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Developing a transdisciplinary and adaptive framework to measure health and well-being for the workplace: the 12 competencies

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Abstract

Purpose – Measuring and tracking health and well-being is challenging for organizations due to a lack of education linking outcomes to interventions and a disciplinary siloing of approaches and tools. To address this, this paper aims to explore adaptive and transdisciplinary design-research methods to develop an evidence-based holistic framework to measure health and well-being.

Design/methodology/approach – An interdisciplinary working group of researchers from academia and industry used a combination of adaptive and transdisciplinary approaches to develop a holistic framework for measuring health and well-being. The six-stage, iterative process drew on multiple theoretical models, frameworks, leading survey tools, thematic literature review and known gaps and barriers to healthy workplaces to create broad "competence areas" supported by domains, dimensions and conceptual models.

Findings – Five interconnected levels known to impact health and well-being were identified, within which 12 competencies are nested. Each competency is broad enough to enable benchmarking. Detailed domains and dimensions help organizations understand what to measure and track for health and well-being and can adapt as research evolves. The framework addresses industry gaps by connecting leading and lagging indicators to allow for a more systemic approach to measuring health and well-being.

Originality/value – Transdisciplinary and adaptive frameworks can support academic research while enabling immediate industry application. By focusing on core indicators for well-being across different disciplines, this framework increases feasibility and understanding, enables multiple tools/methods to be used in implementation and can adapt as methods and knowledge change. This can support organizational goals such as social governance responsibilities to measure and report on health and well-being.

Keywords Transdisciplinary, Design-research, Health and well-being, Methods, Workplace, Thriving, Built environment

Paper type Research paper

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1. Introduction

A range of recent factors – from pandemic-era indoor air quality to workplace culture – has emphasized the need to measure health and well-being in the workplace (Stewart *et al.*, 2020; Guan and Frenkel, 2020). However, measurement remains difficult: systematic literature reviews are difficult to translate into practice, measurement tools use a range of theoretical approaches and neither usually cover all workplace factors (Hanc *et al.*, 2019; Jensen and van der Voordt, 2020; Surma *et al.*, 2021). Despite healthy building standards, organizations struggle to connect leading indicators to health and well-being outcomes [1], leading to inconsistent implementation and overreliance on lagging indicators, which heightens organizational risk (OECD, n.d.; Bruwer *et al.*, 2022). These challenges underscore the need for a holistic, adaptable framework that integrates transdisciplinary factors into strategy, learning and practice.

To address this challenge, a working group of industry researchers, academics and survey providers with expertise in health and well-being was convened in 2021, ranging from public health to cognitive science to environmental engineers. The working group blended real-world implementation with subject matter expertise for actionable outcomes (Burr *et al.*, 2019). This paper details their adaptive and transdisciplinary approach to creating a five-level holistic framework for organizations to measure health and well-being, concluding with critical reflection on these methods, implementation implications and next steps.

2. Literature review

Most research on the physical workplace and health and well-being has followed a *pathogenic*, or risks to health approach (Bergefurt *et al.*, 2022). The *salutogenic approach* views health as a continuum that is influenced by competing pathogenic stressors and salutogenic resources that influence health and well-being outcomes (Roskams *et al.*, 2021; Antonovsky, 1987). Influential frameworks at the intersection of a salutogenic approach and the physical work environment have linked health-promoting environments (e.g. active design and access to nature) with positive outcomes (Adams and White, 2016; Rashid and Zimring, 2008; Roskams and Haynes, 2020; Adamson and Thatcher, 2019). The diversity of approaches and theories support the need for a transdisciplinary framework to more effectively understand and measure how the built environment influences health and well-being (Jensen and van der Voordt, 2020).

The salutogenic approach also highlights how policies, organizational culture and psychosocial working conditions affect employees' well-being, arising from two main drivers. The first driver comes from the push for wellness programs as part of talent strategies or organizational values (Meister, 2021; Scheil-Adlung and Sandner, 2010), despite mixed evidence on their effectiveness (Jones *et al.*, 2019; Goetzel, 2020; Reif *et al.*, 2020). Importantly, organizational investments in well-being often cite outcomes like reduced absenteeism or higher real estate values, blurring health and performance metrics and outcomes (Dodge Data and Analytics, 2016; Heymann *et al.*, 2009). This reflects the financial drivers of organizational decisions (e.g. productivity) and the difficulty of measuring productivity for knowledge workers, leading to reliance on proxy health measures instead (Newsham *et al.*, 2019; Veitch, 2018).

The second driver arose from the need to explain workplace outcomes like burnout or engagement (Bakker and Demerouti, 2007; Awa *et al.*, 2010; Gabriel and Aguinis, 2022), prompting the development of models such as the job–demand resources (JD-R) and job–demand control models (Schaufeli and Taris, 2014; Karasek, 1979; Bakker *et al.*, 2023). These models describe the workplace as a balance between *demands* and *resources* to predict outcomes like burnout, intent to stay and engagement (Schaufeli *et al.*, 2002; Kaiser *et al.*, 2020).

