Cultural Tensions and Values-Action Gaps in Sustainability-Oriented Innovation: An Ethnographic Inquiry*

HENNING BREUER *,‡ and KIRIL IVANOV †,§

* Media University of Applied Sciences & UXBerlin
Ackerstraße 76, 13355 Berlin, Germany

† Centre for Sustainability Management
Leuphana University of Lueneburg
Universitatsallee 1, 21335 Luneburg, Germany

‡h.breuer@media-university.de
§k.ivanov@media-university.de

Abstract

European companies have widely adopted sustainability goals as part of their strategy and normative guidelines but struggle to facilitate organisation-wide cultural transformation towards more sustainable development. Despite the rapid development of theoretical concepts and methods for values-based and sustainability-oriented innovation, we still do not understand the discrepancies between sustainability-oriented values and strategies on the one hand and their insufficient translation into innovation-related practices on the other. In order to advance our understanding of the cultural tensions and values-action gaps that constrain sustainability-oriented innovation at the organisational level and to derive corresponding measures for building values-based innovation cultures, we conducted ethnographic research at a leading technical inspection company in Germany. The resulting insights reveal tensions and gaps between espoused values of corporate sustainability and everyday practices with regard to innovation culture, vertical and horizontal integration, external interfaces, practices and methods and personal alignment. Their discussion enriches our theoretical understanding of values-based and sustainable innovation practices and identifies areas and entry points for managerial intervention to promote a sustainable innovation culture.

Keywords: Sustainability-oriented innovation; organisational culture; innovation practices; tensions; values-action gaps; rapid ethnography.

*Pre-publication author copy; paper to be published as: Breuer, H. & Ivanov, K. (2024). Cultural Tensions And Values-Action Gaps In Sustainability-Oriented Innovation: An Ethnographic Inquiry. International Journal of Innovation Management (ijim), Vol. 28, No. 01n02, 2450005 (2024), pages 1-31, https://doi.org/10.1142/S1363919624500051

Cultural tensions and values-action gaps in sustainability-oriented innovation

Sustainable development as the integrated pursuit of economic, social and environmental goals and values has become a global strategic imperative widely recognised by both political and business actors. There is also an emerging consensus that there is an urgent need to move from superficial activities to enhance corporate communication with 'green' credentials to rigorous compliance and anticipation of increasingly stringent regulation. For example, in business strategies, operations, products and stakeholder relationships to achieve a net zero carbon economy by 2050. At the same time, companies are prioritising economic, social and environmental goals not just because of external regulations or incentives, but as drivers rather than constraints of their innovation efforts. Many companies have explicitly aligned their strategies with stakeholder and corporate sustainability values (Breuer et al. 2022a). However, few have established an organisational culture with inherent practices to manage innovation accordingly (Bocken & Geradts, 2020; Guldmann & Huulgaard, 2020). Despite increased attention to values, their potential to generate innovation management challenges and translate into effective practices is not yet well understood (Breuer et al. 2022a).

Sustainability-oriented innovation (SOI) involves 'making intentional changes to an organisation's philosophy and values, as well as to its products, processes or practices to serve the specific purpose of creating and realising social and environmental value in addition to economic returns' (Adams et al., 2016, 180). Although companies are defining sustainability-oriented corporate vision, mission and purpose statements and integrating stakeholder values into their SOI strategies, recognising the importance of values for managing innovation is very different from effectively managing values for innovation on a day-to-day basis (Breuer et al. 2022a). The challenge is not only to set ambitious goals and formulate sophisticated purpose, mission and vision statements, but also to put them into practice and create a values-based innovation (VBI) culture. Given the significant impact of values on innovation processes and outcomes, the relationship between values and SOI practice remains a surprisingly underdeveloped area of research (Breuer et al. 2022a). This places the exploration of VBI cultures as antecedents of SOI and mediators of SOI-related tensions at the top of the sustainability transition research agenda (Wannags & Gold, 2020).

In this paper, we explore how to create values-based innovation cultures that reliably create a positive environmental, social and economic business impact. To understand the discrepancies between sustainability-oriented strategies and everyday practices, we explore the following question: How do cultural tensions and values-action gaps impede the translation of sustainability-oriented innovation strategies into everyday practice?

We conducted ethnographic research in a large inspection company that has always operated according to its values of protecting human life and has recently articulated a strong commitment to SOI. However, the company was struggling to harness its potential to innovate and respond to the greatest values-based challenge of our time: the sustainability challenge. Despite its best intentions, clear strategy, exemplary track record and committed employees, it was still struggling to become a fully sustainable organisation. Our empirical insights reveal gaps between the espoused values of corporate sustainability and everyday practice in terms of innovation culture, vertical and horizontal integration, external interfaces, practices and methods and personal alignment. These insights are relevant both to the many other technology companies in their ongoing transition to sustainability and indeed to any attempt to establish a new set of core values for an organisational culture. Their discussion contributes to research on values-based innovation and sustainability-oriented cultures, improves our understanding of values-based and SOI practices and advances the VBI management framework. It also contributes to the discourse on tensions constraining the sustainability transition by differentiating emerging categories of tensions and values-action gaps within the management of values for SOI. In addition to these theoretical implications, the case offers practitioner implications by highlighting six essential task areas and illustrating entry points for managerial intervention within them and societal implications by supporting organisations in their cultural transformation towards sustainability.

Theoretical background

In this section, we review theoretical frameworks and empirical studies that show how the systematic management of values can contribute to cultural development and SOI, or how the disregard of stakeholder values can create tensions and values-action gaps that compromise SOI. Practices and values are seen as two fundamental components of organisational cultures (Bourdieu, 1977; Schein, 2010). The different types of cultures they generate can act as antecedents of sustainable transformation (Quinn & Dalton, 2009; Linnenluecke & Griffiths, 2010) and SOI performance (Globocnik et al., 2020; Islam et al., 2019). Effective implementation of SOI strategies requires organisations to develop an enabling VBI culture (e.g., Breuer & Lüdeke-Freund, 2017) that prioritises sustainability values and effectively translates them into organisational practice. Although it is readily appreciated that an enabling culture is an antecedent of SOI, it is difficult to assess and promote the development of values-based cultures due to the lack of knowledge about the components that make up these cultures. Improving this understanding through empirically based

theoretical insights will further the development and validation of frameworks and methods to promote SOI.

Values and practices as constituents of organisational cultures

Human values are defined in social psychology as notions of what is desirable and 'ordered systems of priorities' (Schwartz, 2012). They are understood as fundamental components and reliable representations of organisational culture. According to Schein (2010), all organisational cultures share a certain set of values that are always present either implicitly as basic assumptions or explicitly as espoused statements or as enacted artefacts, behaviours, processes, structures and other tangible cultural elements. Schein's model suggests that misalignments between the three levels at which values are manifested will impede organisational performance and change processes. It also suggests that leaders have a critical role to play in managing values in a way that mitigates misalignments. As Schein (2015, 9) puts it, 'defining values and norms, turning these into shared rules for behaviour, is de facto creating and managing culture'.

Alongside values, practices are often seen as another fundamental component of organisational culture. While values reflect the priorities of an organisation and its members, practices reflect how these priorities are operationalised as behaviours and processes, implying a distinction between espoused and enacted cultural dimensions. Bourdieu's (1977) theory of practice analyses practices as resulting from the interaction of different forms of available capital (economic, social, cultural, symbolic), habitus (a collective system of dispositions such as conventions, rules and values held at individual, collective and social levels) and field (a structured social space in which people enact their dispositions). The adoption of practices must therefore be understood in the context of both the changing field in which they are enacted and the changing habitus that engages with that field at both micro (individual) and macro (social) levels (Bourdieu, 1977). According to this perspective, values not only influence the adoption of practices, but are also influenced by practices and can be reinterpreted or even redefined in relation to them. Depending on their mutual alignment or lack thereof, values and practices drive virtuous or vicious cycles that influence cultural development accordingly.

Values-based innovation management

A values-based view on innovation management focusses on the role of human values in driving innovation in processes, products and services or business models. A VBI framework (Breuer & Lüdeke-Freund, 2017a; b) distinguishes between three major functions through

which values facilitate innovation management. First, organisational values form ordered systems of priorities, wherein they fulfil an integrative function to align diverse stakeholders around shared or overarching values and facilitate their translation into consistent strategies and practices. Second, the generative function of values refers to practices of translating stakeholder values into heuristics for ideation, specification of new business opportunities, anticipation of threats, and adjustment of innovation efforts. As such, values help to anticipate innovation opportunities and impact that would be left unnoticed if innovation projects merely responded to external trends and short-lived stakeholder interests. Third, values serve as directives and orientations towards 'desirable end-states' (Rokeach, 1979, p. 49), thus alleviating uncertainty and facilitating collaboration.

