
Management guidelines to address cultural challenges and facilitate values-based innovation through gamification

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Abstract: Gamification has developed into a methodology of its own to drive innovation and to foster values-based innovation cultures within organisations. However, there are no clear management guidelines, nor any overview of the different gamification approaches that will help organizations to facilitate values-based innovation and to successfully address cultural challenges through gamification. This paper explores this new field through a review of the literature and gathering managerial insights from 26 in-depth interviews with innovation managers from European companies. Based on the findings, we synthesise knowledge and formulate management guidelines for designing and implementing gamification processes to foster values-based innovation cultures within organisations. Our findings reveal the potential for the gamification of innovation and outline pathways for

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future research on the gamification of values-based innovation and organisational culture development.

Keywords: Innovation culture; values-based innovation; innovation management; gamification; facilitation; literature review; design guidelines.

1 Culture still eats strategy for breakfast

Gamification has developed into a methodology of its own to drive innovation. When the term was coined in 2002, gamification was initially used in business to boost workforce performance. Then innovation managers discovered its potential to facilitate innovation-related activities, mainly in the early stages of product and service innovation processes. Recently the potential of gamification to contribute to building an innovation culture in the organisation and to address great societal challenges through values-based and sustainable innovation have been discovered (Breuer et al., 2022). Several games and gamified interventions in this area have been tested. However, an overview of gamification approaches that facilitate values-based innovation in different (normative, strategic, and operational) management dimensions is still missing. Moreover, there is a lack of management guidelines on how to address the challenges in organizational culture to facilitate values-based innovation through gamification.

Organisational culture and values are becoming increasingly important for innovation management theorists and practitioners. Organizational values can stimulate and direct, but they can also inhibit innovation activities when they remain difficult to manage. Both developing an innovation culture and building the capability to innovate share the insight that values are a common foundation for the beliefs and actions of those working in organizations. Values are recognized as the underlying assumptions of

organizational culture (Schein, 2010). They are notions of what is desirable, and they capture what different stakeholders care about. As executives increasingly acknowledge and adopt a purpose beyond increasing shareholder value, this raises the question of which values shape innovation activities. For example, sustainability managers who pursue a triple bottom line of ecological, social, and economic value creation need to reevaluate and reinterpret their organisational values, what Schwartz (2012) calls 'ordered systems of priorities'.

While values are acknowledged for their potential to foster innovation-supportive cultures and to facilitate innovation, they are difficult to access and to translate into appropriate behaviour and practices. This is because values are often only implicitly effective (Rindova & Martins, 2018, pp. 329f.), are entrenched in organizational routines (ibid., pp. 330f.), and are linked to rigid cognitive (Wade-Benzoni et al., 2002, p. 51) and emotional barriers (Seo, 2003). Therefore, top-down leadership or other traditional teaching and training methods fall short in shaping and embedding organizational values in daily practices (Waren et al., 2014, pp. 106f.). Moreover, as interactive and dynamic constructs, values both influence and are influenced by the organizational cultures in which they are embedded (Boenink & Kudina, 2020). This suggests that values-based innovation management needs to consider values from a practice-oriented perspective, that is, using stakeholder input and deliberation to understand values as the 'evolving results of valuing processes' rather than conceiving of them as stable entities (ibid.). Thus, novel facilitation methods are needed to work with values in a more profound and holistic way, providing a collaborative, experiential, and practice-oriented modes of intervention.

Gamification is one particularly well-suited approach to address culture-related innovation challenges and to facilitate values-based innovation. As sources of motivation, creativity, collaboration, and social interaction, gamified methods are gaining increasing importance for organizations that want to improve their innovation capabilities (e.g. Patrício et al., 2018).

Beyond facilitating innovation activities with a traditional focus on product and service innovation, gamification methods can be used, for instance, to specify global values and directives (such as a new sustainability strategy formulated by top management), sensitize employees to their implications, and translate global values into field-specific innovation activities (e.g. for the Envisioning Cards toolkit, see Friedman & Hendry, 2012). However, scientific research on gamified methods for addressing cultural challenges and facilitating values-based innovation is still scarce. A number of companies have experimented with heterogeneous formats, but these are usually not well documented, comparable, or evaluated. Available academic articles and business white papers tend to contain anecdotal reports of local applications and evaluations. Overarching insights on cultural and values-based challenges to innovation as well as management guidelines to design and implement gamification that would address these challenges are missing. Comprehensive literature reviews that systemize existing knowledge and suggest areas for future research are also missing.

To address these gaps, this paper explores the potential of gamification methods as a potent means for overcoming cultural challenges and for facilitating values-based innovation management. We conduct a literature review along with 26 in-depth interviews with innovation management experts. We offer a list of actionable guidelines for the design and implementation of gamified methods to address cultural challenges to managing (values-based) innovation and discuss potential application areas for gamification formats. We conclude with a proposal for a future research agenda.

2 Literature review

Organizational culture and values

The innovation literature agrees that organizational culture is a major factor in both stimulating and inhibiting innovation (e.g. Duygulu et al., 2015; Gedvilaitė & Pădurariu, 2014; Shanmuganathan, 2018). Past research has

identified various cultural factors that support innovation efforts (Asmawi and Mohan, 2011; Tidd and Bessant, 2018; Dombrowski et al., 2007). For example, Dombrowski et al. (ibid.) distinguish eight elements of organizational innovative culture: innovative mission and vision statements, democratic communication, safe spaces, flexibility, collaboration, boundary spanning, incentives, and leadership. Still, despite the widely acknowledged importance of culture for innovating, executives often treat the symptoms of innovation deficiencies through structural and institutional interventions, rather than addressing their root causes, which are deeply embedded in organizational culture (Gedvilaitė & Pădurariu, 2014, p. 9).