Such frameworks now include salutogenic factors like emotion, social networks, psychosocial working conditions and personal resources to explain individual differences in health and performance outcomes (Burr *et al.*, 2019; Xanthopoulou *et al.*, 2007; Mazzetti *et al.*, 2016; Roskams *et al.*, 2021). Interest is also growing in holistic salutogenic approaches such as the Flourishing and Positive emotion, Engagement, Relationships, Meaning and Accomplishment (PERMA) models, which focus on what workplace factors are needed to enable thriving beyond productivity or absenteeism (Donaldson *et al.*, 2022; Keyes, 2007; Lee *et al.*, 2020; Spreitzer *et al.*, 2005; British Council for Offices, 2018b). Finally, rising diversity, equity and inclusion (DEI), social sustainability for environmental, social and governance (ESG), or corporate social responsibility (CSR) reporting pressures have increased interest in tracking these outcomes (Glazerman, 2019; Beyoud and Ramonas, 2021; UN Global Compact, n.d.).

Although this research indicates organizational benefits from investing in employee health and well-being, there is no established consensus on how to measure *across* disciplines. Metrics and methods often remain siloed – built environment studies focus on physical space, while organizational management sciences tend to ignore the built environment (Kumar and Sia, 2012; Surma *et al.*, 2021). Promising holistic approaches – such as those from lifestyle medicine (British Society of Lifestyle Medicine, 2025) – are rarely integrated into workplace strategies, limiting their impact. This has both research and implementation implications.

A shortage of holistic approaches limits the understanding of the complex factors and interactions that support thriving work environments, especially in hybrid work contexts (Hanc *et al.*, 2019; Wierzbicka *et al.*, 2018). These include social and symbolic factors that influence perceptions of the built environment and individual and collective well-being (Morgan *et al.*, 2022; Lach *et al.*, 2022), as well as workplaces that include "third-spaces" and city-level amenities (Surma *et al.*, 2021). This complexity leads organizations to focus on lagging indicators or outcomes that do not help them understand why employees got sick or injured in the first place (US Department of Labor, n.d.; Bruwer *et al.*, 2022), leading to a lack of confidence on their return on investment (Loder *et al.*, 2021; Baid *et al.*, 2021). While promising holistic frameworks exist (Wood and Johnson, 2016; Engineer *et al.*, 2021; Weziak-Bialowolska *et al.*, 2021; Burton, 2010; National Institute for Occupational Health and Safety, 2020; Confederation of British Industry, 2021; Allen *et al.*, 2017; British Council for Offices, 2018a), they often omit built environment, community or reporting factors that can impact organizational performance and thriving, or they lack sufficient detail on theoretical frameworks, which hinders the creation of comprehensive measurement tools. Thus, a comprehensive framework is needed to understand and measure leading and lagging indicators across multiple workplace domains.

3. Methods

3.1 Stakeholders and approaches

The framework's development required integrating diverse theories and disciplines into accessible language for non-experts and industry adopters. Eleven researchers drew on their research, industry and cultural experience and backgrounds (Canada, Japan, India, South Korea, South Africa, Brazil, Italy, Belgium, Australia and the USA), to assess and select approaches that facilitated the incorporation of diverse theories and data. Approaches had to be previously used in complex research-implementation projects by at least one of the authors and be feasible within time and budget constraints. To integrate multiple disciplines, types of data, and theories, a combination of holistic, transdisciplinary, and adaptive approaches was selected.

A *holistic approach* ensured that multiple disciplines and tools were evaluated during the literature review, including from fields not traditionally associated with health and well-being, such as social sustainability. *Transdisciplinary approaches* have been used in design-research fields (Jensen and van der Voordt, 2020) to address socio-ecological "wicked problems" (Brown *et al.*, 2010), different disciplinary understandings of the same term, and the traditional absence of stakeholder input and engagement (Holzer *et al.*, 2019; Rosenfield, 1992). *Adaptive approaches* - used in urban environmental initiatives - use design-thinking and a "safe to fail" attitude blending existing evidence with multi-stakeholder feedback, enabling decision-making despite the presence of unknowns and risks (Grose, 2014; Ahern *et al.*, 2014; Loder, 2020). The adaptive approach allowed for the development of stable yet flexible categories that could adapt as new evidence emerges – essential for complex outcomes like health and well-being, thriving, and resilience.

