familiarity declines when questions address algorithmic bias, explainability, data governance, and regulatory obligations. This pattern of asymmetrical literacy closely mirrors findings from OECD (2023), EY (2024), and OSKA (2025), where general digital confidence coexists with weak AI-specific governance knowledge.

Formal training exposure is uneven. Some respondents report having participated in AI-related learning activities, but systematic training in bias, ethics, governance, and regulation remains limited. This aligns with OSKA's observation that structured AI education for managers in SMEs is still at an early stage and often fragmented (OSKA 2025).

2. When exploring AI use in management and human oversight, respondents predominantly describe AI as a decision-support tool rather than an autonomous decision-maker. Typical uses include text generation and summarisation, information processing, idea generation, and analytical support. This is consistent with Eurostat (n.d.b) data showing that text processing, analytics, and marketing-related applications dominate AI use in European enterprises.

Verification practices are present but not fully formalised. While several respondents state that they often or always check AI-generated recommendations against other data or personal judgement, others describe situational approaches depending on time pressure or decision importance. This mirrors concerns raised in the literature on automation bias and managerial overreliance on algorithmic advice (Microsoft 2024; Perens 2025).

3. Regarding explainability and governance, self-assessed ability to explain AI-assisted decisions to boards, investors, or regulators is moderate. Respondents are generally more confident in explaining business rationales than technical system behaviour. Formal governance mechanisms, such as documented selection criteria, audits, bias monitoring processes, or designated AI responsibility roles, are rare.

This finding closely aligns with OECD (2023) evidence that SMEs typically rely on informal governance arrangements and vendor defaults rather than dedicated AI governance frameworks. The pilot thus reinforces the view that governance capacity lags adoption, even among relatively AI-engaged leaders.

4. In questions of ethical awareness and responsibility, responses show the strongest consensus. Respondents overwhelmingly agree that AI-supported decisions must remain subject to human review, that unfair or discriminatory outputs should be rejected, and that ethical responsibility cannot be delegated to AI systems or vendors. The mean responses to these questions are very high, with minimal variance.

This strong normative alignment with responsible AI principles mirrors EU-level regulatory discourse and national strategy documents. At the same time, respondents express lower confidence in their practical ability to detect subtle bias or evaluate training data quality, reflecting the well-documented gap between ethical intent and operational capability (OSKA 2025; Perens 2025).

5. In competence gaps, barriers, and support needs, respondents identify key competence gaps in bias detection, explainability, governance design, and regulatory compliance. Perceived barriers centre on limited internal expertise, time constraints, uncertainty about regulation, and lack of practical guidance. These barriers closely replicate those reported in OECD SME studies and Estonian labour-market analyses (OECD 2023; OSKA 2025).

Correspondingly, desired support focuses on practical managerial training, clear regulatory guidance, governance templates, checklists, expert advisory support, and peer learning networks. The near one-to-one mapping between barriers and requested support underscores the consistency of the pilot findings with existing research.

Limitations and conclusion

This exploratory pilot study demonstrates that leadership-level AI literacy, use, and governance can be examined in a structured manner using a purpose-built questionnaire instrument, and that the resulting patterns can be meaningfully contextualised against established benchmarks.

The pilot study has clear limitations. The small sample size (4 finished questionnaires out of 8) and self-selected recruitment strategy preclude statistical generalisation. Results should therefore be interpreted descriptively rather than inferentially. The benchmarking against secondary sources (Eurostat, EY, OECD, OSKA) provides contextual orientation but does not constitute a comparative research design with matched primary datasets. Nevertheless, the strong convergence between our pilot patterns and established EU- and Estonia-level evidence suggests that the findings are unlikely to be specific to this sample and, by extension, supports the adequacy of the study design for its intended exploratory and instrument-validation purposes.

Findings regarding RQ1: Respondents reported moderate to high AI familiarity (means 3.25–4.0) and strong ethical commitment to human oversight and override of unethical AI outputs (means 4.5–5.0, SDs near 0.0). These self-reported literacy levels co-occur with reported verification practices (frequent checking, cross-referencing), transparency to stakeholders, and clear willingness to reject problematic recommendations. While the pilot cannot establish causal or predictive relationships given the sample size, the observed co-occurrence of higher AI literacy with sustainability-oriented behaviours is consistent with EU AI Act expectations and best-practice leadership in AI governance (Tabata et al. 2025).

Findings regarding RQ2: Organisational conditions such as SME resource constraints, time pressure, lack of in-house expertise, and presence/absence of governance structures appear to shape whether AI literacy translates into formalised governance. Respondents identify lack of expertise, insufficient resources, competing priorities, and unclear regulation as primary barriers. Where governance mechanisms exist, literate leaders embed responsible practices; where absent, literacy manifests mainly as individual behaviour. Desired support (training, templates, regulatory clarity, networks) directly mirrors identified barriers (OECD 2025).

AI literacy is necessary but not sufficient for sustainable governance. Closing SME AI governance gaps requires dual

action: leadership AI literacy programmes (emerging) and structural support: policies, tools, training budgets, and communities of practice to institutionalise the responsible, fair, and transparent AI use that leaders already value in principle (Implement 2024; Thulasidoss et al. 2025). The pilot study indicates that the proposed conceptual framework is empirically operationalisable and offers a basis for further research examining how organisational context conditions sustainable AI leadership.

Based on the pilot results and contextual evidence, several suggestions emerge:

1. Systematic leadership training: Targeted programmes should focus on explainability, bias mitigation, and governance rather than generic AI awareness.
2. Practical governance tools: SMEs would benefit from templates, checklists, and minimal governance frameworks tailored to limited resources.
3. Regulatory translation: Clear, accessible guidance on the EU AI Act is essential to reduce uncertainty and compliance anxiety.
4. Scaling the research design: The pilot provides an initially validated instrument that can be deployed on a larger scale to enable robust statistical analysis and test the relationships indicated here.

In sum, while exploratory, the pilot moves the discussion from largely narrative accounts to a structured examination of how SME leaders understand, use, and govern AI, and provides a basis for both future research and targeted interventions to strengthen sustainability-oriented and ethically robust AI adoption in SMEs.

AI use declaration

Artificial intelligence tool (ChatGPT) was used during the preparation of this manuscript for language editing, stylistic refinement, and improving the clarity and linguistic coherence of text drafted by the authors. The authors have reviewed and take full responsibility for the submitted work.

Data availability statement

Data are available upon request due to privacy and ethical restrictions.

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Jätkusuutlik juhtimine digiajastul: tehisintellekti kirjaoskus kui juhtimiskompetents Eesti väikestes ja keskmistes ettevõtetes – pilootuuringu analüüs

Aive Pevkur ja Jaanus Mugu

Artikkel käsitleb tehisintellekti (AI) kirjaoskust kui vajalikku, kuid seni väheuuritud juhtimiskompetentsi väikestes ja keskmise suurusega ettevõtetes. AI laialdasem kasutamine juhtimis-, personali- ja otsustusprotsessides eeldab juhtidelt mitte üksnes tehnilist kasutusoskust, vaid ka arusaamist AI kasutamise piirangutest, kallutatusest, selgitatavusest, vastutusest ja regulatiivsetest nõuetest. Euroopa Liidu tehisintellekti määruse valguses muutub AI-kirjaoskus organisatsioonides strateegilisest eelisest regulatiivseks kohustuseks. Artiklis esitatakse ülevaade AI-kirjaoskuse eksploratiivsest pilootuuringust Eesti väikeste ja keskmise suurusega ettevõtete juhtide seas. Uuringu tulemused asetatakse varasemate uuringute (Eurostat, OECD, EY ja OSKA) konteksti ning analüüsitakse juhtide teadmisi ja hoiakuid AI põhimõistete tundmises, eetika- ja riskiteadlikkust ning AI kasutamist otsustusprotsessides. Samuti käsitletakse, kuidas AI-kirjaoskuse erinevad dimensioonid seostuvad juhtimisrollide, tegevusvaldkonna ja organisatsiooni suurusega. Sidudes AI-kirjaoskuse jätkusuutliku ja eetilise juhtimise põhimõtetega, panustab artikkel kujunevasse AI juhtimisuuringute valdkonda. Artikkel käsitleb AI-kirjaoskust mõõdetava ja rakendatava juhtimiskompetentsina, mis toetab vastutustundlikku juhtimist ning on kooskõlas ELi tehisintellekti määruse ja OECD soovitustega. Arvestades väikest valimit, toimib uuring eelkõige instrumendi valideerimise ja teostatavuse hindamisena, pakkudes alust edasisteks, suuremahulise valimiga uuringuteks.

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The efficiency–verification trade-off in large language model-assisted workplace risk assessment

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ABSTRACT

Large language models (LLMs) are increasingly adopted in occupational health and safety (OHS) to accelerate workplace risk assessment, yet their integration raises a dilemma between efficiency and verification. The study examines this trade-off in an LLM-assisted workflow using data from 111 student assignment files from an educational setting, analyzed at the session level, yielding 96–121 analytic sessions depending on measure availability. Efficiency was measured via perceived time savings versus an estimated manual baseline, while the verification-burden proxy was operationalized as an AI–human disagreement in quantitative scoring (probability and impact on 1–5 scales). User acceptance was captured via the utility and satisfaction / intention to reuse Likert scales.

The results show substantial perceived efficiency gains: the median LLM-assisted time was 20 minutes versus the median manual time of 120 minutes (median saving 0.84). The verification-burden proxy remained non-trivial: median disagreement was 0.50, and 26.8% of sessions exhibited disagreement ≥1.0. Acceptance remained high (mean satisfaction 4.06/5). Notably, 40.6% of the sessions showed a possible overreliance pattern, with high satisfaction coexisting with high disagreement. In a robust ordinary least squares (OLS) regression, utility was the strongest predictor of satisfaction, while disagreement reduced satisfaction; time saving was not significant.

Perceived speed gains may thus coexist with hidden assurance costs and possible trust miscalibration, highlighting the need for verification structures and targeted training for sustainable digital safety governance.