One essential lever for managing organizational culture is clear communication of the organizational values. In Schein's model of organizational culture (2010), values represent one of the three layers of culture, along with basic assumptions and artifacts. They provide organizational members with reference points that guide their attitudes and actions with respect to the organization's interests and goals (Büschgens et al., 2013; Pivec & Potočan, 2015). Clear communication of values allows senior managers to establish norms manifested in artifacts (e.g. rituals, stories, and physical arrangements) that serve to support innovative behaviours and contribute to enhanced innovation performance (Hogan & Coote, 2014). The values at stake in innovation are, according to stakeholder theory (e.g. Freeman & McVea 2001; Freeman 2018), those of the different stakeholders who affect or are affected by an organization's activities and suggests. Companies must thus attend to the values of their stakeholders, especially if they pursue sustainability-oriented innovations (Hörisch et al., 2014). However, aligning stakeholder values with the normative directions, strategic decisions, and daily practices of an organisation is an ongoing challenge. For instance, since the values of internal stakeholders are often implicit, accessing and aligning them with organizational goals and/or desired outcomes of cultural change can be difficult. Yet if management communication about organizational values

fails to reflect what is really important to the employees they are addressing, these messages become vague ‘cultural stamps’ that cannot translate into a framework for action (Lemon & Sahota, 2004, p. 3).

Values-based innovation management

Companies can achieve long-term success by aligning their innovation efforts with their core values and purpose (Breuer, Lüdeke-Freund & Bessant, 2022; Henderson, 2021; Rindova & Martins, 2018). Values-based innovation management ‘understands and applies individual, organisational, societal, and global values, and corresponding normative orientations as a basis for innovation’ (Breuer & Lüdeke-Freund, 2017, p. 59). Previous empirical research (Hogan & Coote, 2014; Meissner & Wulf, 2021; Manohar & Pandit, 2014; Rauter et al., 2017) and case studies (e.g. Mehta & Shenoy, 2011; Gerken et al., 2017) demonstrate how attention to values fosters innovation success, not only financially, but in having a positive impact on social and ecological sustainability.

Schein (2015, p. 9) observes that ‘defining values and norms, turning these into shared rules for behaviour, is de facto creating and managing culture’. Accordingly, a values-based approach to innovation management reviews, defines, and introduces new or reemphasizes existing stakeholder values, turns them into guidelines and rules for innovation practices, and thus develops a particular innovation culture. Attending to stakeholder values in innovation-related activities, it addresses drivers and barriers across different management dimensions, going beyond the traditional focus on process, product, and service innovations.

Breuer & Lüdeke-Freund’s (2017) values-based innovation management framework builds on the integrated management framework developed by Bleicher (2011). It distinguishes between 1) normative management to deal with overarching ethical guidelines extending beyond economic interests, 2) strategic management to ensure market differentiation and competitive advantages, and 3) operational management to create processes and tasks

that meet the strategic objectives, e.g. throughout the innovation funnel's phases of ideation and search, selection, implementation, and capture and evaluation of innovation results (Tidd et al., 2018). Furthermore, the framework emphasizes that an organization's effectiveness depends on the degree of its meta-alignment with changing stakeholder values external to the organization, vertical alignment across its normative, strategic, and operational levels of management, and horizontal alignment across its structures, activities, and behaviours.

Breuer & Lüdeke-Freund (2017) propose that the management (i.e., integration) of values on each of the three management dimensions contribute to corresponding forms of values-based innovation (fig.1):

1. on a normative level in interorganizational networks or in organizational identity, it is facilitated through the recognition and integration of often implicit stakeholder values in official corporate statements, policies, and/or desired outcomes of cultural change
2. on the strategic level in business model innovation and strategic renewal, it is facilitated through the integration of stakeholder values into business model components, organizational structures, management systems, activity-guiding programs, and role definitions or guidelines for problem solving
3. on the operational level in service, product, and process innovations, it is facilitated through the integration of stakeholder values into innovation process stages, administrative systems, operational tasks, and performance and cooperation practices

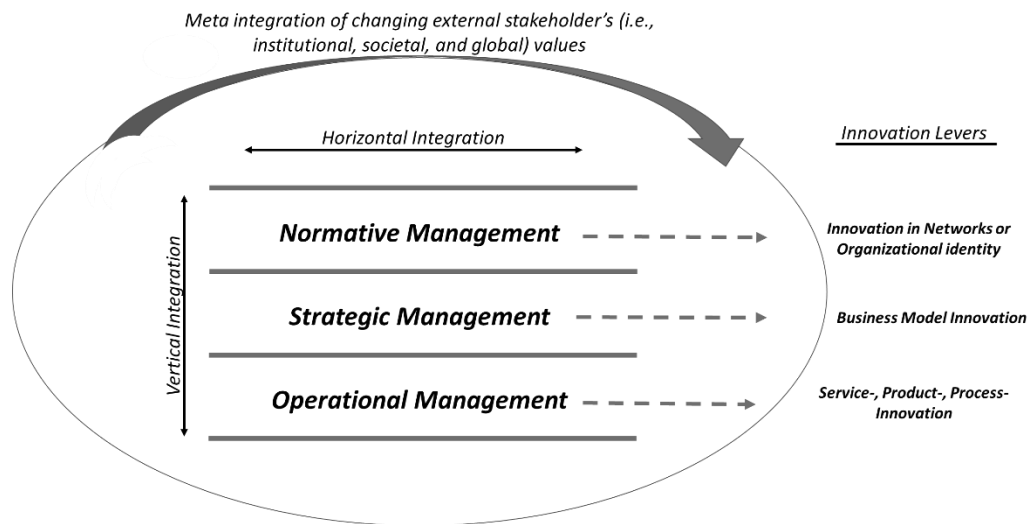


Figure 1. The values-based innovation framework, with integration mechanisms, management levels, and innovation levers, based on Breuer & Lüdeke-Freund (2017) and Bleicher (2011).