3.2 Development process

The six-stage iterative process (see Figure 1:12 *Competencies development*) began with the socio-ecological model of public health, industry experience, subject matter expertise and previously identified gaps and barriers to healthy buildings and organizational practices (Loder *et al.*, 2021; McLeroy *et al.*, 1988) to identify five interconnected levels known to impact health and well-being: individual, organizational, environmental, community and global. The *Individual* level is where most human data is collected (e.g. surveys). *Organizational* level data impacts individual health, well-being and performance outcomes amid growing interest in DEI and psychosocial working conditions (Beyoud and Ramonas, 2021). *Environmental* data is a well-established tool to minimize risk from indoor environmental conditions. The *Community* level is gaining in popularity with social impact and resilience reporting (Platform on Sustainable Finance, 2022; Social Equity Assessment Method, 2022). Finally, *Global* ESG, CSR, and sustainability reporting are driving interest in measuring and tracking health and well-being (Bruzzone *et al.*, 2021; Sisson, 2022).

Second, the working group started with existing interdisciplinary frameworks (e.g. the WELL Building Standard, Fitwel), workplace survey tools and conceptual models (e.g. JD-R) and systematic literature reviews for known factors influencing health and well-being in the workplace. Guided by a transdisciplinary approach – emphasizing participatory research, real-world problems and the integration of disciplinary paradigms (Jensen and van der Voordt, 2020; Brown *et al.*, 2010), the goal was to agree on key "competence areas" or categories stable enough for benchmarking, were evidenced-based, and which spanned across the five data levels. Key questions included: "what is true across these fields?"; "what do existing tools and theories have in common?"; and "what are cross-disciplinary gaps in evidence?" This resulted in 12 core "competencies" across five different levels of impact that balanced comprehensiveness with usability.

Third, the competency areas were reviewed to identify key domains that would need to be measured, asking "what is the main definition or understanding of this competency?" and "what are known constructs/measurements that help explain outcomes associated with this competency?" These broad categories and domains can be used as an initial guidepost for organizations. Fourth, known dimensions of those domains were compiled to further facilitate measurement. Finally, known and emerging theoretical models were again reviewed to compare against competencies, domains and dimensions, focusing particularly on cross-competency relationships and drivers. This allowed for relationships in the framework to be informed by multiple theoretical models. Final domains included in the framework balance well-established, emerging, and non-western evidence. Sixth, conceptual models were developed to show the relationships *between* the competencies. The process