The explanatory power of the framework can be seen in case studies, but further empirical evidence is needed for a detailed account on the functions of values, their translation into practices and related tensions (for an overview of research, see Breuer et al., 2022a; and for the application of frameworks, see Partelow, 2023). Likewise, evidence is missing with respect to the framework's contributions to related challenges in responsible and sustainability-oriented innovation such as managing conflicting stakeholder conflicting values (e.g. Lubberink et al., 2017; Stilgoe et al., 2013).

Cultural tensions in sustainability-oriented innovation

Instead of assuming fundamental alignment between business and sustainability goals, recent management literature focuses on tensions that must be dealt with when seeking to attain a more sustainable business development. These tensions are defined as the presence of 'two phenomena in a dynamic relationship that involve both competition and complementarity' (Epstein et al., 2014, p. 3). Whereas tensions that are based on relationships of competition provoke trade-offs, tensions based on relationships of complementarity encourage synergies. Essentially, the dichotomies between trade-offs characterised by a 'win-lose' outcome and synergies representing a 'win-win' outcome originate from the same underlying tensions (Haffar & Searcy, 2017). In this light, previous studies have emphasised that the understanding and leveraging of tensions can help organisations to rise above trade-offs involving their priorities for corporate sustainability or identify synergies that develop SOIs (van Bommel, 2018; Wannags & Gold, 2020). In this study, we define cultural tensions as dynamic relationships that involve competition and complementarity between different values within an organisation. For example, sustainability tensions are often related to differences between private and shared values, that is, 'between acting in the interest of shareholders only at the organisational level, and in the interests of society and the planet as

a whole at the systemic level' (Wannags & Gold, 2020, p. 4).

Values-action gaps in sustainability-oriented innovation

Besides cultural tensions that occur between values within an organization, values-action gaps represent another cultural impediment to the implementation of SOI strategies. Values-action gaps are discrepancies between the employees' organizational or individual values and their actual behaviours or practices. They prevent the translation of values as criteria for what is desirable and important into a corresponding interpretation and adoption of practices by organizational members. Several company cases suggest that closing the values-action gap is essential for succeeding in SOI (Sull et al, 2020). The Volkswagen diesel emissions scandal (Aurand et al., 2018) and the Apple 'Batterygate' scandal (Rodriguez Vidal, 2019) illustrate the detrimental consequences that may result when officially proclaimed values are not lived by organizational members. Both companies incurred significant financial and reputation losses through product development practices that contradicted sustainability regulations as well as their own organizational values.

Although research on the barriers to pro-environmental consumer behaviour has often addressed the importance of values-action gaps, sometimes using alternative terms such as values-behaviour gaps (Kennedy et al., 2009) or 'green gaps' (El-Haffar et al., 2020), the concept remains largely overlooked in the management literature. Some studies show a positive relationship between organisational values and improved innovation performance along economic, social and environmental parameters (Globocnik et al., 2020; Manohar and Pandit, 2014; Pedersen et al., 2018). It seems self-evident that we will try to bring about the things we want to achieve. However, the literature does not provide evidence on how values-action gaps hinder SOI. A deeper contextual understanding of values-action gaps and cultural tensions is needed to understand how innovation managers and entrepreneurs can adopt SOI practices more effectively.

Methodology

Methodological background

Innovation management research has produced different conceptualisations of values to account for the role of values, tensions and values-action gaps in managing SOI. First, a substantive approach (e.g., von Schomberg, 2011) takes predefined European values such as sustainability, security or privacy as criteria to ensure responsible innovation. Second, Stilgoe and colleagues (2013) propose a procedural approach to actively engage stakeholders in

value deliberation and reflection—without prescribing how to do so or elaborate their implications. 'Both approaches invite a conceptualisation of values as ready-made entities, at once knowable and available for deliberation. Whether they can be found in political documents or by interrogating stakeholders … the moral hermeneutics of identifying values is ignored' (Boenink & Kudina, 2020, p. 454f.). Boenink and Kudina (2020) therefore propose a complementary, practice-based approach that recognises that values are realised in specific practices, are interactive with material, social and cultural environments, and are dynamic and changing. In addition to reviewing policy agreements and eliciting values through stakeholder surveys, they call for the study of 'valuation in action' (Boenink & Kudina, 2020, p. 461) through interpretive methods such as case studies and focus groups.

Another prominent interpretive method is ethnography, which is an approach that has proven its worth in exploring stakeholder values and values-based practices in organisations (Andersen, 2017; Breuer & Lüdeke-Freund 2017, Langendahl et al., 2016) and in paving the way for meaningful change in corporate strategy and innovation (Madsbjerg & Rasmussen 2014). Ethnographic research allows the exploration of symbolic forms, experiences, values and layers of cultural meaning that are often not obvious to the participants. It can thus provide insights into otherwise implicit values or contradictory behaviours, such as organisational tensions and values-action gaps. However, only a few studies have used ethnographic methods to empirically explore the influence of values on SOIs (e.g. Andersen, 2017; Halme et al., 2016; Langendahl et al., 2016).

Although ethnographic approaches are valued as the most appropriate approaches for exploring organisational culture, values and conflicts or tensions, they require considerable time, skill and effort and have therefore not been widely adopted (Cooper & Edgett, 2008). Essential key features of the ethnographic approach include holism, the field as the unit of study, multi-method material collection and interpretative analysis requiring reflexivity on the part of the researchers (Bloomberg, et al., 1993). In keeping with these principles, we streamlined the material collection in this study through methods for rapid inquiry of stakeholder values based on field interview techniques that engage participants in interactive exercises and staged activities rather than participatory observation of natural work-related practices. We also ensured compliance with quality criteria of qualitative research (Steinke, 2004, p. 186ff): Comprehensibility including documentation of the process), attention to process cues and limitations, empirical grounding and reflected subjectivity (e.g. by making initial assumptions explicit). Triangulation of material sources between different investigators, different perspectives on the same material and methodological triangulation (combining interviews and observations) was applied (Patton, 2002; Yin, 2017).

Methods and sampling

We designed an interview guide for 2–4-hour field interview sessions with 18 mandatory top-level questions and optional sub-questions covering the following five main topics: personal background and history in the company, interpretation and prioritisation of corporate values, experience of innovation projects, relationship between sustainability values and innovation management and future outlook. The interview sessions included interactive exercises such as depicting a mood curve (to identify emotional highs and lows and critical turning points at the job), card sorting (to prioritise organisational values), a core-values assessment exercise (following the competing values framework; Santoriello, 2015) and a heaven-and-hell imagination exercise (using exaggerated scenarios to elicit deep concerns, fears and far-reaching hopes). Participants were also asked grand-tour questions (Spradley, 2003) to guide the interviewers through their own workspace, the company offices, meeting and collaboration spaces, and inspection facilities. An observation guide followed the interview structure and focused on illustrations, visualisations, artefacts (such as templates and presentations) and site-specific installations to expand on verbal information and elicit implicit aspects and values through interpretation.

The current case study is part of a larger multi-case investigation of the SOI cultures of 11 companies in four countries (Germany, Italy, Poland and Spain). In this study, we focus on the insights from a leading German technical inspection company (hereafter abbreviated as TIC) founded more than 100 years ago to ensure the operational safety of industrial equipment. It was chosen as a case (Yin, 2017) because it had characteristics that are also relevant for other technology companies introducing sustainability as a new core value equal in importance to the fundamental value of safety. It is also a revelatory case (Yin, 2017), as company representatives invited researchers for an in-depth and open exploration of rarely accessible, even conflicted information and internal tensions related to its ongoing cultural transformation. Over the years, TIC has remained committed to its traditional values of safety, neutrality and trust as an independent third party between technology users and providers. These values have underpinned its expansion into other areas of inspection and certification, such as mobility, training, IT, engineering, mining and aerospace, among others. Since 2018, sustainability has been one of the company's core values, and is becoming increasingly important to its culture and a key component of its official strategic goals. TIC thus provides a unique case of how an organisational culture traditionally focused on the values of safety and neutrality has integrated sustainability values as a new top priority, integral to its culture, innovation strategy and operations.