1. Introduction

The digital transformation of corporate governance has positioned generative AI as a practical tool for improving organizational resilience. In the context of sustainable management in the digital era, sustainability increasingly depends on maintaining high occupational health and safety (OHS) standards while optimizing limited time and human resources (Falegnami et al. 2024). Workplace risk assessment is central to this challenge, and large language models (LLMs) are now being integrated to support hazard identification and mitigation planning, with the promise of faster and more standardized safety workflows (Aladağ 2023; Nyqvist et al. 2024).

A primary managerial incentive for adopting LLMs is a potentially substantial increase in process efficiency. Recent field experiments have documented substantial productivity gains; for instance, Martin et al. (2025) found that AI-assisted groups completed construction risk evaluations in an average of 36 minutes, compared to 157 minutes for traditional methods. However, these gains may introduce an efficiency–verification trade-off: while LLMs can rapidly generate broad and plausible risk narratives, they may lack site-specific depth and struggle with precise quantitative scoring (e.g., probability and impact), which remains critical for prioritizing controls and allocating resources (Collier et al. 2024; Nyqvist et al. 2024).

A relevant concern for sustainable safety governance is automation bias (AB) – the human tendency to over-rely on automated suggestions even when they contradict contextual evidence (Romeo and Conti 2026). Empirical studies suggest that the "mere knowledge" of a suggestion being AI-generated

can induce overreliance, leading to inferior decision payoffs (Klingbeil et al. 2024). This phenomenon is exacerbated by a "gulf of impatience," where users prioritize the low latency of AI over the time-consuming process of manual verification (Qiao et al. 2025). Although users frequently report high satisfaction with AI integration in safety-related work (Choudhury and Shamszare 2024; Martin et al. 2025), there remains limited evidence on the "assurance cost" of perceived efficiency – namely, whether perceived time savings coincide with systematic AI–human divergence in quantitative risk metrics.

To address this gap, the present study analyzes structured workplace risk assessment data from an educational setting, linking perceived time savings to AI–human disagreement in quantitative risk scoring and user acceptance. The aim of this study is to examine the efficiency–verification trade-off in an LLM-assisted workplace risk assessment across three dimensions: perceived time savings relative to a manual baseline, quantitative disagreement between AI-generated and human-finalized risk scores, and the extent to which high user acceptance may coexist with substantial scoring divergence. This approach allows us to explore a possible overreliance pattern in which satisfaction and intention to reuse remain high despite substantial scoring disagreement.

To investigate this efficiency–verification trade-off, this study pursues three research questions:

1. What is the magnitude of perceived efficiency gains (time savings) when students use LLMs to assist in workplace risk assessment compared to their expected manual baseline?
2. How significant is the quantitative disagreement between initial AI-generated risk scores (probability and impact) and the final scores validated by human users?
3. To what extent do high user satisfaction and intention to reuse persist despite substantial disagreement with the AI's quantitative output, suggesting a possible overreliance pattern?

2. Background

LLMs are increasingly evaluated as safety support tools in workplace risk management, with evidence showing strong performance in early-stage risk identification. For example, Nyqvist et al. (2024) reported that GPT-4 produced more comprehensive hazard identification outputs than human experts (overall score 8.6 vs. 5.7). Similarly, Oral et al. (2026) found high internal consistency in ChatGPT-generated assessments (similarity 0.90–0.99), suggesting stable output structure under repeated prompting. At the same time, technical specificity and numerically grounded scoring remain weak points: in failure mode and effects analysis (FMEA)-style risk assessments, Collier et al. (2024) reported that experts rated AI-generated severity and likelihood scoring as "poor" or "fair" in over half of cases, indicating limitations in decision-critical quantification.

A major driver of adoption is the prospect of process efficiency gains. In construction risk assessment, Martin et al. (2025) documented substantial time reductions, with AI-assisted groups completing evaluations in 36 minutes compared to 157 minutes using traditional methods. However, these gains may introduce an efficiency–verification trade-off. Prior work argues that filtering irrelevant or inaccurate AI content can impose a non-trivial verification burden, including iterative prompting and "debugging" of AI artifacts (Collier et al. 2024; Sun and Kalar 2025). From a governance perspective, such acceleration may also increase the risk of expertise erosion if users reduce reflective deliberation in safety-critical decisions (Martin et al. 2025).

This trade-off may become particularly consequential under AB – the tendency to over-rely on automated suggestions despite contradictory evidence. Parasuraman and Riley (1997) first systematically described how misuse of automation through overreliance leads to monitoring failures and decision errors. Subsequent reviews confirmed that erroneous automated advice increases incorrect decision-making by over 25% compared to unaided conditions (Goddard et al. 2012), and that verification complexity is a central factor determining susceptibility to AB – the harder it is to verify automation correctness, the greater the risk of overreliance (Lyell and Coiera 2017). In AI-assisted workflows, recent evidence confirms that merely knowing a recommendation was AI-generated can induce overreliance, leading to decision payoffs roughly 22% lower than control conditions (Klingbeil et al. 2024; Romeo and Conti 2026). Low-latency outputs may further intensify this effect through a "gulf of impatience," where users accept "fast" results to avoid cognitive effort (Qiao et al. 2025). While satisfaction with LLM integration is often high (Choudhury

and Shamszare 2024; Martin et al. 2025), there remains limited evidence linking perceived time savings to objective AI–human disagreement in quantitative risk metrics. This study addresses this gap by analyzing educational workplace risk assessment data and examining whether a possible overreliance pattern emerges when high acceptance coexists with substantial scoring divergence.

3. Methods

This study examines the efficiency–verification trade-off in an LLM-assisted workplace risk assessment using data from a structured educational workflow. The dataset comprised 111 submitted student assignment files collected across multiple course cohorts. Although all assignments involved AI-assisted workplace risk assessment, some task formats required students to complete more than one tool- or interface-specific workflow. Accordingly, one file could contribute one or more analytic sessions. The 111 submitted assignment files yielded 121 analytic sessions in total. For analysis, the primary unit was an assessment session, defined as one completed risk assessment workflow under a given tool condition. Within a session, time measures were recorded separately for each workplace and then aggregated to session totals. Hazard-level AI–human scoring differences were averaged to obtain session-level disagreement. Likert-based perception measures were recorded once per session. Analytic sample sizes then varied by outcome due to incomplete time, scoring, or questionnaire data. Specifically, 113 sessions had valid time data, 97 had complete AI–human scoring pairs, 120–121 had questionnaire data depending on the scale, 96 had complete data for the overreliance zone analysis, and 91 had complete cases for regression analysis. The study does not aim to establish ground-truth occupational risk levels; instead, it analyzes perceived efficiency gains, AI–human quantitative scoring disagreement as a verification-burden proxy, and user acceptance.

Time measures were self-reported for each workplace within a session: time spent using the LLM-assisted workflow (T_{ai}) and the estimated manual baseline without AI support (T_{manual}). Session totals were computed by summing across workplaces where both values were available. Perceived time saving was operationalized as:

$$SavingPct = \frac{T_{manual} - T_{ai}}{T_{manual}} . \tag{1}$$

For each hazard, both the AI and the participant provided numeric scores on 1–5 scales for probability and impact. Session-level disagreement was computed as the mean absolute divergence across hazards:

$$Disagreement = \frac{|Prob_{ai} - Prob_{human}| + |Impact_{ai} - Impact_{human}|}{2}. \tag{2}$$

Disagreement is interpreted as a verification-burden proxy and does not imply that either AI or human scores represent a ground-truth reference.

The key measures used in this study should be interpreted as analytically useful proxies rather than direct measures of the underlying constructs. First, the disagreement index captures divergence between AI-generated and human-assigned scores but does not establish which party is more accurate; human scores may themselves reflect miscalibration, and high disagreement does not necessarily indicate AI error. Second, the manual-time baseline (T_{manual}) is a subjective self-estimate rather than an observed measurement, meaning that perceived time savings reflect the user's internal valuation of the tool rather than objective efficiency gains. Third, the overreliance zone is defined operationally as the co-occurrence of high disagreement and high satisfaction and should be interpreted as a possible overreliance pattern consistent with AB-related concerns rather than a direct measurement of overreliance or decision degradation.

Participants completed a 17-item Likert questionnaire (1–5) measuring risk-metric realism, competence/accuracy, utility, and satisfaction / intention to reuse. Scale scores were computed as mean item ratings, and internal consistency was assessed using Cronbach's alpha. No questionnaire items were dropped from the predefined scales. An overreliance zone was defined as the intersection of high disagreement ($D \geq 0.5$) and high satisfaction ($S \geq 4.0$) and is interpreted as an operational indicator of a possible overreliance pattern.

Descriptive statistics were reported using medians and interquartile ranges for time and disagreement measures, and means for perception scales. Associations were assessed using Spearman correlations. Group differences were tested with the Mann–Whitney U test, reporting Cliff's delta as the effect size. Finally, an ordinary least squares (OLS) regression with heteroskedasticity-robust standard errors (HC3) examined whether satisfaction could be jointly explained by perceived efficiency gains (SavingPct), disagreement, and perceived utility.

The study was conducted in an educational setting using anonymized student-generated materials, with results reported only in aggregated form.

4. Results

4.1. Perceived efficiency gains and AI–human scoring disagreement (RQ1–RQ2)

Across sessions with a valid manual baseline (n = 113), participants reported substantial perceived efficiency gains when completing workplace risk assessments with LLM assistance. Median LLM-assisted time was 20 min, compared to 120 min for the estimated manual baseline, corresponding to a median proportional time saving of 0.84. Positive time savings were reported in 97.3% of sessions with valid baselines (Table 1). Figure 1 visualizes the strong separation between the distributions of LLM-assisted and manual baseline times.

As a verification-burden proxy, a session-level disagreement index was computed from absolute AI–human differences in probability and hazard impact scoring. Among sessions with valid scoring pairs (n = 97), median disagreement was 0.50, and 26.8% showed mean disagreement ≥ 1.0 (Table 1), indicating non-trivial divergence between AI-generated and human-assigned scores in a meaningful share of cases. At the hazard level, exact agreement was lower for probability (43.9%) than for hazard impact (59.9%), with visible off-diagonal dispersion in the mid-to-high scoring range (Fig. 2).