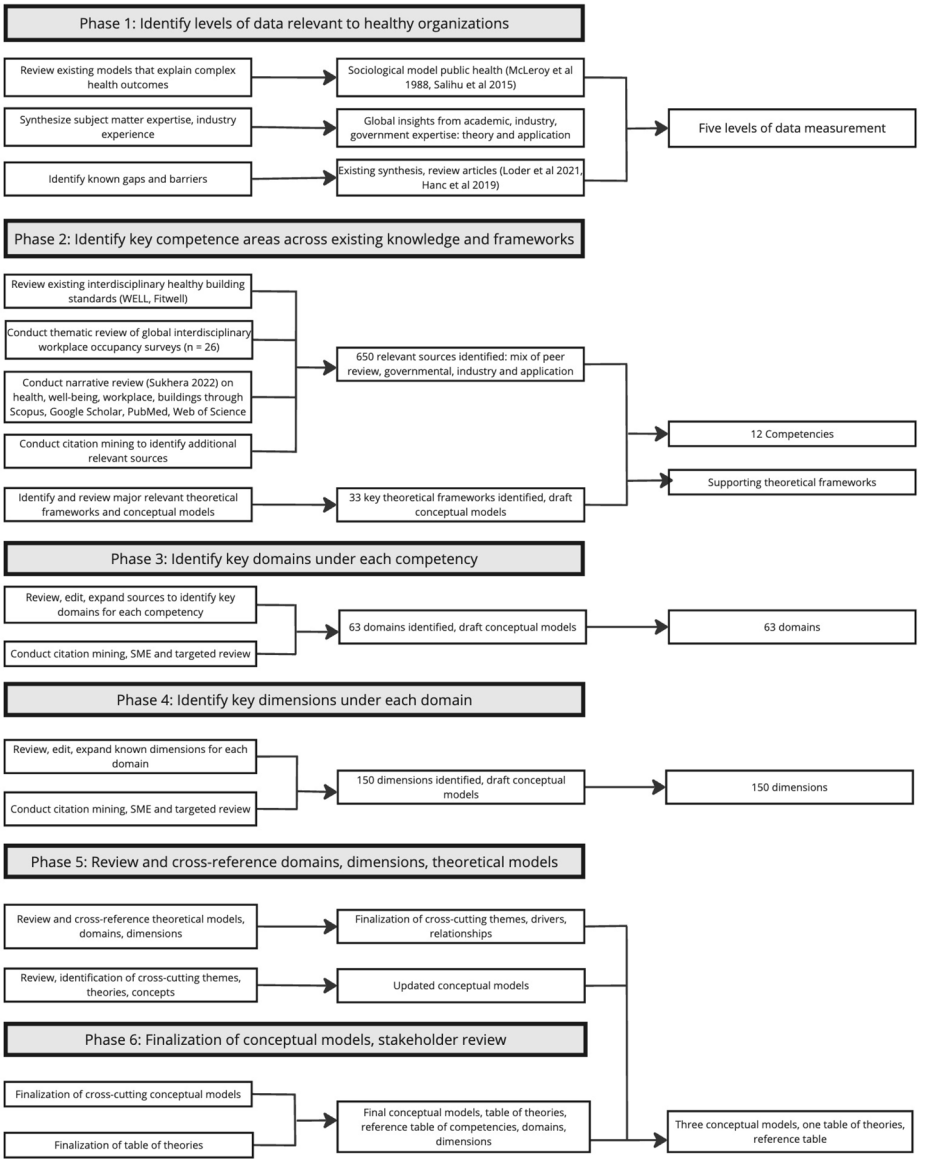

Figure 1. 12 competencies development
Source: Authors' own

was iterative and underwent multiple rounds of internal and external stakeholder revisions and review.

4. Results: the 12 competencies

The *12 competencies for measuring health and well-being for the workplace* framework offers a roadmap for organizations to identify, measure and track health and well-being. Figure 2:12 *Competencies: levels of data*, gives an overview of the 12 competencies spread across the five levels of impact. Table 1: *Competencies and domains overview* introduces the 63 domains used to support these 12 competencies.

A key characteristic of the framework is the interconnection *between* competencies and domains across the five levels. For example, organizational *and* built environment factors influence health and well-being, and organizations should consider cumulative impacts across all levels of measurement.

Conceptual models were developed to show how the competencies interact and highlight leading and lagging factors. Figure 3: *Conceptual model of the 12 competencies*, illustrates these relationships. The factors in bold reflect established workplace theories (e.g. the JD-R model) that explain the health-performance-thriving relationship. Individual health and well-being factors – e.g. health behaviors – influence individual states of well-being (physical, emotional and mental energy). Individual well-being in turn influences performance energy – how much energy an individual brings to their work – as well as their overall thriving. Organizational factors – e.g. perceived work climate – influence motivational states (engagement, trust and commitment). These motivational states in turn influence performance motivation – how motivated an individual is to do their work, as well as their overall thriving. Individual energy and motivation influence team dynamics. Finally, individual and team performance energy (from health factors) and performance motivation (from organizational factors) impact employee effectiveness. Importantly, health, well-

Figure 2. Levels of data and the 12 competencies
Source: Authors' own

Table 1. Competencies and domains overview

Scale	12 competencies	Domains to measure
Individual	Health and well-being Thriving	Physical and mental health, mental health resilience, health behaviors Energy, contentment, work–life balance, recharge and vigor, values and meaning, perceived organizational support whole person
	Performance energy and performance motivation	Employee thriving, environment of care and support, work structure and relationships, career development, engagement
	Employee effectiveness	Performance and productivity, work engagement, perceived focus, attention and performance, job satisfaction, mindfulness
Organizational	Organizational performance	Organizational, leadership effectiveness, aggregated employee effectiveness, financial well-being, recognition/awards
	Organizational culture and engagement	Organizational structure, strategy and execution, relationships and communication, talent management, organizational engagement
	Risk management	Hazard prevention and control, emergency preparedness, asset and organizational resilience
	Environment of care and support	Workplace and leadership support of well-being; diversity, equity and inclusion; actual and perceived support of well-being; collective well-being
Building	Ambient environmental quality and design	Design and measurements on indoor environmental quality. Design, layout, aesthetics, injury prevention
	Occupant and market perceptions of indoor environmental quality and design	Market perceptions, perceived satisfaction indoor environmental quality. Perceived health and safety, access, functionality, multi-sensory experience, aesthetics
Community	Community and stakeholder engagement	Community engagement policies and initiatives, shared/collective values and practices, location and amenities, equity and historical acknowledgement, responsible labor practices, sense of place
Global	Sustainability and ESG reporting and strategy	Green building certifications, climate-related disclosure frameworks, rules and regulations, standards and benchmarks, international principles, impact measurement systems, ratings and indices