Innovation challenges

Innovation challenges can be viewed as factors that inhibit innovation (see Hjalmarrsson et al., 2014). Previous research has proposed various frameworks for categorizing the multitude of factors that inhibit innovation, including external vs internal (Hadjimanolis, 2003), revealed vs deterring (D'Este et al, 2012), systemic, behavioural, and political (Baum et al, 2014). A literature review by Smith and colleagues (2008) distinguishes nine major categories of factors that impact an organization's ability to manage innovation. One of these categories refers to cultural factors as 'the values and beliefs of the organisation and how these impact the management of innovation within the organisation' (ibid, p. 9). Their analysis suggests that 'culture is a key factor in the management of innovation ... that impacts all others and is also impacted upon by changes in the other factors' (ibid, p. 14). The culture of the organization is reflected in the organizational structure, prevalent management styles, knowledge management, and operational processes that guide the generation, development, and implementation of innovations. Notably, culture and strategy are two

factors that the authors highlight as highly interdependent since the organizational strategy reflects the underlying culture but can also trigger and guide cultural change. This interdependence can be interpreted through the prism of the values-based innovation framework, which views strategic management as an intermediary management level where values on the normative level (espoused culture) are aligned with values on the operational level (enacted culture) and vice versa.

Gamification in the context of innovation management

Gamification, or ‘the use of game design elements in non-game contexts’ (Deterding et al., 2011) is relevant to fostering the integration of values in managing innovation and building an innovation-supportive culture. Gamification taps into key motivational drivers of human behaviour through extrinsic (e.g. prizes, penalties, status) and/or intrinsic (e.g. fun, group membership, purpose) reinforcements. In this way, gamification assists in managing employee behaviours (Patrício et al., 2018, p. 501) and attitudes (Procopie et al., 2015). Therefore, gamification addresses tacit, informal, emotional, and intangible factors that drive innovation cultures.

Studies indicate that elements inherent to gamification—such as formalized social interaction, non-monetary reward systems, and storytelling—provide levers for building innovation-supportive cultures (Jassawalla & Sashittal, 2002; O’Reilly, 1989; Hogan & Coote, 2014). Moreover, when integrated in day-to-day business processes, gamification methods become part of the organizational culture and translate into cultural artefacts (like stories, physical arrangements, and rituals). As instantiations of values, these artefacts include gamified approaches that facilitate the communication of values and cultural change by encouraging employees to adopt the organization’s values through rituals, simulations, storytelling, etc.

Despite the opportunities presented by using gamification for innovation, the literature on potential applications is scarce. Gudiksen & Inlove (2018) review a number of gamified formats and games dealing with values and

culture-related organizational challenges. They study their different applications to business challenges (such as breaking down silos, suspending power relations, and establishing trustworthy relations), or to challenges in the innovation process such as mitigating conflicts between competing objectives.

Other authors have focused on the role of gamification as a method to enhance creativity, engagement, and collaboration related to ideation challenges in the early stage of innovation (Patrício et al., 2018; Patrício, 2016; Schulz et al., 2015). Different approaches have been tested such as gamestorming (Gray et al., 2010) or gamified crowdsourcing (Roth et al., 2015; Kavaliova et al., 2016; Morschheuser et al., 2017a). However, there is sparse research on how gamification contributes to challenges in later stages of the innovation funnel, such as implementation or capture and evaluation (Shpakova et al., 2020).

In the context of cultural challenges to innovation, some authors have focused on how gamification generates social dynamics to overcome deficient interactions among interdisciplinary and cross-functional groups (Asmawi & Mohan, 2011; Tidd & Bessant, 2018; Dombrowski et al., 2007). In a broader context, Shi et al. (2017) discovered that the social, hedonic, and utilitarian mechanics of gamification provide effective means to address culture-related challenges faced by manufacturing firms in their transition to advanced service provision, such as barriers to interaction with customers and suppliers.

3 Research questions and design

Research on gamification approaches to dealing with cultural challenges and facilitating values-based innovation processes is still fragmented. Literature reviews are missing, and most papers are not generalizable since they are limited to individual cases and a narrow scope with respect to innovation and gamification. As a consequence, practitioners, innovation managers, and designers who want to implement gamification to address

cultural challenges and foster values-based innovation are missing reliable sources of knowledge on preconditions, requirements, and critical design elements and observations that can inform their efforts. Therefore, this study aims to answer the following research questions:

1. What are the core insights and research gaps in the academic literature on gamification dealing with cultural challenges to successfully implementing values-based innovation management?
2. How can gamification help to overcome cultural challenges to facilitating values-based innovation management? What actionable management guidelines are suitable for the design and implementation of gamified methods addressing cultural challenges and facilitating values-based innovation management?

Considering the fragmented research context and its early stage of development, we selected an exploratory research design to address the two research questions (Babbie, 2007). We synthesize insights from a literature analysis and expert interviews and draw from different company cases to aggregate the available management and design knowledge.

First, we conducted 26 exploratory expert interviews with innovation managers and experts from six European firms, each expert with a widely acknowledged track record in gamification for innovation: a science conglomerate, a telecommunications company, a metering company, an insurance company, an airline subsidiary for IT services, and a bank. We developed a semi-structured interview guide covering three areas of interest: major challenges to innovation, past experiences with gamified formats, and perceived future potential for using gamification. The interviews were conducted between June and October 2019 with companies located in Germany, Denmark, Spain, and the Netherlands. Respondents were selected based on two criteria: (1) having first-hand experience with gamification in an organizational context and (2) being actively involved in their company's innovation processes. The average interview duration was

45 minutes (see table 1 in the Appendix for an overview of the study's sample and dataset).

To interpret the empirical data, we employed coding and aggregation procedures for expert interview analysis (Meuser & Nagel, 2009). We looked for response patterns and categories, how they help to inform the different management dimensions of normative, strategic, and operational management, and how they fit with overarching concepts such as preconditions and design challenges for gamification; aspects of innovation such as challenges, capabilities, process stages, and application domains; and aspects of organizational culture such as values, collaboration and cooperation, customer focus, time horizon (see Schein, 2010; Detert et al., 2000).