Table 1. Descriptive statistics for efficiency, disagreement, and user acceptance across session-level analytic samples

Construct	Measure	n	Statistic	Value
Efficiency	LLM-assisted time (T_{ai})	113	Median [IQR]	20 [10–35]
	Estimated manual time (T_{manual})	113	Median [IQR]	120 [90–240]
	Time saving (SavingPct)	113	Median [IQR]	0.84 [0.75–0.92]
Verification-burden proxy	Mean AI–human disagreement (1–5 scale)	97	Median [IQR]	0.50 [0.25–1.00]
	High disagreement (≥ 1.0)	97	% (count/n)	26.8% (26/97)
Perceptions (Likert 1–5)	Metrics realism (1–5)	121	Mean (SD)	4.18 (0.62)
	Competence/accuracy (1–5)	121	Mean (SD)	4.25 (0.67)
	Utility (1–5)	120	Mean (SD)	4.41 (0.70)
	Satisfaction / intention to reuse (1–5)	120	Mean (SD)	4.06 (0.88)
AB indicator	Overreliance zone share	96	% (count/n)	40.6% (39/96)

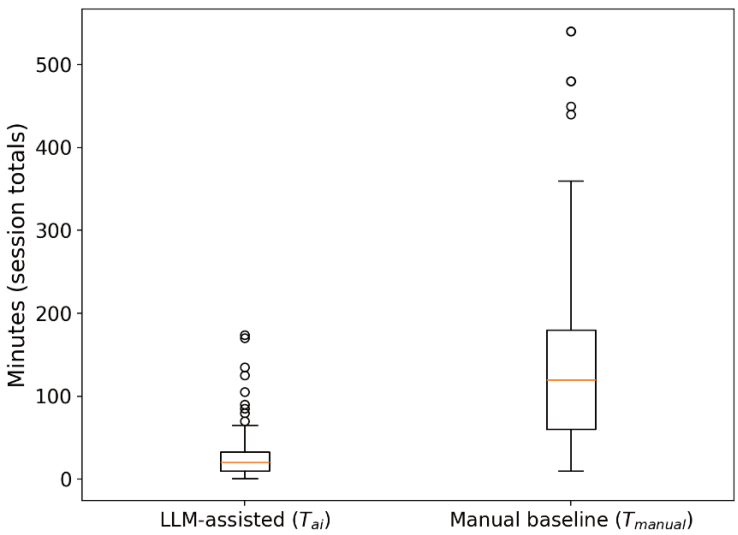

Fig. 1. Distribution of session-level LLM-assisted time and estimated manual baseline time (n = 113).

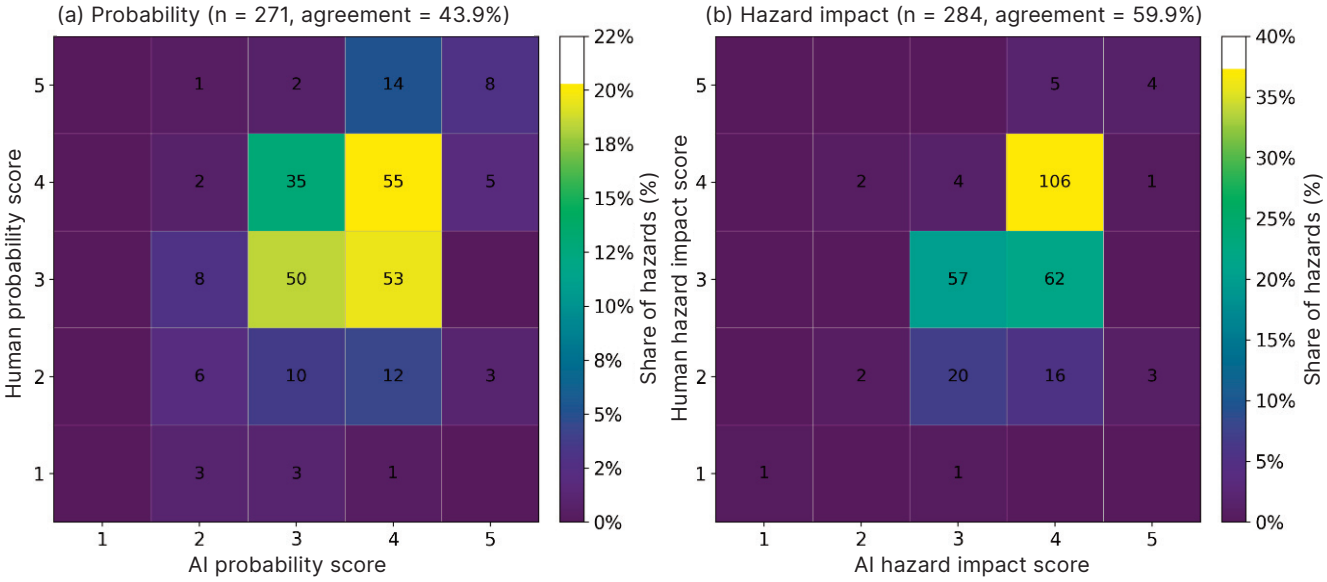

Fig. 2. AI–human agreement in quantitative risk scoring (hazard level): (a) probability and (b) hazard impact.

4.2. User acceptance and possible overreliance patterns (RQ3)

Despite scoring disagreements, participants reported high acceptance of the LLM-assisted workflow. All perception scales averaged above 4.0, including utility and satisfaction / intention to reuse (Table 1). Internal consistency was acceptable to high across the four composite scales: metrics realism ($\alpha = 0.896$, 7 items), competence/accuracy ($\alpha = 0.799$, 3 items), utility ($\alpha = 0.902$, 4 items), and satisfaction / intention to reuse ($\alpha = 0.862$, 3 items). Disagreement was negatively associated with satisfaction (Spearman $\rho = -0.26$, $p = 0.012$), whereas the relationship between time saving and satisfaction was small and marginal ($\rho = 0.20$, $p = 0.053$).

Figure 3 maps disagreement against satisfaction using the median disagreement (0.50) and a satisfaction cutoff of 4.0. Among sessions with complete data (n = 96), 40.6% fell into the high-disagreement/high-satisfaction quadrant (overreliance zone), indicating frequent cases of strong tool acceptance even when participants assigned scores that diverged substantially from AI-generated values.

Finally, an OLS regression model predicting satisfaction (Table 2) showed that perceived utility was the strongest positive predictor ($\beta = 0.98$, $p < 0.001$), while disagreement remained a significant

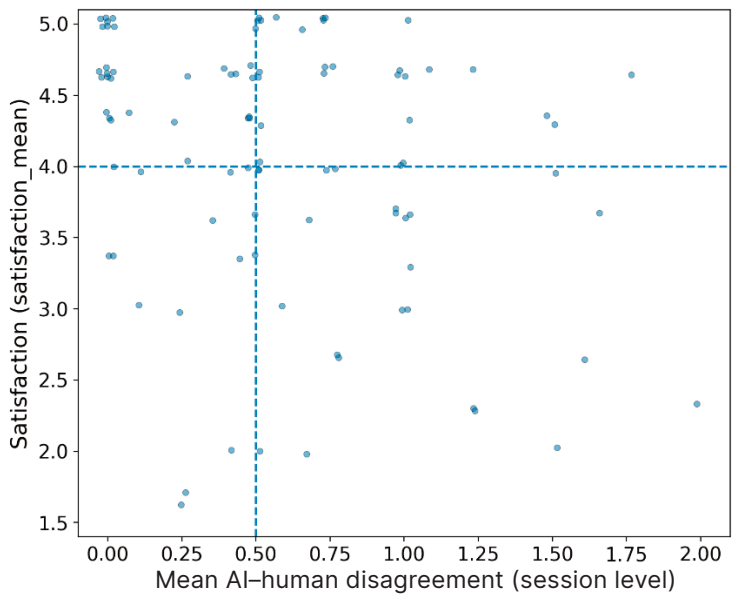

Fig. 3. Disagreement–satisfaction relationship and the overreliance zone. Dashed lines indicate the median disagreement threshold (0.50) and the satisfaction cutoff (4.0).

Table 2. Robust OLS model predicting satisfaction (1–5); N = 91, R^2 = 0.729, adj. R^2 = 0.719; HC3 robust standard errors; β* denotes standardized coefficients

Predictor	Coef. (β)	β*	Robust SE	t	p
Intercept	0.089	–	0.287	0.31	0.756
SavingPct	–0.134	–0.041	0.144	–0.93	0.350
Mean disagreement	–0.398	–0.211	0.126	–3.17	0.002
Utility	0.985	0.830	0.061	16.21	< 0.001

negative predictor (β = –0.40, p = 0.002). Perceived proportional time saving was not statistically significant once the other predictors were included (p = 0.35). The model explained 72.9% of variance in satisfaction (R^2 = 0.729). Standardized coefficients confirmed that utility was the dominant predictor (β* = 0.830), followed by disagreement (β* = –0.211), while time saving was negligible (β* = –0.041). A supplementary check for nonlinearity revealed no significant quadratic terms for any of the three predictors ($SavingPct^2$, mean $disagreement^2$, $utility^2$; all p > 0.30), supporting the adequacy of the linear specification.

5. Discussion

This study mapped the efficiency–verification trade-off in an LLM-assisted workplace risk assessment. The workflow appears to offer substantial perceived speed advantages, but the findings also suggest an assurance cost: quantitative risk scores often showed substantial AI–human disagreement, while acceptance remained high even when disagreement was non-trivial. This creates a governance dilemma for sustainable safety management: perceived time efficiency is attractive, but it does not automatically imply reliability or well-calibrated trust.

5.1. Perceived efficiency gains (RQ1)

The median perceived time saving of 84% documented in this study indicates a substantial perceived shift in OHS process management. A reduction from a 120-minute manual baseline to a 20-minute AI-assisted session mirrors the "efficiency leap" observed in construction risk assessment by Martin et al. (2025), who recorded a move from 157 to 36 minutes.

However, our findings suggest that this efficiency is primarily perceived. By using T_{manual} as a subjective baseline, we captured the user's internal valuation of the tool. This strong perceived reduction in effort may serve as an important driver of technology adoption, but as Sun and Kalar (2025) note, such gains often come with hidden costs. The lack of statistical significance for SavingPct in our regression suggests that while speed may act as an initial adoption driver, it is not the primary driver of long-term satisfaction once the user begins interacting with the tool's output.