Source(s): Authors' own

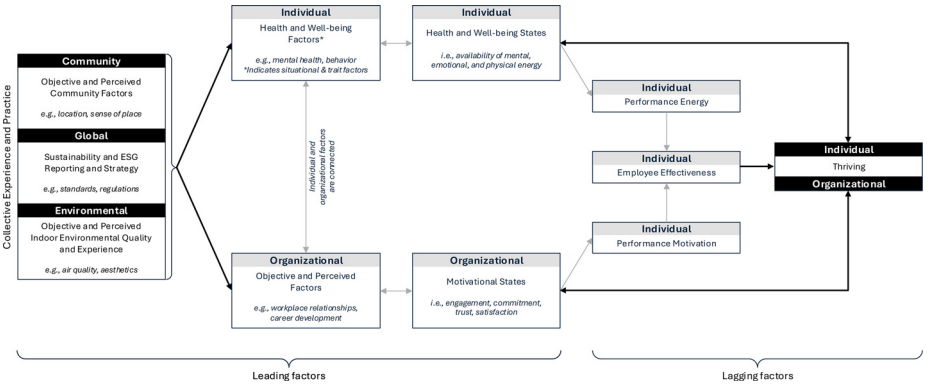

Figure 3. Conceptual model of the 12 competencies
Source: Authors' own

being, motivation, energy and employee effectiveness are dynamic states requiring continuous measurement.

To make the model more holistic and transdisciplinary, community (e.g. location), indoor environmental [e.g. indoor environmental quality (IEQ)] and global environmental (e.g. regulations) were added, with arrows showing their influence on both individual and organizational factors. Collective experiences and practice were added to challenge the western individualist viewpoint. Figure 3 unites these factors to explain health and workplace outcomes, with thriving as the overall goal of the framework for both health and workplace outcomes. Organizations can use Figure 3 to understand the drivers (leading factors) influencing outcomes (lagging factors), and Figure 4 for details on what to measure in each category.

The following sections give an overview of the framework, the domains for each competency and key relationships, emerging factors, and definitions. For the complete list of dimensions, supplementary evidence and links to theoretical models, see Supplementary materials 1, 2 and 3, respectively.

4.1 Individual level

The Individual level of measurement primarily uses self-reported, subjective individual data from surveys, although physiological data (e.g. wearables) are increasingly available (British Council for Offices, 2016). Surveys are key to understanding how policy and place impact employee health and well-being as perceptions vary across job roles, cultures and users versus decision makers (Health Enhancement Research, O., American College of, O., Environmental, M. and Care Continuum, A., 2013; Zallio and Clarkson, 2021). However, surveys are often absent from performance testing or workplace wellness policy approaches (Graham *et al.*, 2021; Loftness *et al.*, 2009).

4.1.1 Health and well-being. Health and well-being are both an overall goal of the framework and directly measurable as a competency. The framework blends the salutogenic WHO definition of health (World Health Organization, 1985) as physical, emotional and social well-being with the concept of allostasis, or health as a balancing of energy (McEwen and Stellar, 1993). Well-being encompasses health and larger subjective individual assessments of satisfaction with the domains of work, life, and family, and both immediate

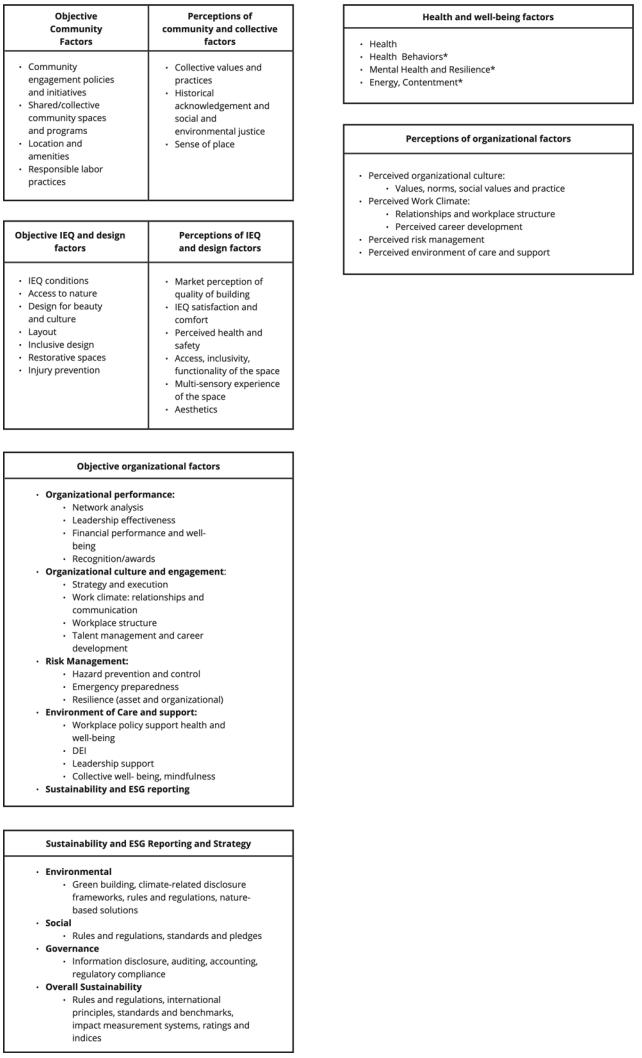

Figure 4. Transdisciplinary influencing factors on health and well-being in the workplace
Source: Authors' own

pleasure (hedonic) and self-growth and actualization (eudaimonic) factors (Huppert and So, 2013; Diener, 1984; OECD, 2013; Ryan and Deci, 2001). The domains and dimensions covered under *health and well-being* include specific health and well-being measures (e.g. socioeconomic indicators), health behaviors (e.g. healthy eating) and mental health and resilience (e.g. burnout). Dimensions clarify what to measure for each domain, addressing both traits (e.g. personal resources) and situational factors (e.g. office layout). Though the framework includes broader health and well-being influences (e.g. health behaviors at home), it emphasizes factors organizations can directly impact, such as stress (see Table 1).