Our analysis of the literature followed Tranfield and colleagues' (2003) systematic literature review methodology and consisted of two parts. First, an initial literature analysis elicited a total of 415 research papers sourced from SCI, SSCI, AHCI, and Web of Science databases between 1900 and 2021. The following keywords were used: (gamif* AND innovation) OR (gamif* AND creativity) OR (gamif* AND idea*) AND (culture OR values). The word 'game' was excluded from the search string because it elicited a large number of additional articles (3,022), mostly unrelated to the topic of business innovation and our research questions and instead dealing with computer games and the video game industry.

Only JCR indexed papers were reviewed (no books and no conference proceedings). The 415 articles were narrowed down to 58 dealing with the topic of business, management, or economics. These were further narrowed down to 14 articles focusing on the concepts of values and culture in an innovation or entrepreneurship-related context.

In the second part of the literature analysis, we conflated industry and academic perspectives on the subject by reviewing ISPIIM (International Society for Professional Innovation Management) conference, symposium,

and innovation forum papers between 2009 and 2021. ISPIM is a community of researchers, practitioners, entrepreneurs, consultants, and public entities who share an interest in innovation management. One of their focus themes is gamification. We chose to review ISPIM publications due to the strong participation of innovation practitioners and consultants in its community and its comparatively stronger emphasis on practice-oriented themes in relation to the more theoretical focus of journal publications. We found 85 articles (<https://www.ispim-innovation.com>) that include the keywords 'game', 'games', or 'gamification' and extracted 37 that explored gamification methods for innovation, 11 of which we excluded from our analysis because only their abstracts had been published. We further narrowed down the list to 12 papers that included the keywords 'culture' OR 'values'.

Thus, we selected and conducted an in-depth review of a total of 26 academic and practice-oriented papers discussing gamification approaches that address values-based innovation and cultural innovation challenges. We systematically described each article, summarizing cultural challenges to innovation, research methods or approaches, games or gamification format types, insights relevant to our research questions, and their suggestions for effective design or implementation.

4 Findings

In reviewing the selected literature, we related the cultural challenges with the normative, strategic, and operational management levels of the values-based innovation management framework (Breuer & Lüdeke-Freund 2017). On the normative level of management, eight of the reviewed publications explored the potential of gamification to address challenges of alignment between stakeholder values and espoused organizational culture (see table 2). On this level, cultural challenges consisted of the appropriate consideration of values specific to generations (Procopie et al., 2015), the different phases of group development (Jovanović et al., 2016), and the

translation of values into daily practices (e.g. Gudiksen & Sørensen, 2017; Breuer et al., 2022). Open innovation (Giménez Fernández & Abril, 2020), brand perception (Eigenraam et al., 2021), and European policy (Perrotta et al., 2020) are discussed as challenging application contexts. Several gamification approaches support alignment of stakeholder values and espoused organizational culture, brand engagement initiatives, and attendance to key ethical issues of gamification design.

On the strategic management level, five of the reviewed studies present approaches for addressing challenges of business model innovation and strategic renewal (table 3). Typical cultural challenges on this level are related to the leveraging of background knowledge, (contradictory) inter-organizational knowledge (Shi et al., 2017; Santonen et al., 2020), and manager skills and capacities conducive to (radical) business model innovations based on sustainability values (Lejeune, 2012; Wagner & Galuszka, 2020). These challenges are addressed across the application contexts of stakeholder relationships (e.g. with clients or supply chain partners), workshop facilitation, and employee assessment and training. Different gamification approaches and game mechanics are discussed in relation to their effectiveness in enabling stakeholder dialogue and providing participants with a shared understanding of common values, normative directions, and strategic options (e.g. for availability-based vs performance-based servitisation, see Shi et al., 2017 or for incremental technological developments vs radical innovation, see Wagner & Galuszka, 2020).

On the operational level, 16 of the reviewed studies concentrate on the more general social outcomes of gamification, that is, to improve engagement, communication, and collaboration among stakeholders across the innovation funnel of service, product, and process innovations (table 4). Here, the extant literature discusses cultural innovation challenges such as organizational inertia (Giménez Fernández & Abril, 2020), values-based conflicts (Sick et al., 2018), and meagre intrinsic motivation (e.g.

Lithoxidou et al., 2020; Morschheuser et al, 2017), communication, collaboration, experimentation, or risk taking among stakeholders and within heterogenous teams (e.g. Patricio et al., 2020; Parjanen & Hyypiä, 2019). Challenging application contexts include crowdsourcing (e.g. Morschheuser et al, 2017), co-creation, and cross-functional collaboration (e.g. Bang, 2009; Parjanen & Hyypiä, 2019), ideation (e.g. Järvillehto et al., 2011), and open innovation (Bhimani et al., 2018; Giménez Fernández & Abril, 2020). The effectiveness of different game mechanics and other design approaches depends on the purpose and application context of the intervention, e.g. hedonic (motivation, engagement), social (team spirit, consensus building) and utilitarian (for creativity, productivity, and cognitive outcomes, see Patrício et al., 2018).

In addition, the literature suggests several types of games and gamified formats that are suitable to address specific cultural innovation challenges. First, dilemma games have been discussed for their potential to raise awareness and establish a shared understanding of organisational values (Breuer et al., 2022; Giménez Fernández & Abril, 2020) and to promote vertical as well as horizontal communication across boundaries (Gudiksen & Sørensen, 2017). Second, gamified workshop facilitation methods can guide participants through the collaboration process, support co-creation (Sick et al., 2018), and ensure that initial values-based framing informs subsequent decision-making (Breuer et al., 2022; Ivanov & Breuer, 2021; Giménez Fernández & Abril, 2020). Modelling materials can also be used as boundary objects to support workshop activities (Zenk et al., 2021). Third, several publications propose different ideation games as methods to promote collective creativity, collaboration, experimentation, and risk taking through the use of tangible symbols and actions (Patrício, 2016; Parjanen & Hyypiä, 2019; Giménez Fernández & Abril, 2020). Fourth, another often discussed type of intervention is gamified crowdsourcing platforms, which enhance the engagement and motivation of employees and other stakeholders in contributing to the innovation process (Morschheuser