In order to gain a broad understanding of the company's SOI practices, we selected participants who deal with innovation and sustainability as part of their job profile, but who came from different hierarchical levels, business units, innovation-related functions and locations, and who had been with the company for different lengths of time. Our primary contacts were the head of innovation management and a head of digitalisation in the largest business unit. They introduced us to participants at different hierarchical levels who could provide information on sustainability and innovation issues. The participants were sent a standardised information sheet and consent form prior to the interview, and they suggested who else we should talk to. In this way, snowball sampling (Parker et al., 2019) complemented the initial top-down approach to participant selection and recruitment.

Material collection

Between November 2021 and April 2022, three researchers conducted nine interviews with individual participants (Table 1). Five interviews were conducted in German and four in English. Each interview lasted between two and four hours and was recorded with audio, video and field notes. These recordings were used to produce detailed ten-page profiles for each interview. Due to the Corona pandemic, three of the interviews were conducted online and the participants were asked to show objects and spaces using portable devices and to complete the practical exercises using an online collaboration platform (Mural) and pre-set templates. Each profile was sent back to the participant for communicative validation, which resulted in minor changes to one of the profiles due to misleadingly translated quotes.

Pattern recognition and insight synthesis

Based on the profiles, three researchers analysed the material in a two-day collaborative workshop (see Table 1 for an overview of the interpretive approach). 1) We transformed the material gathered in the field into profile templates. In a storytelling session, we presented the profiles of our participants, describing observed actions, initiatives, methods, values and stories. 2) Based on these profiles and stories, we noted relevant findings and coded them into thematic categories. 3) We identified recurring patterns or clusters of related themes (e.g. drivers, value alignment, practices, tensions, value-action gaps, persistent challenges, etc.) across the coded categories. We carried out this pattern recognition through a process of 'formal indication', which identifies recurring patterns and higher order themes that connect the material through creative and analytical conversations (Madsbjerg & Rasmussen, 2014, p. 115). 4) We explored the resulting patterns in terms of interrelated desires, values and tensions or conflicts experienced by the participants. This approach helped streamline

the ethnographic interpretation towards the identification of 'seeds of insight'. We identified a total of eighteen insight seeds. 5) In a final step these were aggregated into six overarching insights and associated subordinate aspects. Each insight seed and overarching insight describes fundamental characteristics of the participants' emotions and activities from their point of view, provides explanations for why they act as they do and articulates tensions between desires and values on the one hand and opportunities for fulfilment on the other.

Ethnographic writing

Ethnography has been defined as 'a written account of the cultural life of a social group, organisation or community, which may focus on a particular aspect of life in that setting' (Watson, 2008, 100). Ethnographic writing is therefore an essential aspect of the interpretation of material collected in the field, which should ultimately result in 'thick descriptions' (Geertz, 1973, 6) of the phenomena observed. Thick descriptions are detailed accounts of fieldwork in which the researcher makes explicit contextualised patterns of cultural and social relations (Holloway, 2007).

In order to provide thick descriptions for each insight, we used the following structure. First, we described each insight, summarising it with a title and a short statement, and illustrated it with a statement the participants could have used to get to the point of the insight, using the structure of desire (we want), values (so that) and conflict (but) for each phrase (Table 2). Second, we described the insight and provided empirical evidence supporting the insight and its aspects. Third, we summarised the lessons learned from the insight and the underlying empirical findings, reasoning why the evidence supports the insight. Finally, in the discussion section, we explain how our insights contribute to open questions in the VBI & SOI literature. Throughout the text, we refer to the pseudonyms or reference numbers (in parentheses) of the participants who provided the evidence.

Insights

Overview

We provide an overview of the six insights, each with a summarising sentence and an illustrative statement (Table 2). In the remainder of this section, we provide a detailed account of the empirically identified tensions and values-action gaps across the six insights. Each insight is presented here with a title, a brief description, one or two key aspects, and lessons learned with reasons how the evidence supports the insight.

Research Activities	Output	Exemplary Results	
1. Create participant profiles from field material	Field material and participant profiles	Nine participant profiles: 1) *Theo*, head of group management; 2) *Ronald*, head of digitalisation; 3) *Christos*, operational management lead; 4) *Mark*, corporate venturing; 5) *Martha*, strategic management; 6) *Stefan*, Product Management; 7) *Alex*, service station management; 8) *Ulrich*, CR management; 9) *Holger*, head of auditing	
2. Collect findings and code them in thematic categories	Clustered findings from interviews and observation	*Developing a constructive attitude towards mistakes:* 'Things simply go wrong, and we should develop a constructive attitude to it and always strive to draw something positive from these mistakes.' (Theo) *Problems as sources of learning:* 'You want big enough problems so that failing gives you either a big gain or a big learning experience.' (Ronald) *Resistance to change:* Observation of a participant response to a poster in the meeting room calling for experimentation that there is still cultural resistance to experimental approaches. (Mark)	*Teams avoid failure at early-stage development:* 'When you try new stuff you fail all the time ... Don't build the login mechanism that works perfectly ... Move on and then we go to the data stuff, the new stuff.' (Mark) *Leadership struggles to accept learning from failure:* 'When I explained this learning from failure concept to my boss ... he struggled ... He said: We must then also make learning from success.' (Theo) *Failure results in blaming:* Observation of a participant commenting on failure and blaming by demonstrating that finger-pointing involves three fingers pointing back to the person doing the blaming. (Theo)
3. Identify recurring patterns	Patterns	Recognizing the need for experimentation and failure tolerance	Fear of failure and being blamed
4. Identify and describe 'seeds for insights' with illustrative formulations	Seeds for insights formulated with a desire, values, and conflict	'We want to experiment and learn from failure so that we can rapidly advance towards our ambitions for sustainability-oriented innovation, but we also fear failure and finger-pointing and identify with the risk aversity that characterises the traditional inspection business.'	
5. Aggregate seeds for insight and describe overarching insights	Overarching insights	Insight 1: 'We want to establish a sustainability-oriented innovation culture so that we can comply with and act on our values like sustainability, safety and trust, but in some cases, our history and engineering mindset prevent us from fully embracing a failure-tolerant, stakeholder-inclusive and sustainability-oriented innovation culture.'	
6. Ethnographic writing	Ethnographic descriptions	Insight 1 'Sustainable innovation culture' presented with one-sentence summary, illustrative statement, short description, empirical evidence supporting the insight and its aspects (Innovation mindset and Sustainability literacy), lessons learned from the insight and discussion of its theoretical implications	

Table 1. Overview of the respondents with their pseudonyms, reference numbers, background and age group and the steps of the interpretative approach with examples from the material

Insights	Summary	Illustrative participant statement
1. Sustainable Innovation Culture	Sustainability literacy is unevenly distributed across actors, and SOI competencies are grown more from individual initiative rather than a pervasive strategy and VBI culture.	'We want to establish a SOI culture so that we can comply with and act on our values like sustainability, safety, and trust but in some cases, our history and engineering mindset prevent us from fully embracing a failure-tolerant, stakeholder-inclusive, and SOI culture.'
2. Vertical Integration	Misalignments between executive and operational managers' understanding and implementation of the core values desynchronise mutual efforts to advance SOI.	'We want to collaborate across hierarchical levels based on shared values so that we can achieve a higher impact of our joint efforts, but our strategy and values are not consistently adopted and backed up with supporting measures.'
3. Horizontal Collaboration	Divergent interests and interpretations of values hamper multilateral collaboration and knowledge exchange to address sustainability challenges.	'We need to collaborate across divisions so that we can learn from one another and leverage distributed knowledge for sustainable value creation but the division of efforts and returns often remains uncertain and breeds conflicts.'
4. External Interfaces	Sharing and absorbing sustainability-related expertise require great efforts to maintain ambidexterity and gain reputation as an outstanding sustainability enabler.	'We want to be open to external trends and stakeholders and seek exchange with partners from universities, legislation, and civil society so that we can exchange perspectives and capture opportunities that can ensure positive impact but absorbing and exerting external influences while developing our established business is challenging.'
5. Practices and Methods	Normative and theoretical frameworks can increase the scope and maturity of SOI but require consistent adoption and continuous development of supportive practices and methods.	'We have successfully experimented with new practices and methods so that we can establish a SOI culture but some of them face resistance while others are not yet adequately managed due to increased complexity and perceived distance from the accustomed corporate values and way of work.'
6. Personal Alignment	Engaging the workforce in the process of cultural transformation requires leveraging their individual values and informal interactions.	'All employees expect to align their personal (idealistic) values with TIC's organisational values so that they can fully engage and make the world a better place but many struggle to keep up the spirit alive as the company culture changes.'