This is important because well-being and productivity have a complex relationship and are often mixed in workplace studies (see Figure 3) (Hanc *et al.*, 2019; Nielsen *et al.*, 2017). The framework highlights how individual resilience supports overall resilience, and incorporates emerging evidence on mindfulness, psychological safety, belongingness and connection for mental health (Office of The US Surgeon General, 2022; Burton, 2010).

4.1.2 Thriving. *Thriving* at work is increasingly linked to performance and health outcomes (Liu *et al.*, 2021; Spreitzer *et al.*, 2012). This domain focuses on managing energy which impacts contentment, measured through work life balance/role strain, recharge and vigor, alignment with meaning and values, and perceived organizational support for the whole person. Thriving is a shared state between individuals and organizations achieved through balancing the whole person and the organization and serves as an overall goal of the framework (Figure 3). Managing daily energy is emerging as a key indicator of well-being and sustained performance (Schaufeli and Taris, 2014; Li *et al.*, 2020), both of which are required for thriving.

4.1.3 Performance energy and performance motivation. *Performance energy and performance motivation* are key drivers for employee effectiveness (Figure 3). While organizational factors are well-known influences on performance motivation (e.g. perceived recognition), the transdisciplinary approach shows the importance of individual and collective experiences of the built environment (e.g. air quality), community (e.g. responsible labor practices) and global (e.g. green building) factors on employee effectiveness as well. This is a key insight from the framework, as it helps explain the health-performance relationship and the complexity of measuring performance. Domains include environment of care and support (e.g. perceived organizational support), work climate and workplace structure (e.g. manager quality and reporting structure), career development and organizational engagement (e.g. aggregated individual survey responses). The domains and dimensions highlight the importance and interrelatedness of both workplace *characteristics* that influence social capital as well as workplace *conditions* that influence job satisfaction and intent to stay. Perceived organizational support is emerging as crucial and connected to multiple workplace outcomes, such as retention, DEI and social well-being (De Smet *et al.*, 2022; Burr *et al.*, 2019).

4.1.4 Employee effectiveness. The framework shows that employee effectiveness is a shifting state influenced by the balance between job resources and demands, with work engagement mediating between job resources and turnover intention. Work engagement is characterized by a positive work-related state of mind, vigor, and absorption and is a trait, state and behavior (Meijer *et al.*, 2009; Butler and Kern, 2016). Because work engagement is influenced by traits (e.g. personal resources), organizational factors (e.g. poor working conditions) and physical work environments (e.g. lighting), the framework shows that single-item measures of task accomplishment or focus are inadequate to fully capture the range of drivers influencing employee effectiveness. The framework points to other measurement tools, such as the decision-making performance index (Carrier and Harvard, 2020) and mindfulness, as promising to better capture the range of tasks required of knowledge workers.

4.2 Organizational level

The organizational level asks projects to gather data across four competencies – *Organizational performance*, *Organizational culture and engagement*, *Risk management* and *Environment of care and support* – to evaluate overall organizational effectiveness. While not always analyzed in conjunction with individual-level data, evidence is emerging that workplace factors such as leadership effectiveness and organizational strategy and

execution play a crucial role in employee health, well-being and performance (Bakotić, 2016; Stander *et al.*, 2015; Hutchins and Storm, 2019). Collecting this organizational-level data in conjunction with aggregated individual perceptions also helps to explain the linkages found between investment in health and well-being and organizational financial performance and recognition.

4.2.1 Organizational performance. *Organizational performance* can be measured in many ways. The domains included under this competency include both well-known measures such as "Leadership Effectiveness" and "Financial Performance," as well as newer approaches such as "Organizational Network Analysis," and all have been linked to employee well-being and performance (Nielsen *et al.*, 2017). The framework connects leadership and investment in health with improved financial performance, showing that organizational performance is impacted by the investment in health and well-being, leading to improved productivity and job satisfaction and reduced turnover. Finally, aggregated individual responses are a proxy for collective experience but do not necessarily reflect social practice or well-being.