et al., 2017a; Roth et al., 2015; Zimmerling et al., 2019; Giménez Fernández & Abril, 2020). Fifth, the literature also presents various design games that facilitate dialogue between designers and other stakeholders, e.g. regarding values (Bang, 2009) or the implementation of alternative design strategies (Santonen et al., 2020). They can also be used to capture logic and emotions related to the design process and thus enable assessment of managerial capacities and skills (Lejeune, 2012). Sixth, less often discussed formats include traditional business simulations (see Dubina, 2015), which Bhimani and colleagues (2018) use to address social exclusion challenges in open innovation and approaches to gamifying social collaboration platforms and customer engagement initiatives (see Lithoxoidou et al., 2020; Eigenraam et al., 2021). Seventh, agile management and retrospective games have potential to improve a shared understanding of values and project-related objectives in the early (forming and storming) phases of small group development (Jovanović et al., 2016; Giménez Fernández & Abril, 2020).

From the interview transcripts, we also derived observations and lessons learned from the experts regarding the effective design and implementation of gamification to address innovation challenges. These were clustered into 11 emergent categories making up design and implementation guidelines associated with the different forms of values-based innovation: on the normative level, in interorganizational networks, or in organizational identity; on the strategic level, in business model innovation and strategic renewal; and, on the operational level, in service, product, and process innovations (see tables 5, 6, and 7). These findings were deepened with references to the scientific literature we analysed, which provided further support to the interviewees' observations and elicited further guidelines in the categories already identified.

In addition, the literature review indicated three further categories of guidelines for addressing cultural challenges on the operational management level: 1) using physical tools to promote communication and collaboration (Patrício et al., 2018; Parjanen & Hyypiä, 2019; Zenk et al.,

2021); 2) using non-technical language to facilitate understanding (Procopie et al., 2015; Santonen et al., 2020; Zenk et al., 2021), and 3) considering the pros and cons of using games or only game elements (i.e., gamification) depending on the application context (Skaržauskienė & Kalinauskas, 2014).

5 Discussion

Based on a literature review and 26 expert interviews, we identify several types of games and gamified formats that can be used to overcome cultural challenges and drive values-based innovation. Previous research on a limited variety of different games and gamified formats indicated a general (but not arbitrary) suitability of gamification to facilitate values-based innovation. In the literature we found a strong focus on cultural challenges in the early stages of innovation; by contrast, our expert interviews indicated cultural challenges throughout all stages of the innovation process. This suggests a prevalent need for adopting measures and tools that enhance performance in the later and seemingly more problematic areas of innovation performance (i.e., implementation, and the capture and evaluation of innovation results).

Concerning good practices in the implementation of gamification approaches to overcome cultural challenges, we find limited guidance on important matters such as type of participants, mechanisms, and teams. This important aspect is often omitted because attitudes towards competitiveness (Skaržauskienė & Kalinauskas, 2014; Morschheuser et al, 2017a), unconventional rules (Breuer et al., 2022), physical boundary objects (Zenk et al., 2021), complexity of tasks (Patrício et al., 2018; Morschheuser et al, 2017a), or games in general (Skaržauskienė & Kalinauskas, 2014) vary depending on the participants and the context.

Furthermore, we found several gamification approaches—such as dilemma games and design games that enable facilitation of a bottom-up formulation of values involving individual employees in a ‘dynamic value definition’ of an organisation—that complement the conventional top-down approach of

trying to align employees with the normative directives of the organisation (Breuer & Lüdeke-Freund 2017; Gudiksen & Sorensen 2017). Although organizational values defined at and descending from an authoritative upper management level play a key role in defining organizational cultures, these may remain disconnected from the values of operational employees or other important stakeholders. Thus, a top-down approach to communicating corporate values (see Jollands et al., 2015) may overlook employees' individual priorities and undermine rather than support cultural integrity. When incompatibilities between official values and individual employee values remain unaddressed, they increase the organization's propensity for cultural (innovation) challenges, such as resistance to change and value-action gaps (Edwards & Cable, 2009; Sull et al., 2020).

Values and cultural issues are rarely self-evident, but instead are deeply woven in individual and organisational practices. Therefore, leveraging them to drive innovation requires more complex forms of gamification, likewise a richer set of mechanics than simple points, badges, and leaderboards are required to crowdsource diverse and creative contributions with gamification (see Morschheuser et al., 2017a). Moreover, the gamification of innovation activities that address social or environmental challenges needs to go beyond a reductionist design that underestimates the complexity of such wicked problems and the trade-offs between conflicting stakeholder values that they imply (Sick et al., 2018). To do so, designers should attend to the importance of ethical values that inform the design process and develop game imaginaries to support niches for radical (e.g. sustainability-oriented) innovation (Perrotta et al., 2020; Wagner & Galuszka, 2020). This also aligns with Shahri and colleagues' position (2014) advocating a value-sensitive design approach to ensure ethical use of gamification in enterprises.

6 Managerial guidelines for design and implementation

Based on the experiences and insights elicited from the expert interviews and literature analysis, we propose a set of management guidelines to design and implement gamification that addresses cultural challenges and facilitates different forms of innovation across the three dimensions of (values-based) innovation management (fig. 2).

On the normative level, gamification formats that aim at renewing corporate identity and initiating cultural change that lines up with stakeholder values should build on the existing culture and employee values. Players belong to different subcultures within an organization and hold attitudes or preferences towards gamification that are specific to their demographic or functional backgrounds (Generation X vs Y and Z; educators vs practitioners) or level of experience (new vs established teams; acquaintance with vs scepticism about the advantages of gamification). These differences constrain the design process and should be addressed in the development of game contents and mechanics as well as in how gamification formats are presented to their target groups. To accommodate the expectations of different subcultures, formats that facilitate innovation on the normative level benefit from co-development approaches that involve a wide range of employees as well as lead users from the workforce. Moreover, such co-development approaches can be combined with gamification formats that support bottom-up (re-)definitions of organizational values by collecting contributions from individual members and even newcomers to the organization (e.g. for crowdsourcing of values as in the case of IBM's ValuesJam, see Breuer & Lüdeke-Freund, 2017).