Table 2. Overview of the six insights with illustrative participant statements.

Insight 1: Sustainable innovation culture

Description: TIC's history of prioritising values of safety and trust over short-term benefits makes it well placed to lead the transition to sustainability. However, it is still struggling to move beyond a traditional engineering mindset and practices focused on safety values to promote new sustainability values along with an innovation mindset. An uneven distribution of sustainability literacy and a historically developed risk-averse mindset hamper its forward-looking development.

Innovation mindset (aspect 1): TIC has evolved as an engineering-driven company creating value through expert knowledge to ensure technical safety and regulatory compliance. However, SOI is not easily implemented through operational rules, and the transition to an SOI culture requires this engineering mindset to be complemented with sensitivity in dealing with diverse stakeholders. A transformation from a male-dominated, engineering-driven, solution-focused way of working to a problem-focused approach is needed to identify the customer problems and develop SOIs to address them (2, 3, 4, 5). Some participants (1, 3, 6) highlight the potential of TIC's internal academy as a facilitator to extend their engineering background with soft skills and to practice novel approaches, such as deepening the understanding of a problem space before developing solutions and exploring synergies between technical competencies and values. However, other participants (1, 2, 9) emphasise that the deeply ingrained engineering mindset leads to resistance to change, fear of failure, (1, 2, 4, 9) and limited awareness of innovation potential.

Sustainability literacy (aspect 2): A second key aspect of this finding is the uneven distribution of sustainability literacy. Participants noted a fragmented approach to sustainability, reducing it to ecology (3, 6, 7) or sidelining it as part of the core value of integrity (8) or as a natural consequence of other values (4). Holger (9), head of auditing, criticises that a comprehensive understanding of sustainability (in its environmental, social and economic aspects) is still lacking. For example, he mentions a reporting verification project in which the social dimension was not taken into account. Holger (9) believes that only an integrated approach would allow 'people to work on this one topic from different perspectives'. Corporate responsibility manager Ulrich (8) warns that even a triple bottom-line approach to sustainability tends to neglect one of the three dimensions. Instead, he advocates a system-value approach (i.e. not balancing three domains, but assuming that business is at the centre of concentric circles that address societal needs). However, a common, actionable understanding of sustainability as a core value in innovation is still lacking.

Lessons learned and underlying empirical findings: A general takeaway is that consistent communication about and a common understanding of the implications of core values and

concepts such as sustainability are essential to establishing SOI cultures. Since sustainability depends on and evolves in relation to existing values such as safety, trust and integrity (1,2,4), we need to attend to the priority systems that these values represent, without reducing the new values to a mere extension of those already established. Even eliciting an appropriate understanding of these values, and then establishing and mainstreaming a shared notion of sustainability, is challenging.

Strategic and senior managers are aware that SOI requires a different mindset and practices. They emphasise the importance of a more failure-tolerant and stakeholder-inclusive culture and drive this change, but they are rarely involved in the details of implementation. Moreover, ingrained mindsets such as risk aversion cannot be overcome by top-down directives, even if they are perceived as a barrier to SOI (1, 2, 4, 9), limiting experimentation and ambidexterity. Staff at more operational levels rely primarily on their professional expertise to manage day-to-day tasks and on their 'own moral compass' (9) to prioritise and interpret official values. In several cases, they were unaware of the links between their local initiatives (e.g. to power offices with solar panels, 7) and the overarching strategy and values.

Insight 2: Vertical integration

Description: TIC's strategic managers are trying to embed the new sustainability values throughout the organisation (1, 2, 5, 8, 9). However, these efforts often don't reach the operational managers and employees, who instead act on their own instructions. Some operational managers work with little or no regard to official values, while others, although highly engaged with issues related to these values, interpret them autonomously with respect to their local context. In addition, their independent initiatives to improve sustainability from the bottom up, although encouraged by the official values and statements from senior management, do not always receive appropriate recognition and feedback.

Top-down integration (aspect 1): Some operational managers prioritise employee or customer concerns as key reference points for managing SOI, while remaining detached from core values (3, 7). Other managers who are less involved in the hierarchical structure, such as Mark (4) from Corporate Venturing, even replace the official innovation strategy with self-defined criteria to drive SOI. Mark (4) believes that innovation managed through a standardised process can only be incremental. Since his focus is on generating radical, disruptive innovation, he prefers to replace the official strategy with approaches to stakeholder analysis and small-scale experimentation to develop proofs of concept. In addition, an inconsistent (different values mentioned on different company websites, 8) and incomplete (5) set of core

values creates further confusion and hinders the scaling of SOI efforts across all levels of hierarchy.

Bottom-up integration (aspect 2): Although TIC employees are given opportunities to work independently (4, 6, 9), their personal initiatives to improve sustainability are not systematically managed and seem to exceed the organisation's capacity to absorb them (1, 4, 7). For example, Alex (7), a service station manager, is convinced that sustainability improvements depend on his own initiatives. However, his ideas often receive no feedback or are not acted upon. He struggled with the lack of a clearly defined process, resources and management support to implement his ideas, such as offering a solar charging station for customers. He also wanted to introduce networked printing at his station to improve operational efficiency, but his idea was criticised because of data privacy concerns. When Alex (7) found a reliable workaround, he still had to install the printer himself. Other employees are also given autonomy to initiate their own SOI projects, but little interaction with senior management (9) and uncertainty about how project outcomes will be managed and benefits shared (4) limit the bottom-up absorption of their ideas.

Lessons learned and underlying empirical findings: Participants pointed to several factors as contributing to the gap between how the core values are understood by senior and operational managers and how they share their strategic and operational expertise to drive SOI. Holger (9) attributes these discrepancies to an unsystematic management of values, which rarely goes beyond their definition at the senior management level. The lack of two-way communication about values forces employees to develop and rely on their 'own moral compass' (9) and situated interpretations of official values. As a result, Holger (9) would like to see more 'cool workshops' (9) and regular follow-up with supporting materials that communicate the values and encourage compliance.

In addition, participants cited overly consensual negotiations between the group's subsidiaries, dispersion across multiple headquarters (1, 2), and a lack of courage to impose strict governance and take difficult decisions (1, 2, 6) as reasons for slow inter-hierarchical exchanges that take 'TIC seconds' (i.e., excessive amounts of time; 2, 7). The heterogeneity of different headquarters and subsidiaries addressing different markets requires a clear top-down structure and centralised process, a consistent set of values, clearly defined leadership processes, and rules applicable across all organisational units.

Insight 3: Horizontal collaboration

Description: Digitalisation trends towards networked systems are disrupting the inspection industry and require the involvement of expertise from several fields beyond conventional

(e.g. automotive) engineering (1, 2, 3, 4, 5, 6). TIC's subsidiaries operate in heterogeneous industries such as mining, aerospace and IT, revealing opportunities for interdisciplinary collaboration to respond to these trends. However, subsidiaries are compared to federal states, in that they are 'as influential as the board of directors' (8) and unwilling to sacrifice effort and returns for collaboration. In addition, the group's senior managers are scattered across several isolated locations (1, 2, 8). Vehicle inspection is offered in 14 regions, each with different processes and management practices (6). While TIC's heterogeneous structure offers potential, it also reveals challenges in managing collaboration for an effective transition to SOI.

Balancing interests for collaboration: Balancing the interests of the TIC subsidiaries is crucial for interdisciplinary cooperation. Theo (1) notes that due to digitalisation, inspection services are increasingly dealing with 'networked intelligent systems' (1). He therefore set up an innovation advisory to coordinate the innovation efforts of the subsidiaries and to use their diverse expertise in joint projects. However, the subsidiaries lack the motivation to sacrifice resources and control for the sake of long-term common goals and joint projects, as they are measured by their performance annually. Because of their divergent interests, they engage in constant negotiation rather than collaborative SOI efforts (1, 8).