4.2.2 Organizational culture and engagement. The organizational factors found under *Organizational culture and engagement* are key drivers in the psychosocial working conditions of an organization and its social capital, all of which influence individual and collective employee health, well-being and performance (Karasek *et al.*, 1988; Lev and Radhakrishnan, 2025). Domains range from "Work Climate" to "Organizational Strategy and Execution" to "Organizational Engagement." Engagement here refers to connection to the organization versus work-engagement. Social capital is influenced by social practice (see Supplementary material 3) and may help to explain discrepancies between formal policies and collective outcomes such as perceived belongingness.

4.2.3 Risk management. Risk management has shifted recently to a broader definition of risk and resilience that includes IEQ and social and environmental risk factors, partly due to COVID-19 (Seville *et al.*, 2015; Kaplan and Mikes, 2012; Allen and Marr, 2020). The domains under *Risk management* reflect this expansion, ranging from traditional "Hazard Prevention and Control" to "Asset and Organizational Resilience." The pandemic also showed that organizations that invested in the health of their employees benefitted financially with better resilience (Sadikin *et al.*, 2021).

4.2.4 Environment of care and support. The *Environment of care and support* competency includes objective factors that influence individual and collective perceptions of an environment of care and support, such as DEI policies and well-being programs. While aggregated individual survey perceptions on these factors are a useful barometer of the effectiveness of these programs, they do not fully capture collective experiences of well-being. To address this gap, collective mindfulness and well-being is included as a dimension, reflecting emerging research linking collective experience and social practice with workplace culture and well-being (Morgan *et al.*, 2022).

4.3 Environment level

The domains and dimensions under the (built) environment level blend objective and subjective factors related to IEQ, building fit out, and employee experience. The domains and dimensions under *Ambient environmental quality and design* reflect current IEQ standards and established evidence on designed aspects of the built environment known to impact health and well-being. The domains and dimensions under *Occupant and market perceptions of indoor environmental quality and design* include market and occupant perceptions of the building and work environment respectively, and go beyond comfort and satisfaction to more holistically reflect occupant experience and current research.

4.3.1 Ambient indoor environmental quality and design. The domains and dimensions under IEQ and design reflect industry standards for IEQ like air quality and acoustics while also highlighting that current acceptable IEQ standards are based on both objective measurements as well as occupant perceptions, and thus should adapt with new evidence. The framework also includes other built environment factors linked to health and well-being such as access to nature, layout, and restorative spaces.

4.3.2 Occupant and market perceptions on indoor environmental quality and design. Gathering data on employee perceptions and experience of their physical work environment is an essential part of a holistic approach to measuring health and well-being for an organization. The framework highlights the importance and interrelatedness of occupant and market perceptions of not only the health and safety of the workplace, but also the design, layout, and accessibility of the space. The framework reflects current research indicating that occupant experiences need to be considered on a wider spectrum than traditional satisfaction and comfort. Finally, the framework includes evidence from non-traditional workplace fields that have been shown to impact occupant experience: sense of place, history and belonging; non-western approaches to multi-sensory experiences and time; and collective experience.

4.4 Community level

The community level recommends that organizations gather data that measures their connection with, and impact on, the health and well-being of their community. The domain and dimensions under *Community and stakeholder engagement* include objective data, such as "Community Engagement Policies and Initiatives," and objective and subjective data, such as "Historical Acknowledgement" and "Sense of Place." Many of the data points can help with reporting on social impact and align with green and healthy building practices.

4.4.1 Community and stakeholder engagement. The framework highlights the link between employee and community health and well-being, showing that socially driven organizational investments benefit both (Burton, 2010). Examples include repurposing office space for community use and aligning office locations with sustainability goals. The framework also includes social justice, modern slavery and collective practices that support collective health and well-being as well as community sustainability, economic well-being, and health (Posselt *et al.*, 2022).

4.5 Global level

The global level recognizes that organizations who are interested in measuring health and well-being are often already making disclosures for ESG reporting and frameworks and seeks to streamline reporting. The framework reflects that organizations are under pressure to report both their own risks as well as how their activities impact people and planet (UNRISD, 2022), and focuses on aligning with current trends and pressures around this reporting.

4.5.1 Sustainability and environmental, social and governance reporting and strategy. The domains in this competency cover ESG, CSR, and overall sustainability, with direct or indirect links to health. The dimensions range from collecting data on building-level activities (e.g. green building certifications) to market drivers (e.g. impact investing) to capital access and pricing implications of sustainability and related health, disclosures and investments (Cohen, 2021). The framework also includes a multi-capital approach, which explicitly includes human and social capital, encouraging synergies between building, social, environmental, and community-scale activities (e.g. biophilic design and local sustainability initiatives).