5.2. AI–human disagreement as a verification-burden proxy (RQ2)

Despite strong efficiency perception, scoring disagreement suggests a non-trivial verification-burden proxy. Median AI–human disagreement was 0.50 (1–5 scale), and 26.8% of sessions showed mean disagreement ≥ 1.0, suggesting that scoring divergence – and by implication, potential verification demands – remains substantial in a meaningful subset of cases. Probability judgments showed lower exact agreement than hazard impact (43.9% vs 59.9%), which is consistent with probability being more context-dependent (exposure, local conditions) and therefore harder for LLMs to infer reliably from limited textual input (Collier et al. 2024; Lee et al. 2026). This aligns with the view that LLMs can support structured hazard narratives while still requiring active human calibration for numeric prioritization (Nyqvist et al. 2024).

5.3. The overreliance zone and a possible overreliance pattern (RQ3)

One notable finding is the identification of the overreliance zone, encompassing 40.6% of sessions. In these cases, users reported high satisfaction alongside substantial AI–human scoring disagreement. This pattern may pose a challenge for sustainable safety governance and may be interpreted through the lens of automation complacency (Klingbeil et al. 2024). When the perceived benefit of the system is high, partly due to the large perceived time saving observed here, users

may, as Kücking et al. (2024) suggest, develop a "blindness to potential errors." This may reflect the "gulf of impatience" (Qiao et al. 2025), where the desire to finalize the assessment quickly outweighs the cognitive strain of rigorous auditing. For sustainable management, this implies that high user satisfaction may be an insufficient proxy for process quality; a satisfied user is not necessarily a vigilant one.

5.4. What drives satisfaction: utility matters most, disagreement still matters (RQ2–RQ3)

The regression results are consistent with the interpretation above. Perceived utility was the strongest positive predictor of satisfaction, while higher disagreement significantly reduced satisfaction. Meanwhile, the time saving variable did not remain significant once utility and disagreement were included.

This suggests a plausible behavioral pattern. Perceived efficiency may support initial adoption, utility may sustain intention to reuse, and disagreement may act as a friction cost that reduces satisfaction but often does not eliminate acceptance – helping explain why a possible overreliance pattern may persist despite recognized scoring divergence. This is important because it helps clarify how such patterns may arise in ways consistent with AB-related concerns: people may recognize scoring divergence (hence, disagreement hurts satisfaction) but still judge the tool as "worth it" because it remains useful overall (Choudhury and Shamszare 2024; Kücking et al. 2024).

5.5. Implications for sustainable digital safety governance

From a management perspective, the results support a practical recommendation: organizations should treat LLM-based risk assessment as a potentially speed-enhancing system that still requires structured assurance controls, especially for numeric risk metrics.

Practical implications include:

- Do not equate satisfaction with assurance. Acceptance can remain high even when quantitative outputs show substantial AI–human disagreement.
- Track AI–human disagreement as a verification-burden indicator. Monitoring scoring divergence or disagreement rates can approximate verification burden and surface reliability issues.
- Design and train for verification. Workflow design should include explicit review steps (e.g., "why this score?" prompts) and user training focused on the most fragile component – probability calibration in context-dependent environments (Collier et al. 2024).

5.6. Limitations

This study has several limitations. First, the dataset originates from an educational setting and reflects student-based validation, which may differ from professional OHS practice in important ways. Compared to students, expert assessors likely bring domain-specific contextual knowledge that could reduce AI–human scoring divergence, as they may be better positioned to evaluate site-specific probability and impact estimates. At the same time, experts may exhibit different trust calibration patterns – either greater skepticism toward AI outputs due to professional standards, or conversely, higher complacency if time pressure is a dominant factor in real workplace settings. Whether the overreliance zone identified here would persist, shrink, or shift in composition among experienced practitioners remains an open empirical question. Second, the manual-time baseline was self-estimated rather than experimentally measured, so efficiency results should be interpreted as perceived savings rather than objective time-and-motion evidence. Third, the disagreement metric captures AI–human divergence, not ground-truth correctness; therefore, it should be interpreted as a proxy for verification effort and calibration rather than an accuracy benchmark. Finally, sessions varied in the number of workplaces and hazards assessed, which introduces heterogeneity in workload and opportunities for AI–human scoring divergence.

5.7. Future work

Future research should replicate the analysis in professional OHS contexts using a comparative design that directly contrasts student and expert assessors on disagreement magnitude, satisfaction, and overreliance patterns under matched task conditions. Such studies should also include observed manual baselines rather than self-estimated ones, to provide objective validation of time-effect

estimates. Additional work could examine whether disagreement patterns differ by hazard type, workplace context, or user expertise, and whether structured interface interventions (e.g., mandatory justification steps) reduce possible overreliance patterns. Finally, qualitative analysis of edits and reasoning could clarify why users accept AI outputs even when numeric scores diverge from human-assigned values.

6. Conclusion

This study suggests that the LLM-assisted workplace risk assessment delivers strong perceived efficiency benefits but introduces a potential verification burden, reflected in consistent AI–human disagreement in probability and impact scoring. A substantial share of sessions exhibited high satisfaction despite high disagreement, indicating a possible overreliance pattern consistent with AB-related concerns that challenges the use of acceptance metrics as a proxy for process reliability. For sustainable digital safety management, the results highlight that speed gains should be paired with explicit verification structures so that efficiency does not come at the expense of risk governance quality.

Data availability statement

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

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Tõhususe ja usaldusväärsuse tasakaal LLM-toega töökoha riskihindamisel

Aleksandr Bosler, Tarmo Koppel ja Karin Reinhold

Suuri keelemudeleid (*large language model*, LLM) võetakse töötervishoius ja tööohutuses üha enam kasutusele töökoha riskihindamise kiirendamiseks, kuid nende lõimimine tekitab dilemma tõhususe ja usaldusväärsuse vahel. Uuringus vaadeldakse seda väljakutset LLM-toega töövoos, kasutades hariduskeskkonnast pärit 111 üliõpilastöö failide andmeid, mida analüüsiti sessioonitasandil. Sõltuvalt mõõdikute kättesaadavusest saadi 96–121 analüütilist sessiooni. Tõhusust mõõdeti tajutud ajasäästu kaudu võrreldes hinnangulise käsitsi tehtava lähteolukorraga, samas kui verifitseerimiskoormuse asendusnäitaja määratleti tehisintellekti ja inimese lahknevusena kvantitatiivses hindamises – tõenäosuse ja mõju skoorides 1–5-punktisel skaalal. Kasutajate omaksvõttu mõõdeti kasulikkuse ning rahulolu ja taaskasutamise kavatsuse Likerti skaalade abil.

Tulemused näitavad märkimisväärset tajutud tõhususe kasvu: LLM-toega töö mediaanaeg oli 20 minutit võrreldes 120 minutiga käsitsi tehtava töö korral, mediaanne ajasääst oli 0,84. Verifitseerimiskoormuse asendusnäitaja jäi siiski arvestatavaks: mediaanne lahknevus oli 0,50 ning 26,8%-l sessioonidest esines lahknevus ≥1,0. Omaksvõtt püsis kõrge – rahulolu keskmine oli 4,06/5. Märkimist on väärt asjaolu, et 40,6%-l sessioonidest ilmnes võimalik liigse usalduse muster, kus kõrge rahulolu eksisteeris koos suure lahknevusega. Robustses vähimruutude meetodi (*ordinary least squares*, OLS) regressioonis oli kasulikkus tugevaim rahulolu ennustaja, samas kui lahknevus vähendas rahulolu; ajasääst ei olnud statistiliselt oluline.

Seega võivad tajutud kiirusevõidud eksisteerida koos varjatud verifitseerimis- ja kontrollikuludega ning võimaliku usalduse väärkalibreerimisega. Sellest tulenevalt tekib vajadus kontrollistruktuuride ja sihipärase koolituse järele kestliku digitaalse ohutusjuhtimise tagamiseks.

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Moral management in practice: a qualitative study of values, habits, and ethical interventions among top managers in Estonia

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ABSTRACT

Top managers are leaders and role models for subordinates. Although numerous research papers have been published on ethical leadership, to the best of our knowledge, recent research has largely overlooked the phenomenon of how managers apply ethical principles in their everyday leadership practices. Moreover, we are interested in finding out how top managers see ethical behaviour. Our research relies on Carroll's moral management theory.

The current article focuses on how top managers' values and habits influence ethical intervention and proactive ethical leadership, and identifies the conditions under which moral managers can act as influential drivers in shaping and strengthening organisational ethical culture.

We conducted 12 semi-structured narrative interviews with top managers in Estonia, who described the ethical conflicts they encountered in workplace situations. Based on our study results, we demonstrate the model of moral managers regarding values and habits in the context of unethical behaviour occurring in everyday business life. By clarifying how managerial values shape ethical reasoning and action across diverse ethical situations, stronger support can be provided for leaders in cultivating an ethical climate that reinforces integrity and reduces unethical behaviour.

Introduction

Managers and leaders are moral agents whose moral compass sheds light on ethical behaviour within whole organisations. In many organisations, there are written rules and a code of conduct; however, the example set by top management is a key factor in shaping the reality of organisational behaviour. There are many studies about ethical leadership (Treviño and Nelson 2017; Zhu et al. 2019), ethical decision-making (Brown et al. 2005; Kaptein 2008; Mayer et al. 2010), handling ethical problems (Chung and Monroe 2007; Hiekkataipale and Lämsä 2017; den Nieuwenboer et al. 2025), and many others. Yet, an important gap remains – we still know comparatively little about ethical intervention as situated executive practice; specifically, which values trigger intervention, what kinds of unethical situations elicit flexible versus inflexible responses, and how leaders' moral habits translate values into action under social and organisational constraints. This is especially salient given Treviño et al.'s (2000) distinction: leaders may be 'moral persons' yet fail as 'moral managers' if they do not actively foreground ethics, communicate standards, and consistently reinforce them. Wainryb and Pasupathi (2015) suggest that there is a need to look more deeply into the degree to which moral values are prioritised in the context of competing moral and non-moral concerns, as well as how values shape individuals' responses to life situations.