For example, Theo (1) proposed an innovation portfolio to evaluate all the group's projects. He wanted to use a Fibonacci sequence to weight factors in the portfolio and give higher priority to key indicators such as sustainability. However, the subsidiaries struggled to agree on how to prioritise the indicators and were opposed to extending the Fibonacci sequence beyond 8 (to 13 or 21), which would widen the gaps between them and make them look bad.

Lessons learned and underlying empirical findings: According to Theo (1), TIC's decentralised structure is rooted in its subsidiaries' history of misaligned interests. Their historical background makes it difficult to initiate and coordinate effective, group-wide SOI projects. Overcoming this historical burden requires efforts from both subsidiaries and central management. On the one hand, subsidiaries need to improve their mutual respect for each other's values, interests and functional agendas. On the other hand, group leaders need to develop a clear top-down structure that can implement decisions on the distribution of effort and returns in SOI projects. In addition, the newer values of TIC, such as sustainability, should be established as points of reference for initiating joint SOI projects that incorporate but also go beyond the historically ingrained risk aversion that Theo (1) links to short-termism and strategies oriented towards survival rather than growth.

Ulrich (8) suggests that such horizontal implementation of sustainability values can be achieved by engaging subsidiaries in peer-to-peer evaluation of each other's innovation

projects based on sustainability criteria – and has obtained promising results from experimental peer review sessions. He expects this will also reduce workload, break down silos and stimulate knowledge transfer between subsidiaries. Another suggestion – supported by Ulrich (8), Mark (4) and Martha (5) – is to justify all SOI projects with a clear, long-term purpose, thus protecting them from short-term interests or values in internal negotiations. Finally, Ulrich (8) emphasises the need to hire dedicated staff and organise regular steering committee meetings to manage the negotiation and exchange regarding SOI across subsidiaries.

Insight 4: External interfaces

Description: TIC seeks to complement the development of its historically established inspection business with an innovation mindset to identify new trends and market opportunities. Participants stressed the importance of balancing these two perspectives (ambidexterity of exploitation and exploration), rather than downplaying one or the other (1, 2, 5). In this context, they emphasise different channels for absorbing external knowledge and identifying outside-in business opportunities. In addition, TIC's experience as an inspection provider and its values of trust and neutrality are seen as advantages for developing SOI inside-out. By leveraging these strategic and normative assets, TIC can enable sustainability in other companies and institutions, e.g. by providing specialised services, inspiring business partners or advising policy makers and regulators. However, TIC's potential in this regard depends on its legitimacy and recognition as a sustainable firm.

Ambidextrous management of external interfaces: TIC uses several channels to absorb external knowledge and identify new opportunities for SOI. For example, exchanges with academia provide perspectives on best practices (3) and lead to joint spin-off ventures (2). Partnerships with NGOs are maintained, despite being unprofitable, because they allow exchange of perspectives, potential future strategic benefits and benchmarking of SOI practices with actors from more advanced industries (9). Furthermore, stakeholder engagement with legislators is critical in innovation projects that respond to anticipated regulation (5). Customer engagement and understanding of customer needs is also seen as a crucial but underutilised lever for successful SOI (2, 3, 4, 5). Even competitors are involved, as when Ulrich (8) surveyed over 600 stakeholders to formulate TIC's sustainability strategy.

TIC also enables sustainability for other actors inside-out, for example by participating in regulatory committees (5, 6) and providing audit and inspection services that enable other firms to design and verify their impact (8, 9). However, digital trends are challenging some of TIC's services with the largest market share (e.g. automated self-inspection in future car

models, 4, 5, 6), while creating demand for third-party inspection in other areas (e.g. regulation of online advertising or distributed ledger systems, 4). TIC's transition to SOI can benefit from capturing these emerging opportunities as well as maintaining competitiveness in traditionally served markets, such as vehicle and industrial inspection, where demand for sustainable value propositions is growing. However, to become an effective enabler of sustainability, TIC needs to gain legitimacy as a sustainable company (8). Some levers that have helped strengthen TIC's legitimacy include gaining recognition from credible third-party institutions (e.g. gold medals from an international provider of sustainability ratings, 8), selecting B2B customers that define their strategy based on sustainability values rather than simply complying with regulations (9), and engaging third-party stakeholders to determine whether an innovation proposal is legitimate (i.e. whether it meets TIC's own sustainability standards and those of its stakeholders) (5). However, these initiatives have not yet been translated into dedicated strategic programmes and operational practices to position the company as a leading provider of sustainability-oriented inspection services.

Lessons learned and underlying empirical findings: As a service provider, TIC's impact is characterised by innovations that enable sustainable development for other actors in its ecosystem. However, to become an established enabler of sustainability, TIC needs to gain and maintain legitimacy, high reputation and topic-leadership in sustainable business conduct. More systematic stakeholder engagement, communication of achievements, and screening of appropriate certification initiatives and partnerships in which to engage can help TIC gain widespread recognition of its expertise, legitimacy and reputation and establish itself at the centre of an emerging sustainable ecosystem.

Insight 5: Practices and methods

Description: TIC's transition towards SOI is supported by the adoption of normative or theoretical frameworks, such as the SDGs, system-value creation and disruptive innovation. These in turn, are implemented through methods and practices, which some employees are hesitant to adopt while others take the initiative to experiment with them, even before being instructed by an official directive. For example, impact assessment is a key method for implementing TIC's SOI strategy and informing gate decisions. However, even after receiving training and support from the CR department many managers resisted its adoption. In contrast, other employees readily experimented with informal practices that are tailored to their day-to-day work and from their perspective effectively contribute to SOI.

Framing of practices and methods (aspect 1): TIC adopts normative and theoretical frameworks as proven reference points for the adoption and implementation of SOI methods.

For example, Ulrich (8) advocates moving from a triple bottom-line approach to evaluating innovation projects to system-value creation, that is, from 'juggling the three balls' of people, planet and profit 'while some units have only one hand' (e.g. finance, works council) to integrating priorities in concentric circles based on the SDGs. Although senior managers such as Ulrich (8) and Theo (1) see the need for the adoption and methodological operationalisation of such frameworks, they also identify challenges. For example, the introduction of project impact assessments based on the SDGs is resisted by some managers, who emphasise increased complexity and workload rather than the strategic advantages it brings (1, 8).

Formal and informal practices (aspect 2): Formal initiatives such as training of innovation experts (3, 6), events on topics such as learning from failure (1) or envisioning TIC's inspection station of the future (5, 6, 7) successfully support the transition of TIC towards sustainability. Informal practices based on individual experience provide additional levers that could be shared and adopted more widely. For example, to promote the system-value approach, Ulrich (8) speaks of it as if it were already established rather than a newly introduced priority. He also presents it as his virtual background during online meetings. Other employees experiment with practices tailored to their specific expertise, such as Mark (4), who uses probability theory and grouping principles to estimate the sustainability impact of his projects.

Lessons learned and underlying empirical findings: Employee initiatives to adopt informal practices that support cultural transformation are important levers that can be scaled more deliberately. Even more important seems to be the appropriate communication of underlying frameworks that are crucial to embedding SOI methods into the organisational culture. Although such frameworks provide a sound basis for the introduction and widespread adoption of SOI practices and methods, such as TIC's impact assessment, there is some difficulty in convincing managers of their strategic importance. This requires ongoing efforts to communicate and establish the theoretical and normative foundations of SOI methods and practices in order to successfully mainstream them at the operational level.

Insight 6: Personal alignment

Description: Most participants joined TIC because they saw it as a company where they could do meaningful work in line with their individual values – they saw the unique opportunity to 'be part of the solution rather than the problem' (1, 2, 4, 8, 9). Their careers at TIC are an extension of their personal development and social activism. While all employees identify with the values TIC established throughout its history, such as safety and neutrality, some

resist change to include values based on the more recently adopted SOI culture. Official directives are not enough to bring about cultural transformation, which is instead facilitated by a gradual process of mutual persuasion through informal interactions.

Hidden treasure (aspect 1): TIC is seen as a values-based employer. Participants' positive associations can be seen in their pride in the company, expressed in statements such as 'we are the good ones' (1, 2, 8). Some employees joined because of the company's values (1, 2, 3, 4, 6, 8, 9) and the opportunity to do meaningful work that 'makes the world a better place' (9). In some cases, TIC allowed employees to integrate their expertise as technical specialists and their commitment to social activism (6, 8). For example, in the 1990s, Ulrich (8) held a senior management position in an SME and was also an 'ethical hacker'. He used his expertise in management and cyber security when he joined TIC's IT subsidiary, where he introduced a 'security for safety' strategy, based on the concept that TIC's core value of safety could not be maintained without taking responsibility for data security. He became so passionate about corporate responsibility that he resigned from his IT management position to approach TIC's board of directors with a proposal for a new sustainability strategy, and successfully applied for a newly created position.