5. Discussion, limitations and implications

The 12 competencies explored using a holistic, adaptive and transdisciplinary approach to create a framework to help organizations and researchers measure and track health and well-being. The transdisciplinary approach combines well-established and emerging dimensions from diverse fields, educating organizations about leading versus lagging indicators and explaining the relationship between health and performance. It also provides evidenced-based flexibility for researchers to focus on the interaction *between* factors, a key gap in the literature, enabling the alignment of multiple paradigms, theories, and disciplines in a holistic framework. While the process was designed to limit disciplinary biases, it is impossible to cover all fields and evidence, and the framework is expected to evolve with practice and new evidence.

The framework's adaptive approach enables its integration into existing reporting frameworks through the competencies' 12 broad categories, while specific dimensions can be adapted as research evolves. The focus on core components and relationships versus specific scales or theories also allows for multiple data collection tools. For example, organizations could evaluate where they already collect data (e.g. building certifications) and where they do not collect data, (e.g. surveys), to create a scaled plan to start filling those data gaps. While this phase of development did not systematically review data collection tools, the framework's alignment with existing organizational data collection was informally piloted with 12 industry organizations and survey providers. Initial results are promising, finding that organizations using certifications like WELL, an occupant survey, and sustainability reporting covered roughly 80% of the framework's topics. Certifications like WELL and LEED aligned strongly with building and organizational-level competencies (e.g. IEQ or health policies), and occupant surveys aligned well with individual-level data, particularly for surveys that included organizational-level drivers for individual health, performance, and well-being outcomes (such as the JD-R or PERMA models). However, gaps remain in collecting data on community and social impact and connecting these to global environmental factors, as well as linking strategy and financial performance with health and well-being. Nevertheless, as many organizations are unsure how to start, or underestimate how building or health data can be used in their reporting, this first step can be helpful as a roadmap for progress. Though beyond the scope of this paper, future work includes creating a roadmap for implementation for organizations like the 2018 British Council for Offices Wellness Matters report (British Council for Offices, 2018b).

The feasibility of the framework will depend on the identification, assessment, and piloting of data collection tools. The difficulty of pulling together different data streams, often managed by different departments or even organizations, is not insignificant and may be a barrier to implementation. As a transdisciplinary framework, updating it will require both practitioner feedback and regular incorporation from more traditional knowledge sources such as discipline-specific systematic literature reviews. Ensuring that the data collected is robust and evidenced-based will depend on transparency around the data collection tools used and a shift from reporting only on effort (policies, programs) to effect (actual measured outcomes). For organizations more comfortable with sustainability reporting, collecting human data will require the engagement of different stakeholders. Future work includes further exploring alignment across competencies, domains and dimensions. For example, a commitment to biodiversity in an organization's sustainability activities could be linked to on-site biophilic design, which is known to have positive impacts on human health, well-being, and performance. Seeing the connection between these levels of data can improve efficiency and alignment.

Finally, the framework can inform internal organizational operations and ESG reporting, though more work is needed to translate it into the kind of quantifiable data required by current reporting frameworks. Some of this is due to the rapidly evolving nature of ESG and ambiguity around what exactly should be included under the "S" in ESG (Sisson, 2021). Additional considerations include further alignment between the framework with current definitions of human, social, and brain capital (Robinson, 2022; Social and Human Capital Coalition, 2019), understanding different international regulatory and legal implications of reporting an organization's health and well-being activities as material (American National Standards Institute, 2021, 2016; European Union, 2022), and responding to current pressures from sustainability accounting to report on impact versus just effort (Liu, 2021; UNRISD, 2022). Finding or establishing effective tools to measure social and community impact will be especially important, given the convergence of social, environmental, and economic pressures on local communities (Posselt *et al.*, 2022; UN Global Compact, n.d.).

6. Conclusions

The 12 competencies provide a flexible, benchmarkable framework to guide organizations in understanding and measuring health and well-being. The framework fills current gaps by identifying five levels of data that organizations should consider collecting, bridging many of the current silos around data collection (e.g. building *or* psychosocial workplace factors). The framework includes both leading and lagging indicators and well-established theoretical models that can help explain influencing factors on health and well-being in the workplace. This can help organizations make better decisions and identify problems before they arise, instead of reacting to existing issues. The framework also aims to demystify the health-performance relationship, a key challenge for industry and organizations. The transdisciplinary approach used to create the framework allows for the inclusion of well-established concepts from fields not typically embraced by workplace studies. This reflects the increasing scope of responsibility being placed on organizations for their community and global environmental impact. Finally, the framework includes emerging measurement topics focused on equity, such as historical acknowledgment, psychological safety, and wage and labor equity that have been linked to health and well-being.

Next steps include creating a roadmap for implementation and further piloting the framework to identify opportunities and challenges in operationalization, a critical element in success when bridging research to practice. This research–practice–research feedback loop is an essential part of the process and will be crucial for ensuring global applicability and the evolution of the framework as new domains and dimensions are developed.

Note

1. Based on client experience with a leading healthy building standard.

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Supplementary material

The supplementary material for this article can be found online.

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