On the strategic level, formats that facilitate business model innovation or strategic renewal should be aligned with the scope of the company's strategic agenda. Managers should weigh and continuously reflect on the effectiveness (the costs and benefits) of using alternative gamification approaches or components to support specific strategic objectives. For

example, gamified workshop formats that bring together a narrow circle of strategists for the development of a new business model or a strategic framework will require an elaborate setup that structures collaboration, knowledge exchange, and decision-making among them. In other cases, however, the implications of an already defined strategic agenda need to be communicated and spread throughout the entire organization. Fostering such large-scale dissemination will require much lighter formats that can be disseminated, learned, and played quickly.

Finally, on the operational level, gamification formats focus on improving engagement, communication, and collaboration among stakeholders across the innovation funnel of service, product, and process innovations. Here managers should pay special attention to how incentives, reward systems, and competitiveness support or diminish employee motivation. In line with previous publications, we recommend integrating explicit intrinsic (e.g. values-based) rather than extrinsic (e.g. monetary incentives) motivational stimuli to engage participants. Game elements such as epic meaning (Chou, 2019), storytelling (Toda et al., 2019), and humour (Dormann & Biddle, 2009) are some design approaches that facilitate such integration. Furthermore, we suggest developing game designs that combine cooperation with competition, so that the positive effects of the former mitigate the potential negative effects of the latter. Support from middle and top managers who participate on an equal footing with other employees, professional moderation, comprehensive tasks, and the use of non-technical language are further factors that positively influence the engagement of employees. Tangible tools such as cardboard, decks, craft materials, LEGO bricks, and board games are powerful means to support moderation, simplify task descriptions, and enhance creativity, communication, and collaboration.

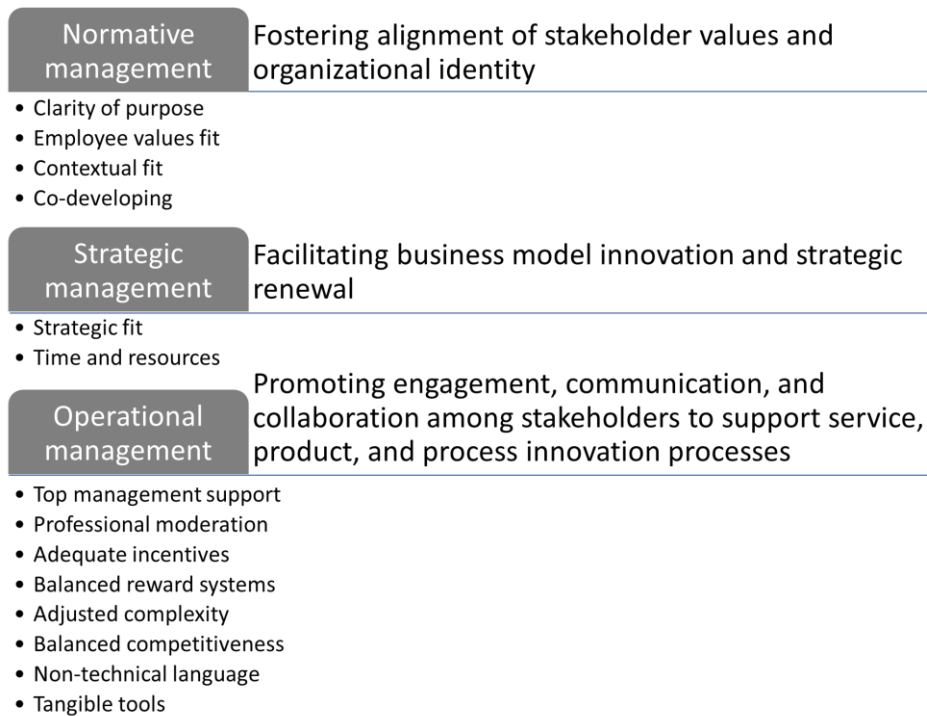


Fig. 2. Management guidelines for gamification to address cultural innovation challenges across three management dimensions of (values-based) innovation.

7 Conclusions

This paper explores how gamification can be used to overcome the challenges organisational culture and values often pose to innovation. Through a review of literature and interviews with experts, we make sense of the main challenges experienced by companies, collect good practices from the literature, and propose concrete implementation guidelines for organizations to follow. We classified the challenges in ten categories and propose a course of action following good practices dealing with these challenges. However, the wide range of gamification approaches we investigated as well as the variety of research methods applied in the reviewed articles limited the possibility to formulate theoretical generalizations.

Furthermore, we summarized a set of management guidelines for gamification design and implementation in three domains: normative, strategic, and operational. In addition, we highlight some of the gaps in the literature on gamification in the context of cultural innovation challenges, such as the lack of existing formats and empirical insights on later innovation stages, methods for bottom-up elaboration, and working with employee and diverse stakeholder values.

We acknowledge that the nascent literature in this important topic is sparse, and we propose a research agenda that will help to advance theory and practice on gamification to address cultural challenges and facilitate values-based innovation:

First, additional systematization and a focus on the interconnectedness of design elements (Shpakova et al., 2020) is needed. One promising approach would be to identify recurring innovation challenges and to analyse the interrelated gamification design patterns that address them.

Second, there is a need to further explore the role of the facilitator and how participant characteristics affect the design and implementation of a gamification intervention.

Third, further research into the ‘dark side’ of gamification for innovation is needed, for example, to explore how it can be misused to solely increase employee productivity.

Fourth, future research on collaborative, cross-hierarchical exploration and negotiation of values (e.g. through dilemma games, design games, or crowdsourcing) offers a promising area of investigation for methods to overcome cultural challenges such as value-action gaps and value incongruence as well as to facilitate values-based innovation on the normative management level.