Informal interactions (aspect 2): Official directives may not be conducive to increasing employee identification with sustainability values, as they tend to provoke resistance when introduced (8). On the other hand, communication through informal interpersonal interactions, e.g. conversations in the canteen (8), during workshops (1), or requests for help (9) facilitate or block away a gradual cultural change. Ulrich (8) recalls how, months after the introduction of TIC's new sustainability strategy, a manager he met in the canteen said to him, 'I was always sceptical, but if it wasn't for you, I don't know how we could be thinking about our future at this point.' Ulrich (8) was surprised because the same person had voiced a different opinion in a meeting where his line manager opposed the sustainability strategy that Ulrich (8) was proposing.

Lessons learned and underlying empirical findings: Participants emphasise that congruence between personal and organisational (sustainability) values is key to harnessing capabilities and business potential for SOI (2, 4, 5, 9). TIC's employees are generally aligned with the company's established core values and commitment to sustainability, which is a key organisational asset. However, for some members of the organisation sustainability is not a key priority in their personal system of values. Again, their resistance can be attributed to the fact that sustainability is not communicated clearly enough as an extension and specification, rather than a replacement, of TIC's established core values, such as safety (i.e. 'protection of

human life') (1). In addition, informal interactions between employees seem to reveal both diverging and shared values and to further the process of cultural change.

Discussion

Each insight reveals cultural tension and points to values-action gaps that constrain the adoption of newly adopted sustainability values and corresponding SOI strategies into everyday practice.

First, an innovation mindset and a broad distribution of sustainability literacy are key components of SOI cultures. Like other similar cases (e.g. technology companies with a traditional focus on safety), TIC's case shows that cultures characterised by risk aversion can lead to blaming individuals for failure (1, 4) and by ingrained habits that disparage the value of learning from failure. A cultural tension is expressed in the fixation on safety, which limits the willingness to experiment and hinders the adoption of unconventional approaches to innovation challenges. This supports previous findings that personal and organisational values act as key enablers of or constraints on business experimentation (Lee et al., 2004) and experimentation for sustainability (Weissbrod & Bocken, 2017). Future research can look for further evidence on how the development of an innovation mindset acts as an antecedent and constitutive component of SOI cultures.

This also points to a challenging values-action gap in the sustainability transition: New sustainability values will require new competencies not required by the pre-existing set of values (e.g. to integrate diverse stakeholders or to manage complex trade-offs). A basic prerequisite is to create a shared understanding of the new sustainability values and related concepts, for example, which concept of sustainability applies to the organisation.

Second, there is a cultural tension between the priorities of systematically integrating a shared understanding of sustainability values across all hierarchical levels, on the one hand, and absorbing local initiatives from operational employees who may still have a poor understanding of these values, on the other. By encouraging and absorbing local initiatives, strong SOI cultures enable employee-led innovation that responds to perceived customer preferences and values, as well as to business opportunities and challenges encountered in day-to-day operations. A multitude of bottom-up initiatives addressing the multi-stakeholder and multi-dimensional aspects of sustainability challenges need to be empowered by top-down direction, inspiration and support through the provision of resources and recognition. Although senior management recognises these needs of the operational workforce and addresses them with official statements and management systems, more is needed to engage all employees in a collective effort towards sustainable transformation. Immersed in their

everyday tasks and situated interpretations of official values, operational managers need more practical and interactive ways of experiencing and learning about the practical relevance of abstract values statements and how they provide a basis for SOI.

Third, alignment of interests is a key prerequisite for sustainability-oriented collaboration across subsidiaries and for reducing values-action gaps in SOI. Multi-industry, multi-regional and multi-market conglomerates can enable different organisational units to synergise their competencies to more comprehensively identify and address sustainability challenges. However, managing collaboration across a multitude of organisational boundaries becomes challenging when stakeholders lack a shared understanding of the group's overarching values and goals and instead foreground their short-term interests. VBI management (Breuer & Lüdeke-Freund, 2019) and stakeholder theories (Freeman & Auster, 2015) emphasise that while interests are often used as a means of political negotiation, values largely define the identities of the actors involved and therefore resist simple negotiation tactics. Therefore, establishing a common ground based on shared sustainability values can help stakeholders to identify points of conversion of their situated interests in order to engage in effective collaboration for SOI. The TIC case illustrates these theoretical assumptions and provides examples of initiatives to put them into practice (e.g. building informal SOI communities with employees who share a strong commitment to sustainability, 6; hiring dedicated employees to manage negotiations, 8; and facilitating horizontal implementation of sustainability values based on peer reviews of innovation projects, 8).

Fourth, the TIC case illustrates the cultural tension between prioritising different approaches to open innovation in SOI management, which is defined as innovation processes based on interactions with other actors that lead to inside-out knowledge exploration or outside-in knowledge exploitation (Chakrabarti et al., 2020). On the one hand, TIC facilitates SOI through outside-in open innovation by identifying, assimilating and applying external knowledge from partners, competitors, academia and others. On the other hand, it also applies inside-out open innovation practices that focus on transforming internal knowledge and resources into external business opportunities through, for example, licensing, spin-offs, joint ventures, technical consulting, etc. TIC employees highlight the importance of integrating these two approaches, a process defined as coupled open innovation, where complementary partners continuously connect 'internal and external knowledge through collaborative innovation work' (Remneland Wikhamn & Styhre, 2019, p. 450). The case shows that to drive this integrated approach, companies need to leverage their sustainability competencies to gain legitimacy, that is, to demonstrate the appropriateness of their actions within a set of specific rules, norms, values and beliefs established by multiple stakeholders (Suchman, 1995). It

suggests that practices of external communication and participation in industry benchmarks can be helpful, but remain insufficient to enhance legitimacy if not backed by a dedicated strategy.

Fifth, the case shows how discrepancies in employees' understanding of official values or other normative frameworks can lead to low willingness to adopt SOI practices and methods. This values-action gap is illustrated by TIC's challenges in transitioning from conventional approaches to SOI impact assessment derived from the triple bottom-line framework (Elkington, 2013) to methods based on system-value creation (Baue, 2021). While the triple bottom-line approach focuses on balancing the social, financial and environmental priorities of organisational performance, system-value approaches anticipate potential rebound effects by recognising issues of carrying capacity and thresholds at which systems begin to collapse. Although the system-value framework appears to be more in line with the company's sustainability values and strategy, some managers are reluctant to operationalise it for reasons of impact assessment. This confirms the need for a value-based perspective on innovation management, as it suggests that values and related normative frameworks influence the adoption of innovation practices because they can influence how employees interpret organisational practices.

Sixth, while most employees are motivated to join and stay with TIC because of the alignment between their individual values and TIC's corporate values, some struggle to identify with and embrace the newly introduced sustainability values. An emerging cultural tension between the established and newly introduced values calls for promoting the synergies between them rather than focusing on the contradictions. This can be done by framing sustainability values as extensions and specifications of, rather than replacements for, established values. The TIC case shows that such communication of new sustainability values requires leveraging both formal and informal channels, as inconsistencies between them increase employee resistance, while synergies reduce it.

Conclusions

Insights derived from case studies can be generalised to other concrete situations and contribute to theoretical developments by advancing existing concepts or raising new ones (see Yin, 2014, p. 41). Following Wannags and Gold (2022), we identify new categories of cultural tensions that constrain the transition to sustainability and SOI and require ambidextrous management, such as between safety and experimentation, top-down and bottom-up integration of values and employee-led SOI initiatives, local interests and overarching values in internal negotiations, inside-out and outside-in approaches to open

innovation, and formal and informal channels for communicating and establishing sustainability values. We also identify values-action gaps in the implementation of SOI practices and methods, caused by divergent interests of organisational subsidiaries and an uneven distribution of sustainability literacy and understanding of the concept of sustainability and related frameworks (i.e. assumptions, values and artefacts; Schein, 2010) across hierarchical and cultural levels. In doing so, we substantiate the VBI management framework, specify the integrative, generative and directive functions of values in innovation management and highlight the tensions involved. First, the case provides evidence of how the integration of values across hierarchical levels, organisational divisions and strategic partnerships, as well as between employees' individual values and the organisation's official values, plays a crucial role in promoting or hindering the implementation of SOI practices. Second, it shows the role that the generative function of values plays in translating normative frameworks, such as the UN SDGs, into methods for evaluating and screening SOI projects. This translation depends on creating common ground and aligning new sustainability values and frameworks with established organisational narratives. Third, the case shows that the directive function of values can facilitate not only a strategic but also a cultural transition to SOI by determining desirable end-states and future scenarios, as in the case of envisioning the future inspection station of TIC.