The current research aims to understand the role of values in ethical intervention by top managers in many layers. First, we analyse which managers' values (Rokeach and Ball-Rokeach 1989) – terminal or instrumental – are triggers for intervention. Second, we would like to understand what the role of moral habits (Carroll 2003) is in this context. Third, we ask what kind of managers are proactive in building and empowering an ethical climate. Analysing the results of 12 semi-structured interviews, we contribute to the theory of ethical leadership. We visualise the values and habits, moral management types, and interventions to unethical behaviour. The model helps to understand in which circumstances moral managers could be influencers in building a new level of organisational ethical culture.

The study contributes an empirically grounded account of everyday ethical practice by top managers, a nuanced application of Carroll's moral management types to contemporary executive practice, and implications for cultivating ethical climates – clarity, discussability, congruency, and sanctionability – through leaders' routine behaviours and interpretations of subordinates' conduct (Kaptein 2008; Mayer et al. 2010). More broadly, we respond to calls to move beyond survey correlations to understanding how leaders apply ethics at work, enriching theory and providing actionable guidance for executive development and governance.

Theoretical approach

Managers who demonstrate ethical leadership behaviours significantly influence the ethical climate of their organisations. This leadership style involves setting clear ethical standards, modelling ethical behaviour, and holding employees accountable (Mulki et al. 2009; Racelis 2025). When these practices are sustained, leaders contribute to a positive ethical climate, defined by shared values, norms, and expectations, which in turn encourages ethical behaviour and lowers the likelihood of unethical practices. Consistent with a social learning perspective, followers tend to imitate ethical leaders because these leaders are viewed as attractive and credible role models who demonstrate normatively appropriate conduct (Brown et al 2005). Ethical climate is therefore not simply an organisational given but a social product that managers continually reproduce through daily decisions, policies, and enforcement practices (Demirtas and Akdogan 2015).

Ethical leadership theory (Brown et al. 2005) is centred around two primary components: the leader as a moral person and the leader as a moral manager. These components are essential for fostering an ethical organisational culture and guiding ethical behaviour among followers.

The concept of the leader as a moral person emphasises the intrinsic qualities and behaviours that define the leader's character. Key attributes include honesty, fairness, and care (Zhu et al. 2019; Limbore et al. 2025), which align with Rokeach and Ball-Rokeach's (1989) instrumental values. Ethical leaders are expected to demonstrate honesty in their actions and decisions, ensuring transparency and building trust within the organisation. Fairness involves treating all individuals with equity and justice, ensuring that decisions are made impartially and without favouritism. Ethical leaders show genuine concern for the well-being of their followers, fostering a supportive and nurturing environment. The role of the leader as a moral manager involves actively promoting and reinforcing ethical standards within the organisation. This includes role modelling, reinforcing ethics, and discipline (Zhu et al. 2019; Pircher Verdorfer and Peus 2020). Ethical leaders serve as role models by exemplifying ethical behaviour, which followers are likely to copy. Leaders reinforce ethical behaviour through policies, rewards, and sanctions that align with ethical standards and promote followers' well-being (Bedi et al. 2016). Ethical leaders are responsible for disciplining unethical behaviour, ensuring that there are consequences for actions that violate ethical norms.

In the present study, we approach moral management from two angles. First, we draw on Carroll's typology of managerial moral orientations, which distinguishes immoral, amoral, and moral managers. Second, we examine managers' ethical habits and values to better understand how ethical leader types translate into concrete interventions when subordinates behave unethically (Carroll 2000, 2003, 2021).

According to Carroll's (2000) typology, the strategy used by immoral managers exploits opportunities and cuts corners wherever it is helpful; norms and values are obstacles that have to be overcome while aiming profit and self-interest. Carroll believes that immoral managers are in minority and the impact of external stakeholders forces them to change or disappear from a management position.

Carroll further differentiates two forms of amoral management: intentional and unintentional. Intentional managers follow the mindset that moral considerations have no relevance in organisational or business life. Morality and business are different dimensions. They do not see the moral consequences of their decisions and acts. Unintentional amoral managers are generally well-intentioned, they are not denying ethics, but in daily business they just do not take into consideration ethical aspects. They are silent about ethics. Acts of unintentional managers are mostly driven by law and regulation, not more. Carroll believes that unintentionally amoral managers are the majority of managers, and they are moving toward being moral managers.

By contrast, moral managers aim to live by sound ethical standards and often seek to act beyond what law and regulation require. Importantly, moral managers are also moral persons: they embody ethical conduct personally and reinforce it institutionally. Carroll argues that moral managers can function as creators and carriers of moral standards within stakeholder networks, demonstrating stakeholder inclusiveness and a strong concern for fairness (Carroll 2003). Carroll's approach toward moral managers is supported by many other researchers (Kaptein 2008; Ciulla 2014; Zhu et al. 2019).

Moving on to the second angle, we examine managers' ethical habits and values. Ethical habits, developed through consistent practice and reinforcement, help managers and employees to internalise ethical standards (Decrinis 2025). These habits contribute to a sustainable ethical climate and reduce the likelihood of ethical blind spots. Building on Carroll (2003), we focus on seven habits of highly moral leaders: 'a) strong ethical character (courage; values-driven conduct), b) passion to do right (internal moral motivation), c) moral proactivity (anticipate issues; role-model; keep ethics in the foreground), d) stakeholder inclusiveness (consider impacts on all legitimate stakeholders), e) obsession with fairness (distributive, procedural, and compensatory justice), f) principled decision- making (explicit values; "high road" commitments), g) integration of ethics and management wisdom (no "ethics vs. business" split)'.

Finally, we integrate a values perspective because leaders' interventions are rarely driven by rules alone. Values-oriented ethics programmes that emphasise core principles (e.g. integrity and fairness) are often more effective at reducing unethical behaviour than compliance-oriented programmes

that rely primarily on monitoring and sanctions (Rokeach and Ball-Rokeach 1989; Porto et al. 2024). Within values theory, terminal values are end-goals that managers strive to achieve, such as a stable ethical climate or a long-term organisational success. Terminal values often drive managers to implement comprehensive ethical programmes and foster a culture of integrity (Demirtas and Akdogan 2015; Racelis 2025; Gonçalves 2026). Instrumental values, in turn, refer to preferred modes of conduct, such as honesty, responsibility, and fairness, that function as means for reaching those end-states. Managers with strong instrumental values are likely to engage in ethical leadership behaviours, setting a positive example for their subordinates and promoting ethical practices within the organisation (Buchko 2007; Demirtas and Akdogan 2015; Hernández-Cuadra and Fernández-Fernández 2024).

Nevertheless, acting ethically is far from being a black-and-white practice. According to the strain theory (Agnew 1992; De Clercq and Dakhli 2009; Su et al. 2019), unethical behaviour can occur when personal strains and frustrations lead to deviant means, such as telling lies or violating the law in one's own or an enterprise's interest, with an aim to achieve desired goals. People working in challenging business and technology management positions require a mature moral identity that will support their ethical principles even in ambivalent business contexts. According to Klebe et al.'s (2022) research, followers experience less positive leadership and more abusive leadership when leaders are strained.

Materials and methods

The current study employed a qualitative research design using semi-structured narrative face-to-face interviews as the primary data source. Narrative interviewing is well suited to understand experience and behaviour (Anderson and Kirkpatrick 2016; Hill et al. 2024) and, when coupled with a semi-structured guide, supports exploration of the values embedded in participants' stories and the reasoning underpinning their actions (Ntinda 2018). The only criterion to be interviewed was current or prior experience in a top-managerial position. We used purposive sampling, complemented by convenience considerations to ensure access, recognising the attendant risk of sampling bias (e.g. shared professional socialisation or value orientations). To mitigate this risk, we sought heterogeneity across sectors and organisational contexts. Participation was voluntary; interviewees received information about the study and could decline participation, skip questions, or terminate the interview at any point. Research ethics was the ultimate principle in our research process.

Twelve senior managers from diverse industries and organisations participated. Prior to data collection, we piloted the interview guide with a small subset of managers to assess clarity and relevance, which led to some revision in the research instrument. For example, we simplified some technical terms and added targeted follow-up prompts to probe ethical dilemmas in greater depth. One week before their interview, participants received the guiding questions and were asked to describe a salient ethical dilemma from their managerial practice. This preparation was intended to facilitate rich, example-based narratives about moral conflict and intervention.

Interviews were conducted individually in a confidential setting between February and March 2022, with each lasting 74–117 minutes. Sessions were audio-recorded, transcribed verbatim, and analysed iteratively. We first identified whether the described case involved an intervention and then undertook a thematic analysis: the first two authors independently generated the initial codes and candidate themes from repeated readings before reconciling discrepancies through collaborative discussion to produce a consensual codebook. In some cases, we recognised several ethical interventions where the manager acted controversially. In these analyses, we handled those cases by considering different social and organisational constraints. To reduce interpretive bias, the transcripts were read multiple times, and the coding decisions were reviewed across cases by all the authors. The interviews were structured as follows: an introduction and building of a trusty and comfortable atmosphere, followed by narrative storytelling, where the interviewee described ethical dilemmas or unethical incidents and his/her interventions in those situations. Guiding questions were provided when needed to probe deeper into specific ethical dilemmas.

Results

The results are presented in Appendix, which summarises the 12 interview cases by showing how top managers with different moral orientations (moral, amoral, immoral) interpret unethical behaviour and translate their values into (non-)intervention in practice. For each case, the table lists the leader type, the key instrumental values and terminal values expressed in the narrative, the presence/absence of Carroll's (2003) moral leadership habits, and whether intervention occurs (and whether it is more flexible or inflexible).

Case 1

This leader represents **a moral manager** who intervenes consistently to protect organisational climate and long-term trust. He terminated a technically competent employee whose persistent badmouthing and toxic behaviour damaged team morale. His actions are primarily driven by instrumental values such as honesty, respect, and fairness. He demonstrates both flexible and inflexible intervention, depending on the severity of the situation, but intervention is always present. His leadership strategy centres on managing by example, proactive communication, and corrective action when respect and trust are threatened.