Fifth, we found several recurring observations in the 26 expert interviews that point towards the future potential for using gamification in the context

of innovation. These observations provide academics with implications for future research and practitioners with implications for the development of new gamified formats that address cultural innovation challenges and facilitate values-based innovation. We grouped the statements into five emerging categories: promoting experimentation in a safe environment, establishing a common ground of understanding, breaking down silos, facilitating cross-functional collaboration, and promoting personal relationships.

The findings of this study offer important theoretical and managerial contributions. First, a strong research agenda has been proposed to advance knowledge on how gamification can overcome cultural challenges for values-based innovation. Second, implications and guidelines for managers and practitioners are described. We provide a detailed list of good practices if gamification is to successfully deal with cultural challenges to innovation. Finally, developers and practitioners are provided with guidelines for design and implementation of gamified methods to support innovation.

In sum, the academic and field research undertaken in this study has allowed us to showcase the power of games and gamification to develop innovation-supportive cultures and values-based innovation. The diverse works reviewed in this study—often representing initial efforts in an emergent field—underline the need to develop novel organization and situation-specific applications, to identify design patterns that address recurring innovation challenges, and to conduct further empirical research to better understand, design, and use more playful ways of managing what we care about.

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Appendix

Table 1. Overview of sample and dataset.

Companies and number of interviews	Positions of interviewed employees
Science conglomerate (2)	Innovation Manager; Senior Application Support Engineer
Telecommunications company (6)	Head of Corporate Gallery; Senior Expert at Transformation Office; Senior Expert for People Transformation; Design and Customer Experience Lead; Senior Project Manager of HR Digitalization and Innovation
Metering company (2)	Senior UX Designer; Head of Data Analytics and UX Design
Insurance company (9)	Senior Executive Corporate Strategy; Chief Executive HR Transformation; Head of Management Control Department; Smart Insurance Project Lead; Smart Insurance for Mobility Product Owner; Senior Consultant for Organization and Processes; Innovation Manager; Head of Mobility Product Management Department; Senior Executive of Prevention Program
Airline subsidiary for IT services (4)	Executive for Business Development and Innovation; CEO's Executive Assistant; Innovation Manager; Innovation Manager
Bank (3)	Senior Development Manager; Chief Consultant Business Development; Chief Business Analyst

Table 2. Gamification approaches (in normative management) to foster alignment of stakeholder values and espoused organizational culture.

Publication	Cultural challenge to innovation	Research method/ approach	Game/ gamification format type	Insights
Procopie et al., 2015	Companies need to adapt to Generation Y's values of independence, openness, idealism, and interactive work to adequately engage them in innovation processes.	Survey	-	Generation Y focuses on the potentials of gamification to aid product and service development, gain knowledge and skills, and create an interactive environment for innovation.
Jovanović et al., 2016	Group development phases of forming, storming, norming, and performing in agile teams are facilitated through agile retrospective games. How can we select appropriate games for each phase?	Literature review	Agile retrospectives	The suitability of 85 retrospective games to support the four phases of group development is assessed and provides guidance for practitioners to select the appropriate ones.
Gudiksen & Sørensen, 2017	Official organizational values are frequently abstract and disconnected from daily practice, preventing their adoption in everyday work situations and customer interactions, as well as their potential to drive innovation.	Action research	Dilemma games	Dilemma games support the adoption of organizational values, sensitize employees to potentially conflicting or abstract values, and promote (values-based) communication across organizational boundaries.
Breuer et al., 2019		Design patterns		
Ivanov & Breuer, 2021		Design patterns	Workshop facilitation	
Giménez Fernández & Abril, 2020	Organizational inertia is a common cultural barrier to the successful transition towards open innovation. In the institutionalizing stage of open innovation, it hinders cross-functional collaboration and the development of a shared, long-term vision that aligns employees.	Literature review	Agile retrospectives; workshop facilitation; dilemma games	Retrospective games, dilemma games, and gamified workshop formats facilitate the institutionalizing stage of open innovation by increasing employees' intrinsic motivation, aligning their understanding of organizational values, introducing new forms of collaboration, or agreeing upon a new shared vision.
Perrotta et al., 2020	Values of social responsibility and ethics are accepted guiding principles for market and innovation stimulation in European funding policies. Gamification has become a prominent policy priority, but ethically problematic aspects of gamification have remained neglected in European policy discourse.	Policy and discourse analyses	-	Recommendations are made for examining 'games as culture' and attending to key ethical issues of gamification (design), such as competition–collaboration dialectics, the role of uncertain rewards, the importance of social values, and the representation of stereotypical roles, narratives, gender, race, and class.
Eigenraam et al., 2021	The appropriate use of gamification approaches to engage customers in positive brand perception depends on the type of brand image the company has. How do brand values and heritage, in addition to warmth and competence, play a role in consumer responses to engagement initiation?	Survey	Customer engagement initiatives	Entertainment initiatives are not appropriate for warm brands, whereas informative engagement is appropriate for both warm and competent brands.

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Table 3. Gamification approaches (in strategic management) for facilitating business model innovation and strategic renewal.

Publication	Cultural challenge to innovation	Research method / approach	Game/ gamification format type	Insights
Lejeune, 2012	The incorporation of ‘strong sustainability’ into business models necessitates the identification and evaluation of managers’ skills and capacities to design business models based on sustainability values.	Single case study	(Business modelling) Design games	A table game captures the logic and emotions related to the design of new sustainable business models and assessment of managers’ capacities and skills.
Shi et al., 2017	In transitioning towards advanced service provision, manufacturing companies must overcome cultural barriers, such as difficulties in sharing interorganizational knowledge or establishing interactive relationships with clients and supply chain partners.	Literature review	-	A theoretical model proposes two levels of gamification design: availability-based and performance-based growth. Practitioners use gamification’s emotional mechanics (hedonic, utilitarian, and social) to overcome barriers to servitisation.
Breuer et al., 2019	Workshops that address complex innovation management challenges require leveraging background knowledge, establishing common ground among participants, and facilitating creative collaboration.	Design patterns	(Business modelling) Workshop facilitation	Gamified workshop facilitation methods provide participants with a shared understanding of common values, normative directions, and strategic options, and ensure that initial (values-based) framing informs subsequent decision-making.
Santonen et al., 2020	Diversity of stakeholders with complementary or controversial skills and knowledge can pose a barrier to developing a shared strategic vision for circular economy business models.	Single case study	(Business modelling) Design games	Qualitative and quantitative evaluation of a board game uses descriptions of circular economy strategies and blank cards to be filled. The game combines theory and business model design strategies to enable stakeholder dialogue and development of a shared vision.
Wagner & Galuszka, 2020	Games promoting (sustainability-oriented) innovation should allow for creative acting and thinking. How can niches for innovation and radical change be incorporated in the imaginaries of games that reproduce outdated socio-technical regimes?	Discourse analysis	-	A critical analysis of social imaginaries in six digital serious games about the transition towards renewable energy advocates for less reductionist design to explain complex energy issues, by emphasizing central priorities and a radical change of the social order.