Our results have implications for practitioners. First, in order to promote a cultural transition towards SOI and evenly distributed sustainability literacy, managers need to communicate sustainability and related concepts in a way that reflects existing organisational values and priorities (see Bertels et al., 2010). Sustainability values and strategies should be underpinned by theoretical and normative frameworks, such as system value and the UN SDGs and aligned with established cultural assumptions, values and artefacts in order for them to be successfully adopted as guidelines and consistent vocabularies for implementing SOI practices and methods. Second, to effectively engage operational employees in supporting SOI strategies, the relevance and meaning of these strategies and their underlying values need to be communicated through more hands-on and interactive methods. Gamified workshops are an effective way to support the top-down integration of values by immersing employees in organisational narratives and instantiations of values-based decision making (Breuer et al., 2022b). In addition to top-down integration, bottom-up integration from the operational level can be leveraged by improving feedback channels and initiating new activities such as a ValuesJam to co-define values with employees (see Yaun, 2006) or interactive workshops to redefine normative statements (Seiler et al., 2022). The TIC case suggests such values-based management initiatives can be crucial for promoting SOI and calls for further research to

validate their potential. Third, the TIC case provides examples of initiatives that can help establish a common ground based on shared sustainability values among organisational units and support their horizontal collaboration for SOI, for example, building informal SOI communities, hiring dedicated staff to manage negotiations, or enabling peer reviews of innovation projects. Fourth, our results suggest that ambidextrous management of inside-out and outside-in approaches to SOI requires strategic communication to gain and maintain corporate legitimacy regarding sustainability values. Fifth, we suggest that the alignment of employee and organisational values can be systematically harnessed to drive cultural transformation towards SOI, for example through leadership based on organisational values and expressed in corresponding attitudes, behaviours and evaluations, or through HR management practices such as selective recruitment, training and team building (Das & Singh, 2016; Rani & Mishra, 2014). In this context, the values of sustainability and corporate responsibility can be used to attract young talent in particular, who are increasingly interested in such values when choosing an employer (Bustamante et al., 2021).

Ethnographic research provides an in-depth understanding of corporate culture and its challenges through a research strategy and a set of methods that allow it to uncover values and the tensions and conflicts associated with them. Our methodological approach includes a prioritisation of the insights (as one of the participating senior managers enthusiastically noted), which makes them actionable for practitioners in the case company and in other companies, especially in technology, which are undergoing a similar transition from a safety-oriented to a sustainability-oriented culture. However, as the results depend on the selection of participants and their access to key information, it is up to managers in the case company and other companies to devise follow-up activities and to decide which insights and actions to prioritise.

In principle, each of the six cultural tensions should also be considered as potentially critical areas for other companies seeking to establish a sustainable innovation culture, especially for technology companies such as TIC with an established safety culture. Although this study meets the quality criteria for qualitative research (Steinke, 2004) and uses communicative validation and triangulation to validate results, there are several methodological limitations. First, the study focuses on a single company in the technical inspection industry. While this provides in-depth insights into a specific context, it limits the analytical generalisability of theoretical insights (Yin 2017), which cannot necessarily be applied to other industries or organisational settings. Second, this study applies rapid ethnography techniques in order to streamline the material collection and manage resources effectively. This streamlined approach may miss nuances that could be captured using more traditional ethnographic

methods, which require days or months in the field rather than hours. Finally, despite triangulation (the use of different methods, material sources and researcher perspectives), the study's reliance on self-reports may be subject to biases such as recall bias or social desirability bias, where participants may provide answers that they perceive as favourable rather than reflecting their true attitudes or behaviours.

Overall, this study improves our understanding of the business practices, challenges and tensions that need to be addressed in the transition to a sustainable economy. Corporate sustainability, even for a focal company, is not just a matter of isolated activities or major campaigns. It is not enough to introduce new processes, products or services, or to create new sustainable business models or strategies, or to add sustainability to a list of core values. It requires significant cultural change, involving deeply held beliefs and values, practices and methods, activities and artefacts. Attempting to establish sustainability as a core value of an organisation is fraught with potential challenges (conflicts, tensions and values-action gaps), six of which we have identified in the insights of this study. Addressing these challenges is critical if we are to move beyond good intentions, elaborated strategies and verbal commitments to making sustainability and related values an everyday practice. Rapid, high-impact interventions to support and accelerate ongoing cultural transformation must follow rapid research such as that undertaken in this study to mitigate the global polycrisis in the time we have left to avoid the worst consequences.

References

Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D., & Overy, P. (2016). Sustainability-oriented innovation: A systematic review. International Journal of Management Reviews, 18(2), 180-205.

Andersen, K. R. (2017). Stabilizing sustainability: in the textile and fashion industry. Frederiksberg: Copenhagen Business School (CBS).

Aurand, T., Finley, W., Krishnan, V., Sullivan, U., Abresch, J., Bowen, J., Rackauskas, M., Thomas, R. & Willkomm, J. (2018). The VW Diesel Scandal: A Case of Corporate Commissioned Greenwashing. Journal of Organizational Psychology, 18(1).

Baue, B. (2021). From Impact Management to System Value Creation. In Generation Impact: International Perspectives on Impact Accounting, 73-83. Emerald Publishing Limited.

Bertels, S., Papania, L., Papania, D. (2010). Embedding Sustainability in Organizational Culture. A Systematic Review of the Body of Knowledge. Network for Business Sustainability.

Bloomberg, J. (1993). Ethnographic Field Methods and their Relation to Design. In: Douglas Schuler (ed.): Participatory Design: Principles and Practices, 123ff. Erlbaum, Hillsdale.

Bocken, N. & Geradts, T. (2020). Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. Long Range Planning, 53(4): 101950.

Boenink, M., & Kudina, O. (2020). Values in responsible research and innovation: from entities to practices. Journal of Responsible Innovation, 7(3), 450-470.

Bourdieu, P. (1977). Outline of Theory of Practice. Cambridge: Cambridge University Press.

Breuer, H. & Lüdeke-Freund, F. (2019). Values-based stakeholder management: Concepts and methods. In Rethinking Strategic Management. Competing Through a Sustainability Mindset, T. Wunder (ed.), 217–239. Berlin: Springer.

Breuer, H. & Lüdeke-Freund, F. (2017a). Values-Based Network and Business Model Innovation. International Journal of Innovation Management. 21 (03), 1750028.

Breuer, H. & Lüdeke-Freund, F. (2017b). Values-Based Innovation Management. Innovating by What We Care About. Hampshire, UK: Palgrave Macmillan.

Breuer, H., Lüdeke-Freund, F. & Bessant, J. (2022a). Managing Values for Innovation. Editorial paper International Journal of Innovation Management, 26(05), 2201001.

Breuer, H., Bessant, J., & Gudiksen, S. (2022b). Gamification for innovators and entrepreneurs: Using games to drive innovation and facilitate learning. In Gamification for Innovators and Entrepreneurs. De Gruyter.

Bustamante, S., Ehlscheidt, R., Pelzeter, A., Deckmann, A., & Freudenberger, F. (2021). The effect of values on the attractiveness of responsible employers for young job seekers. Journal of Human Values, 27(1), 27-48.

Chakrabarti, R., Henneberg, S. C., & Ivens, B. S. (2020). Open sustainability: Conceptualization and considerations. Industrial Marketing Management, 89, 528-534.

Cooper, R., & Edgett, S. (2008). Ideation for product innovation: What are the best methods. ?PDMA visions magazine, 1(1), 12-17.

Das, S., & Singh, R. (2016). Green HRM and organizational sustainability: An empirical review. Kegees Journal of Social Science, 8(1), 227-236.