Case 2

This leader is **a moral manager** who prioritises values and integrity over profitability. He intervened by terminating a high-performing employee involved in an unethical workplace relationship that damaged fairness and transparency. His intervention was guided by terminal values (family security, wisdom) and instrumental values (honesty, helpfulness, politeness, responsibility). He is committed to developing a fair and transparent organisational culture and applies

both flexible and inflexible interventions, depending on the ethical risk involved.

Case 3

This case illustrates **an immoral manager** who consistently avoids intervention and actively engages in unethical practices himself. His value system is dominated by instrumental values linked to ambition, success, and personal achievement, while terminal values are largely absent. He is willing to sacrifice personal relationships for self-interest and justifies unethical behaviour through rationalisations that frame misconduct as inevitable or philosophically acceptable. Although he recognises ethical norms, he reframes violations as ethically neutral, enabling moral disengagement. Despite occasional expressions of compassion, his kindness remains selective and self-serving.

Case 4

This leader represents **an intentional amoral manager** (Type 2) who understands ethical norms but deliberately avoids interventions. He tolerates unethical behaviour, such as disrespectful conduct in meetings, in order to maintain functionality and results. His reasoning is guided by instrumental values such as capability, pragmatism, and self-control, alongside terminal goals related to family security and a sense of accomplishment. Ethical considerations are recognised but remain secondary to performance outcomes and organisational efficiency.

Case 5

This leader is **a moral manager** who intervenes consistently and primarily inflexibly. His value profile closely resembles Case 1, relying on strong instrumental values such as honesty, fairness, kindness, empathy, and justice. He treats ethics as an integral part of managerial responsibility rather than a reflection and actively builds ethical foundation within the organisation. Ethical intervention is viewed as essential to effective leadership and organisational sustainability.

Case 6

This case describes **a moral manager** guided mainly by instrumental values. The leader recognises that people can make mistakes and emphasises accountability through apology, learning, and corrective commitment. Her intervention style is predominantly flexible, aiming to balance responsibility with compassion. Ethics are embedded in reflective practice, focusing on improvement rather than punishment.

Case 7

This leader represents **an unintentional amoral manager** (Type 1) whose actions are morally unclear. While he employs unethical and manipulative methods, he justifies them as necessary to restore justice and serve the greater good. He perceives himself as a role model and insists on transparency, with profit not being the dominant goal. His decisions are guided primarily by terminal values (salvation, self-respect, sense of accomplishment, world of beauty), while instrumental values are neglected. The case illustrates how strong end-goals can override ethical means.

Case 8

This leader is **an intentional amoral manager** (Type 2) whose primary objective is conflict avoidance. Despite recognising unethical situations, she does not interfere to minimise personal inconvenience and emotional strain. Her behaviour is guided by instrumental values such as politeness, friendliness, and avoidance of conflict. She displays no stable moral habits aligned with ethical leadership, and non-intervention is chosen because action would create additional hassle.

Case 9

This leader is **an intentional amoral manager** (Type 2) who rarely considers ethical implications unless external attention is drawn to the issue. His actions are guided by instrumental values such as logic, responsibility, capability, and obedience, alongside a strong commitment to shareholder interests. Ethics function reactively rather than proactively, and intervention occurs only when legitimacy or accountability is threatened.

Case 10

This case illustrates **an unintentional amoral manager** (Type 1) who intervenes selectively based on instrumental values such as justice, responsibility, protection, and forgiveness. Although the organisation has a zero-tolerance policy toward alcohol use, he forgives a serious violation committed by a high-performing employee. His intervention is relatively inflexible in structure but supportive in intent, focusing on teaching, forgiveness, and offering a second chance rather than strict sanctioning.

Case 11

This leader represents **a moral manager** who intervenes consistently and inflexibly when humanity and dignity are threatened. Company values serve as core organisational principles, and his leadership is grounded in instrumental values such as trust, transparency, valuing people, humanity, and keeping promises. He places strong emphasis on the internal microclimate, believing trust to be the foundation of organisational functioning. Ethical leadership is performed through continuous attention to relationships and organisational culture.

Case 12

This multi-layered case describes **an intentional amoral manager** (Type 2) whose behaviour varies across contexts. He demonstrates strong terminal values (self-respect, social recognition, equality, happiness, world of beauty) and instrumental values (honesty, transparency, sincerity, care). When acting as a middle manager, he leaves an unethical organisational culture to preserve moral identity. However, when confronted with a bribery incident involving a business partner, he acknowledges its unethical nature yet chooses non-intervention to preserve the relationship, effectively permitting the misconduct. The case highlights the tension between stated moral values and situational vulnerability to social pressure and conflict avoidance.

In some cases, managers' morality was diverse. The results showed that the same person (C12, C10) could behave in a contradictory way.

Across the negative cases (immoral leaders, see Appendix), Carroll's seven moral leadership habits are largely absent, even when leaders recognise that something ethically problematic is happening. It means that ethical reflection may exist, but it is separated from intervention and replaced by contextual rationalisations (e.g. cultural reasons, business

reality) or emotion-management strategies (avoiding conflict, withholding truths). However, amoral leaders tend to show partial habits (selectively, and often only when the issue threatens performance, harmony, or legitimacy) or none at all. Some amoral cases still list individual habits (e.g. C7P includes strong character, passion to do right, proactivity, fairness, principled decisions) and lead to decisive action (termination), but this is not described as a stable ethical orientation. Appendix indicates the clearest and most complete presence of Carroll's habits among moral leaders who explicitly name values, keep ethics outstanding, and intervene determinedly. For example, in the moral leader cases (e.g. C1.2, C5, C6), the narrative explicitly ties action to ethical culture-building and internally motivated moral reasoning (not merely compliance).

Discussion

The findings of this study provide a theoretically integrated explanation of ethical intervention as a value-based and habit-enabled managerial process. By combining Carroll's (2000) moral management typology, Treviño et al.'s (2000) and Brown et al.'s (2005) distinction between a moral person and a moral manager, and insights from the strain theory, the results represent how ethical leadership is enacted or fails to be enacted in everyday organisational practice.

Consistent with Carroll's (2000, 2003) concept of moral management, leaders classified as moral managers were distinguished not only by their ethical intentions but by their ability to actively promote ethics through habits, intervention, and role modelling. These leaders demonstrated value profiles dominated by kindness- and fairness-oriented instrumental values, often emphasised by terminal values such as self-respect, inner harmony, dignity, or long-term relational trust. Such patterns supported principled ethical reasoning, enabling leaders to evaluate unethical behaviour against stable moral standards rather than situational possibilities. As a result, moral leaders presented the full set of Carroll's moral leadership habits, including moral proactivity, obsession with fairness, principled decision-making, and integration of ethics with management wisdom. This combination consistently concluded in decisive ethical intervention, particularly when core human values were at stake.

The findings extend Treviño et al's moral person / moral manager framework by demonstrating that being a moral person, having personal integrity and ethical awareness, is insufficient on its own. They also need to act as moral managers: communicate ethical expectations, reinforce standards, and sanction unethical behaviour, even when such actions may cause personal or organisational cost. For moral leaders, the instrumental values such as honesty, transparency, fairness, empathy, and responsibility repeatedly appear alongside terminal values such as inner harmony, self-respect, a harmonious team, patient safety, dignity, etc. The representation of Carroll's habits appears to operationalise Treviño's moral manager role, translating internal moral identity into visible and consequential organisational action.

In contrast, amoral leaders, both intentional and unintentional, were characterised by value orientations prioritising pragmatism, tolerance, self-control, and organisational harmony. Their ethical reasoning was predominantly contextual, reflecting what Treviño describes as ethical silence or ethical fading, where moral considerations are acknowledged but not actively integrated into managerial decision-making. These leaders often recognised that something ethically problematic was occurring, yet this recognition did not translate into action. Correspondingly, Carroll's moral leadership habits were present only partially or remained absent, and intervention, if it occurred at all, was selective, reactive, or instrumental, aimed at restoring performance or legitimacy rather than moral order.

For leaders who did not interfere, a repeated logic of action emerged that aligns with Carroll's notion of amoral management. Ethical evaluation was postponed through contextual sensitivity and observation, behaviour was reframed as culturally embedded rather than unethical, and tolerance became a dominant instrumental value. Conflict avoidance and emotional regulation strategies further stopped ethical action, concluding in outcome-oriented justifications that framed misconduct as inevitable or 'part of business reality'. In these cases, ethics remained cognitively present but practically disconnected from leadership action.

Several cases revealed situational inconsistency among amoral leaders with relatively strong ethical awareness. These leaders expressed moral concerns and, in some contexts, demonstrated elements of Carroll's habits, yet held back to interfere when the perceived social or relational cost was high, such as dependence on powerful business partners, fear of damaging trust, or shared financial stakes. This pattern is well explained by the strain theory (Agnew 1992; Klebe et al. 2022), which suggests that social and economic pressures can push individuals toward norm-violating behaviour when conventional means of achieving valued goals become pressured. Rather than reflecting moral blindness, these cases illustrate moral compromise under relational strain, where leaders knowingly tolerate unethical behaviour to preserve critical relationships or organisational stability.

Finally, immoral leaders were characterised by value systems dominated by ambition, performance orientation, autonomy, and personal success. Their ethical reasoning was explicitly self-interested, and Carroll's moral leadership habits were almost entirely absent. While immoral leaders often recognised ethical boundaries, they engaged in systematic moral disengagement, justifying unethical actions as competitively necessary or philosophically acceptable. This aligns closely with Carroll's depiction of immoral management where norms and values are perceived as obstacles to be overcome. In such cases, non-intervention or unethical intervention occurred regardless of whether ethical issues were intentional or unintentional, emphasising the stability of moral disengagement once ethical habits are absent.

Taking our findings and theoretical framework together, we present the process model for ethical intervention grounded in values, moral types, and habits in Fig. 1.

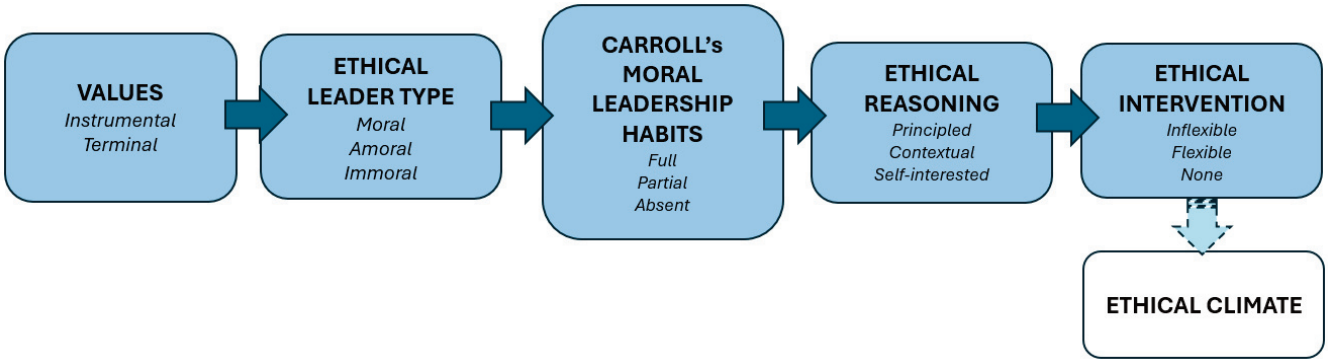

Fig. 1. The process model for ethical intervention.

It proposes that leaders' instrumental and terminal values provide moral direction and shape their ethical leader type (moral, amoral, immoral). From there, leader type is reflected in (and expressed through) two linked mechanisms: the extent to which leaders enact Carroll's moral leadership habits (full/partial/absent), such as strong ethical character, moral proactivity, fairness, principled decision-making, and integrating ethics with management wisdom, and their ethical reasoning style (principled, contextual, or self-interested). These mechanisms together predict whether leaders respond to observed misconduct with decisive intervention, selective intervention, or non-intervention, which ultimately shapes the organisation's ethical climate and (indirectly) subordinates' ethical behaviour.

Study limitations

The study is based on semi-structured narrative interviews interpreted by thematic analysis. While this approach is well suited for understanding experiences and the values embedded in leaders' stories, it does not enable statistical generalisation or causal inference. The process model we propose should therefore be treated as an empirically grounded interpretive framework rather than a causal test of relationships between values, leader type, reasoning, habits, and intervention. The cases are participants' reconstructions of significant ethical dilemmas. Narratives are vulnerable to recall bias (selective memory, post-hoc rationalisation) and social desirability effects (presenting oneself as fair, honest, or humane). This is particularly relevant when leaders describe interventions: the moral framing may be amplified, and organisational constraints or conflicting motives may be softened. Because we did not triangulate accounts with other informants (e.g. subordinates, human resources, peers) or documentary evidence, we cannot verify the accuracy of events, the proportionality of interventions, or how others experienced the same incidents. Mapping narratives into Carroll's ethical leader types and the seven moral leadership habits requires interpretive judgment. Even with independent coding, repeated readings, and compromise through discussion, some coding decisions (e.g. whether a habit is truly present vs implied) remain disputable (e.g. Case 12).

Therefore, we recommend that future researchers extend our findings through a quantitative perspective. For example, next studies could operationalise Carroll's moral types and the moral leadership habits into validated survey instruments (supplemented by scenario-based vignettes), enabling larger-sample tests of whether the proposed process model holds across sectors and contexts, and under what boundary conditions.

Conclusion

This study examined how top managers translate ethical values into action when confronted with unethical behaviour in everyday organisational settings. The findings demonstrate that ethical intervention is not merely a matter of individual character or formal rules but the outcome of an interconnected process linking values, ethical reasoning, moral leadership habits, and situational pressures.

The findings contribute theoretically by showing that ethical leadership is best understood as a configurational process rather than a stable trait. Values provide moral direction, but it is the presence of moral leadership habits that enables leaders to translate ethical intention into action under pressure. In this sense, habits function as a critical implementation mechanism linking ethical awareness to organisational practice. The proposed intervention model can serve as a reflective tool for organisations seeking to strengthen ethical culture and support leaders in navigating morally complex situations.

Overall, the study emphasises that ethical leadership in practice requires more than good intentions: it depends on the alignment of values, reasoning, habits, and organisational conditions that enable leaders to act ethically when it matters most.

Data availability statement

Data are available upon request due to privacy and ethical restrictions.

Acknowledgement

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Appendix

Case profiles of ethical/unethical leadership: from values to intervention outcomes

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Moral leaders				
C1.1P and C1.2P **Male, age group 40–44** Toxic behaviour and smearing of competitors by an employee: the leader terminates the employment. He is a person who not only follows ethical norms but also develops ethical culture within the organisation. His leadership habits are reflective and internally motivated: he acts ethically not out of fear of sanctions, but because he believes it is the right thing to do.	Transparency Politeness Obedience Honesty Fairness Positivity	Inner harmony Self-respect Sense of accomplishment Harmonious and motivated team	1. Strong ethical character. The leader repeatedly emphasises honesty and transparency toward clients and employees (‘I say things as they are’). 2. Passion to do right. Even a small lie or exaggeration ‘bothers him deeply’. 3. Moral proactivity. He intervenes when employees use unethical sales tactics or display toxic behaviour to protect organisational values. 4. Stakeholder inclusiveness? 5. Obsession with fairness. He refuses to badmouth competitors even if it might bring short-term benefit. 6. Principled decision-making. The leader describes his team as his own reflection – most have worked with him for a long time and share his principles. 7. Integration of ethics and management wisdom. His consistent behaviour strengthens moral authority and trust within the organisation.	Inflexible He demonstrates that ethical leadership is not merely about compliance with rules but about self-awareness, transparency, and leading by example.
C2.1P and C2.2P **Male, age group 45-49** Sexual relationship between two individuals at the workplace: the leader interferes. If it is an unethical relationship, the leader terminates the employment. Otherwise, the leader intervenes because the action jeopardises the fair completion and distribution of tasks and overall transparency within the organisation.	Selflessness Honesty Helpfulness Politeness Leading by example Chivalry Responsibility Transparency Logic	Family security Wisdom Salvation Equality Sense of happiness Self-respect Personal integrity and inner peace	1. Strong ethical character. The leader is disturbed by dishonesty, denial, and avoidance of responsibility (‘When you’re caught, admit and apologise. Don’t run away’). 2. Passion to do right. He describes a powerful inner drive to act according to what ‘feels right’, even when it is inconvenient or costly (asking a valued employee to leave). 3. Moral proactivity. He takes initiative in addressing unethical relationships to protect company culture and prevent conflicts of interest. 4. Stakeholder inclusiveness. He believes ethical leadership is a balance between relationships and business needs. 5. Obsession with fairness. He emphasises equality and fairness regardless of gender, position, or power. 6. Principled decision-making. He balances ethical principles with empathy and business needs; he embodies moral pragmatism (depends on practical consequences). 7. Integration of ethics and management wisdom. He keeps promises rigorously (‘An agreement is an agreement – even a minor one’).	Inflexible and flexible His ethical reasoning shows that he considers not only formal rules but also the unwritten moral code shaping the culture of the organisation. He believes that ethical leadership is fundamentally about balance – between human relationships and business needs, between emotions and rational decisions.

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Appendix. *Continued*

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Moral leaders				
C5.1P, C5.2P, and C5.3P **Male, age group 50–54** Pregnant employee treated unjustly by HR, disloyalty and breach of a non-competition agreement and autocratic middle-management not tolerated. The leader not only rejects unethical outcomes but actively makes decisions that bring the situation back to fairness and humane treatment, supporting ethical culture rather than treating ethics as plain compliance.	Honesty Fairness Kindness Empathy Justice	Happiness Wisdom Family security Freedom Inner harmony Loyalty	1. Strong ethical character. He frames the main issue as injustice and 'attacking a weaker-position person', and he has the courage to ignore a senior HR decision when it violates humane treatment. 2. Passion to do right. He connects ethical action to being able to 'look in the mirror' and feel at peace with himself. 3. Moral proactivity. He builds preventive practices (e.g. a consultation rule before firing) and intervenes early to avoid escalation. 4. Stakeholder inclusiveness. In the pregnancy case, he explicitly weighs the employee's dignity and emotional state as well as the wider organisational impact (others seeing a crying employee, reputational harm). 5. Obsession with fairness. He repeatedly returns to justice as a guiding principle. 6. Principled decision-making. He justifies decisions with clear principles and explicit commitments (e.g. 'our agreement / work contract says no competition'). 7. Integration of ethics and management wisdom. He treats ethical handling as good management: correcting unfairness prevents reputational damage.	Inflexible His moral reasoning is reflective and internally driven rather than compliance-driven.
C6P **Female, age group 50–54** Dishonest behaviour by an employee providing health services occurs: the employee is hiding, denying mistakes, and refusing to take responsibility for her work. The leader intervenes.	Honesty Transparency Responsibility Humanity Caring / valuing others Empathy/compassion	Human dignity Psychological safety at work	1. Strong ethical character. She explicitly states that lying is intolerable. 2. Passion to do right. Her moral reasoning is described as something that comes from 'inside', and patient safety is chosen because it carries strong emotional weight for her. 3. Moral proactivity. She promotes and strengthens a blame-free / just culture to prevent future harm. 4. Stakeholder inclusiveness. Her decisions explicitly consider patients (safety and harm prevention), employees (dignity, support after an error), and the organisation (process improvement). 5. Obsession with fairness. She treats unintentional errors through a fair, learning-oriented response but applies procedural justice when misconduct is intentional. 6. Principled decision-making. Her principles are explicit: people generally do not come to work intending to cause harm, and leadership must first understand whether the incident was intentional. 7. Integration of ethics and management wisdom. She analyses incidents step-by-step, distinguishing individual vs system causes.	Flexible As a moral leader, she consistently tries to balance patient safety, staff dignity, and organisational learning. She treats ethical practice as something you build through reflection and learning, not as 'being perfect'.