ElHaffar, G., Durif, F., & Dubé, L. (2020). Towards closing the attitude-intention-behavior gap in green consumption: A narrative review of the literature and an overview of future research directions. Journal of Cleaner Production, 122556.

Elkington, J. (2013). Enter the triple bottom line. In The triple bottom line (pp. 1-16). Routledge.

Epstein, M., Buhovac, A., & Yuthas, K. (2014). Managing social, environmental and financial performance simultaneously. Long Range Planning, 48, 35–45.

European Union (2000). Charter of the Fundamental Rights of the European Union. 2000/C 364/01, 18.12.2000. Brussels: Official Journal of the European Communities.

European Union (2007). Treaty of Lisbon, Amending the Treaty on European Union and the Treaty Establishing the European Community. 2007/C 306/01, 17.12.2007. Brussels: Official Journal of the European Union.

Freeman, R. and Auster, E. (2015). Bridging the Values Gap: How Authentic Organizations Bring Values to Life. New York: Berrett-Koehler Publishers.

Gedvilaitè, D., & Padurariu, C. (2014). Opening the 'Black Box' of Innovation: The Use of Cultural Analysis in Measuring Innovation Capability. Master of Applied Cultural Analysis Supervisor.

Geertz, C. (1973). Thick Description: Toward an Interpretive Theory of Culture. In: *The Interpretation of Cultures: Selected Essays*. New York: Basic Books, pp. 3-30.

Giddings, B., Hopwood, B., & O'Brien, G. (2002). Environment, economy and society: fitting them together into sustainable development. Sustainable development, 10(4), 187-196.

Globocnik, D., Rauter, R., & Baumgartner, R. J. (2020). Synergy or conflict? The relationships among organisational culture, sustainability-related innovation performance, and economic innovation performance. International Journal of Innovation Management, 24(01), 2050004.

Guldmann, E., & Huulgaard, R. (2020). Barriers to circular business model innovation: A multiple-case study. Journal of Cleaner Production, 243:118160.

Haffar, M., & Searcy, C. (2017). Classification of trade-offs encountered in the practice of corporate sustainability. Journal of Business Ethics, 140, 495-522.

Halme, M., Kourula, A., Lindeman, S., Kallio, G., Lima-Toivanen, M., & Korsunova, A. (2016). Sustainability innovation at the base of the pyramid through multi-sited rapid ethnography. Corporate Social Responsibility and Environmental Management, 23(2), 113-128.

Holloway I. (1997). Basic Concepts for Qualitative Research. Oxford: Blackwell Science.

Islam, M., Tseng, M., & Karia, N. (2019). Assessment of corporate culture in sustainability performance using a hierarchical framework and interdependence relations. Journal of Cleaner Production, 217, 676-690.

Kennedy, E., Beckley, T., McFarlane, B., & Nadeau, S. (2009). Why we don't 'walk the talk': Understanding the environmental values/behaviour gap in Canada. Human Ecology Review, 151-160.

Langendahl, P., Cook, M., & Potter, S. (2016). Sustainable innovation journeys: Exploring the dynamics of firm practices as part of transitions to more sustainable food and farming. Local Environment, 21(1), 105-123.

Lee, F., Edmondson, A. C., Thomke, S., & Worline, M. (2004). The mixed effects of inconsistency on experimentation in organizations. Organization Science, 15(3), 310-326.

Linnenluecke, M., & Griffiths, A. (2010). Corporate sustainability and organizational culture. Journal of World Business, 45(4), 357-366.

Lubberink, R., Blok, V., Ophem, J., & Omta, O. (2017). A framework for responsible innovation in the business context: lessons from responsible-, social-and sustainable innovation. In Responsible Innovation 3 (pp. 181-207). Springer, Cham.

Madsbjerg, C., & Rasmussen, M. (2014). The moment of clarity: using the human sciences to solve your toughest business problems. Harvard Business Review Press.

Manohar, S., & Pandit, S. (2014). Core values and beliefs: A study of leading innovative organisations. Journal of Business Ethics, 125(4), 667–680.

Patton, M.Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, CA: Sage.

Parker, C., Scott, S., & Geddes, A. (2019). Snowball sampling. SAGE research methods foundations. Online: https://eprints.glos.ac.uk/6781/1/6781 [accessed 07.12.2022].

Pedersen, E., Gwozdz, W., & Hvass, K. (2018). Exploring the relationship between business model innovation, corporate sustainability and organisational values within the fashion industry. Journal of Business Ethics, 149(2), 267–284.

Quinn, L., & Dalton, M. (2009). Leading for sustainability: implementing the tasks of leadership. Corporate Governance: The International Journal of Business in Society.

Partelow, S. (2023). What is a framework? Understanding their purpose, value, development and use. Journal of Environmental Studies and Sciences, 1-10.

Rani, S., & Mishra, K. (2014). Green HRM: Practices and strategic implementation in the organizations. International Journal on Recent and Innovation Trends in Computing and Communication, 2(11), 3633-3639.

Remneland Wikhamn, B., & Styhre, A. (2019). Corporate hub as a governance structure for coupled open innovation in large firms. Creativity and Innovation Management, 28(4), 450-463.

Rodriguez Vidal, J. (2019). Authority and priority signals in Online Reputation Monitoring. Compultence University of Madrid. Doctoral thesis.

Rokeach, M. (1979). Understanding Human Values: Individual and Societal. New York: The Free Press.

Santoriello, A. (2015). Assessing unique core values with the competing values framework: the CCVI technique for guiding organizational culture change (Doctoral dissertation, Portland State University).

Schein, E. (2015). Organizational Psychology. Then and Now: Some Observations. Annu. Rev. Organ. Psychol. Organ. Behav. 2015.2:1-19.

Schein, E. (2010). Organizational culture and leadership (Vol. 2). John Wiley & Sons.

Schwartz, S. (2006). A theory of cultural value orientations: Explication and applications. Comparative Sociology, 5(2-3), 137-182.

Seiler, M., Cott, A., Torres, V., Reif, J., Kugler, K., Gammel, J., & Brodbeck, F. (2022). How to strengthen a culture of innovation by combining values-based and evidence-based innovation management. International Journal of Innovation Management, 26(05), 2240003.

Spradley, J. (2003). Asking descriptive questions. Qualitative approaches to criminal justice: Perspectives from the field, 44-53.

Steinke, I. (2004). Quality Criteria for Qualitative Research. In Flick, U., von Kardoff, E. & Steinke, I. (eds.). A Companion to Qualitative Research, pp. 184-190. London: Sage.

Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. Research Policy, 42(9), 1568-1580.

Suchman, M. (1995). Managing legitimacy: Strategic and institutional approaches. Academy of Management Review, 20(3), 571-610.

Sull, D., Turconi, S., & Sull, C. (2020). When it comes to culture, does your company walk the talk? MIT Sloan Management Review.

van Bommel, K. (2018). Managing tensions in sustainable business models: Exploring instrumental and integrative strategies. Journal of Cleaner Production, 196, 829-841.

Vogel, P., & Fischler-Strasak, U. (2014). Fostering sustainable innovation within organizations. In Sustainable Entrepreneurship (pp. 191-205). Springer, Berlin, Heidelberg.

Von Schomberg, R. (2011). Towards responsible research and innovation in the information and communication technologies and security technologies fields. European Commission Services. Available at SSRN 2436399.

Wannags, L., & Gold, S. (2020). Assessing tensions in corporate sustainability transition: From a review of the literature towards an actor-oriented management approach. Journal of Cleaner Production, 264, 121662.

Watson, T. (2008) 'Participant observation and ethnography', in R. Thorpe and R. Holt (eds), Dictionary of Qualitative Management Research. London: Sage.

Weissbrod, I., & Bocken, N. (2017) Developing sustainable business experimentation capability – a case study. Journal of Cleaner Production, 142 (4), 2663-2676.

Yaun, D. (2006) Driving culture change by consensus at IBM. Strategic Communication Management 10(3), 14-17.

Yin, R. (2017). Case Study Research and Applications. Design and methods. 6th edition. London: Sage.

Acknowledgements

We thank Paul Lauer for copyediting, as well as our colleagues from the IMPACT project for sponsoring that work. The research presented in this paper has been funded with support from the European Commission, IMPACT Project Number 621672-EPP-1-2020-1-DE-EPPKA2-KA, Project Duration January 2021 - December 2023. This publication reflects the views only of the authors and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union