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Appendix. *Continued*

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Moral leaders				
C11P **Male, age group 55–59** Despite good results, the employee's disregard for people, cooperation, and respect is seen as ethically unacceptable. The leader intervenes because high performance cannot justify behaviour that damages the internal working climate and violates core organisational values.	Trust Transparency Valuing people Humanity Keeping promises Fairness Valuing teamwork	Self-respect Happiness Inner harmony Trustworthy and humane organisational climate Long-term relational trust Human dignity	1. Strong ethical character. Courage, values-driven conduct. 2. Passion to do right. Acting against his values would 'feel bad'. 3. Moral proactivity. Ethics are kept continuously in the foreground through values discussions, storytelling, and role modelling. 4. Stakeholder inclusiveness. Decisions explicitly consider impacts on individuals, teams, and the wider organisation. 5. Obsession with fairness. He rejects outcomes achieved at others' expense and insists on consistency between stated values and actual behaviour. 6. Principled decision-making. He draws clear boundaries: values are non-negotiable, even if short-term performance suffers. 7. Integration of ethics and management wisdom. Ethics and effective management are fully integrated; protecting trust and humanity is treated as essential to organisational sustainability.	Inflexible and flexible Intervention is initially flexible (warnings, dialogue, explanation, opportunity to change behaviour) but becomes inflexible when value violations persist. Repeated disregard for humanity, teamwork, or respect results in termination of employment, even for high performers.
Amoral leaders				
C4N amoral intentional (Type 2) **Male, age group 45–49** When faced with disrespectful or confrontational behaviour in meetings, the leader chooses not to intervene, interpreting it as a cultural pattern rather than misconduct. He thinks ethically but acts pragmatically respecting others' values without enforcing his own. His ethical reasoning is primarily guided by instrumental values such as tolerance, pragmatism, and self-control. His terminal values, such as harmony and trust, function as long-term aspirations rather than criteria for moral judgment.	Tolerance Capability Pragmatism Respect Self-control Reliability	Trust and long-term legitimacy (building continuing trust within multicultural or complex environments) Organisational harmony (maintaining functional and culturally balanced working relationships)	Carroll's list is absent. 1. Non-intervention as a managerial strategy. Ethical passivity is intentional – the ethical evaluation depends on context, not universal principles. 2. Contextual sensitivity and observation before judgment. The leader consistently prefers to observe before acting, stating that 'you must first understand how the organisation operates before taking a position'. 3. Respect for cultural and social differences. He avoids judging or interfering in culturally embedded behaviour. He sees respect as understanding others' context rather than enforcing one's values. 4. Pragmatic and outcome-oriented reasoning. The leader repeatedly emphasises results and organisational effectiveness over moral or emotional considerations. 5. Value of patience and trust-building. He builds trust through listening, non-judgment, and giving others space to act.	No intervention A leader who is not overly unethical but intentionally separates ethics from managerial decision-making. Ethical reflection is seen as context-dependent or secondary to achieving organisational effectiveness, cultural sensitivity, or strategic outcomes.

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Appendix. *Continued*

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Amoral leaders				
C7P amoral unintentional (Type1) **Female, age group 50–54** The manager describes entering an organisation with a strongly autocratic culture and then facing a serious interpersonal-misconduct incident involving an employee who was sending threatening messages (secretly) to a colleague. She uses a strategic, negotiation-based approach, which she herself recognises as involving manipulation, to bring the truth to the surface.	Justice Obedience Honesty	Salvation Self-respect Sense of accomplishment World of beauty	Partial Carroll's habits: Strong ethical character (stays balanced, passion to do right). She is morally proactive and obsessed with fairness. She is principled in decision-making (explicit values, 'high road' commitment).	Inflexible Termination of the employment but with mutual understanding and keeping respect
C8N amoral intentional (Type 2) **Female, age group 55–59** The ethical dilemma centres on information as power and potential manipulation in an organisational setting with internal competition. The manager repeatedly finds herself in situations where she possesses more information than others expect yet fears that full disclosure would intensify conflict.	Politeness Conflict avoidance Friendliness	Open, fear-free ethical climate based on trust (people can speak freely without fear of consequences)	Partial Carroll's habits: Strong ethical self-reflection and intention ('I don't lie') but limited moral courage / proactivity in confronting distortion of truth.	No intervention The leader refrains from intervening and selectively withholds some truths to avoid stirring strong emotions that could lead to quarrels among people.
C9P amoral, intentional **Male, age group 35–39** The company experiences financial difficulties, jeopardising investors' funds. The leader intervenes to seek a solution, resulting in the necessity to terminate the employment of several employees.	Logic Responsibility Capability Obedience	Organisational survival and viability Functioning, sustainable team Trustworthy relationships with stakeholders	Partial Carroll's habits: 1. Proactive sense-making and problem-mapping before acting (turning 'unknown into known', diagnosing root causes). 2. Involving the affected party instead of deciding unilaterally (e.g. bringing the other side into the process rather than 'cutting off' immediately). 3. Developing people through coaching/mentoring routines (habitual investment in growth). 4. Pragmatic containment in crisis (withholding information briefly to prevent broader harm/chaos).	Inflexible Intervention occurs but can be indirect/managed. He intervenes actively through diagnosis, engagement, and decisions; yet, in crisis he may delay full transparency to control harm.

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Appendix. *Continued*

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Amoral leaders				
C10P amoral, unintentional (Type2) **Male, age group 65–69** An employee is discovered under the influence of alcohol at the workplace. He receives a reprimand but is not dismissed, even though he violates the code of conduct. The manager makes a rare exception because the employee is extremely good and hard to replace – later acknowledging it as a compromise that still 'pains' him due to the message it could send to others.	Justice Protectiveness Forgiveness Responsibility Loyalty Professionalism	Self-esteem World of beauty Equality Organisational sustainability / survival in crisis	Partial Carroll's habits: 1. Stakeholder inclusiveness and accessibility (any level employee can come, open door). 2. Moral proactivity (changed an unfair practice instantly, later made tough cost-cut decisions). 3. Problem-solving orientation (if no immediate solution, convenes and finds one). 4. Principled self-reflection after value–conflict decisions.	Flexible Reprimands, tough talks, giving a new chance
C12P amoral, intentional **Male, age group 40–44** 1. Cultural differences emerge within the company where the Russian owners show a low attitude toward their workforce, lacking respect and courtesy in their treatment of employees. These activities cause the leader to intervene by departing from the organisation. 2. A business partner decides to take a bribe to continue the business. The leader accepts his partner's unethical action and does not interfere, as avoiding conflict with a close business partner becomes more important than being honest. In this case, the leader aims to maintain harmony with his business partner and sits in his comfort zone yet later regrets consenting to the act of bribery.	Transparency Truth Honesty Being loving Sincerity	Self-respect Social recognition Equality Happiness World of beauty	Partial/inconsistent Carroll's habits: He can show moral identity protection (e.g. leaving an unethical culture), but under social/relational pressure he avoids conflict and permits misconduct rather than acts on the ethical concern.	Inflexible and selective His behaviour varies by context. In one setting, he protects his moral identity by withdrawing from an unethical organisational culture, but intervention does not occur in the focal bribery incident (he acknowledges it is unethical but allows it to preserve the relationship).

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Appendix. *Continued*

Leader type	Instrumental values	Terminal values	Habits (Carroll 2003)	Intervention occurs
Immoral leaders				
C3N **Male, age group 35–39** The leader developed a similar product as a business partner and sent it to the market with some guilty feelings but without any intervention to stop it. Although he recognises when a decision may conflict with moral principles, he chooses not to intervene – justifying it as 'an inevitable situation' and 'part of business reality'.	Ambition Need to be successful Self-discipline and persistence Adaptability (flexibility to justify actions depending on circumstances) Efficiency	Sense of accomplishment Business success and performance Excellence Autonomy and control (freedom to act without moral or emotional constraints)	Carroll's list is absent. Aware of ethical boundaries but willing to cross them when they conflict with business advantage. His reasoning displays moral disengagement, where ethics is perceived as relative, context-dependent, and often incompatible with competitiveness.	No intervention A leader whose primary orientation is toward self-interest and business gain, with ethical considerations playing a secondary role. He is dominated by rational calculation, competitiveness, and outcome-orientation.

Abbreviations: C – case, P – positive case (ends with intervention), N – negative case (ends with non-intervention)

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Eetiline juhtimine praktikas: kvalitatiivne uuring väärtustest, harjumustest ja sekkumistest Eesti tippjuhtide seas

Merle Ojasoo, Karin Reinhold, Marii Haak ja Amit Gupta

Tippjuhid on oma alluvatele nii liidrid kui ka eeskujud. Kuigi eetilise juhtimise kohta on avaldatud palju uuringuid, on seni vähem tähelepanu pööratud sellele, kuidas juhid tegelikult rakendavad eetilisi põhimõtteid oma igapäevases juhtimistöös. Samuti pakub huvi, kuidas tippjuhid ise eetilist käitumist mõtestavad ja milliste põhimõtete järgi nad keerulistes olukordades otsuseid teevad. Käesolev uurimus tugineb Carrolli moraalse juhtimise teooriale ning annab empiiriliselt põhjendatud ülevaate tippjuhtide igapäevasest eetilisest praktikast. Näitame, kuidas moraalse juhtimise eri tüübid avalduvad Eesti tippjuhtide igapäevases tegevuses.

Viisime läbi 12 poolstruktureeritud narratiivintervjuud tippjuhtidega, kes kirjeldasid eetilisi konflikte, millega nad on tööolukordades kokku puutunud. Tulemusi analüüsides vaatlesime, kuidas tippjuhtide väärtused ja harjumused mõjutavad eetilist sekkumist ning proaktiivset eetilist juhtimist ning millistel tingimustel saavad moraalsed juhid tegutseda mõjusa jõuna organisatsiooni eetilise kultuuri kujundamisel ja tugevdamisel. Tulemuste põhjal esitleme moraalse juhi mudeli, mis käsitleb väärtuste ja harjumuste rolli igapäevases ärikeskkonnas esineva ebaeetilise käitumise kontekstis. Töö laiem eesmärk on liikuda edasi üksnes küsitlusandmete korrelatsioonidest ning mõista sügavamalt, kuidas juhid eetikat praktikas töökohal rakendavad. Nii rikastab uurimus nii teooriat kui ka pakub praktilisi suuniseid juhtide arendamiseks ja organisatsiooni juhtimise tugevdamiseks. Lisaks toob uurimus esile, kuidas juhtide igapäevased käitumisviisid ja tõlgendused alluvate tegevuse kohta aitavad kujundada eetilist kliimat.

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