Table 4. Gamification approaches (in operational management) addressing cultural innovation challenges.

Publication	Cultural challenge to innovation	Research method / approach	Game/ gamification format type	Insights
Bang, 2009	Users' emotional values and experiences about a product are difficult to verbalize, making communication and collaboration with designers difficult.	Single case study	Design games	A 'design game' engages users in a dialogue about soft and non-verbal issues like emotional values in textile design.
Morschheuser et al, 2017	Crowdsourcing campaigns bring in contributions from a wide range of stakeholders, promoting innovation-supportive cultures. However, as they provide little or no monetary incentives, their success is contingent on engaging 'the crowd' through intrinsic motivation.	Literature review	Crowd-sourcing platforms	A conceptual framework examines the attributes of gamified crowdsourcing systems, showing that gaming experiences elicit intrinsic motivation and increase crowdsource contributions.
Roth et al., 2015		Literature review		Overview of a longitudinal study (Scheiner, 2015) indicates that basic game elements such as points, rating systems, badges, or levels positively impact the motivation to participate.
Zimmerling et al., 2019		Field experiment		Game elements boosting crowdsourcing platform activity are ineffective at increasing the quantity and quality of ideas. Practitioners should treat game elements with caution to avoid undermining the utilitarian aspects of crowdsourcing.
Breuer et al., 2019		Design patterns		Crowdsourcing formats foster engagement and collaboration through gamified ideation, resource allocation, crowdfunding, and 'innovation markets'.
Parjanen & Hyypiä, 2019	Innovation-supportive cultures require collaboration among a wide range of stakeholders, but team heterogeneity and differences in working and communication styles can hinder collective creativity processes.	Single case study	Ideation games	The Innotin game supports innovation activities through cognitive (learning and understanding) and social (creative atmosphere, facilitated dialogue, networking, and ideation) affordances.
Skaržauskienė & Kalinauskas, 2014		Literature review		Gamification fosters collective intelligence and creativity by incorporating game elements that promote competitiveness, collaboration, engagement/immersion, and flow.
Zenk et al., 2021		Comparative evaluation		Workshop facilitation
Järvilehto et al., 2011	Conflicting organizational pressures, high complexity and uncertainty, and continuous exploration of customers' needs and values at the front end of innovation requires increased levels of engagement and collaboration among diverse stakeholders.	Multiple case study	Ideation games	InnoCoopenhances front-end innovation efforts through cooptation and a tournament format of serious games.
Patrício et al., 2018		Literature review	-	Cross-comparison of 18 cases of gamification in the early stage of innovation identifies three positive gamification outcomes: hedonic (motivation, engagement), social (team spirit, consensus building), and utilitarian (cognitive)
Patrício, 2016	Innovation cultures support behaviours and capabilities such as collaboration, experimentation, and risk taking. How can such values be promoted through tangible symbols and actions?	Single case study	Ideation games	ideaChef helps teams to ideate solutions by using cooking metaphors, supporting innovation and co-creation in a more open environment, stimulating dialogue, team building and team spirit and shaping an innovation-supportive culture.
Patricio et al., 2020		Multiple case study		

Bhimani et al., 2018	Social exclusion experienced by individuals and groups threaten their sense of belonging and impede open innovation projects.	Single case study	Business Simulation	An Open Innovation Game addresses social exclusion challenges by examining interactions and exchanges in open innovation processes.
Lithoxoidou et al., 2020	Social collaboration platforms contribute to employee engagement and support knowledge exchange but motivating employees for long-term participation can be challenging.	Single case study	Social collaboration platforms	Positive qualitative and quantitative evaluation of an online social collaboration platform gamified through game mechanics that award participants for their active participation in exchanging knowledge and engaging in routine workplace activities with low interest.
Sick et al., 2018	Wicked problems entail a wide range of stakeholders with opposing values, necessitating the integration of disparate viewpoints and collaboration among diverse actors.	Single case study	Workshop facilitation	The article proposes WickSprint as a holistic approach for multidisciplinary workshops using gamification elements (instead of crowdsourcing and innovation contests) to engage participants and foster collaboration.
Giménez Fernández & Abril, 2020	Organizational inertia is a common cultural barrier to open innovation, including the not-invented-here and not-sold-here syndromes, functional fixedness, knowledge inertia, and the lack of employee motivation and commitment.	Literature review	Crowd-sourcing platforms; Ideation games	A systematic literature review proposes gamified crowdsourcing, future scenario techniques, and ideation games for facilitating the unfreezing and moving stages of open innovation. They overcome organizational inertia by boosting creativity and learning, introducing new communication flows, and engaging the crowd in the exploration of business opportunities.

Table 5. Management guidelines to design and implement gamification addressing cultural innovation challenges of normative management.

Overarching design and implementation guidelines	Recommendations and exemplary quotes
Providing clarity about the games' purpose and real-world impact	Clarify the desired consequences of the activity to participants: <i>'The game or the setting should impart to the people what kind of behaviour is expected from them'</i> (Senior Expert for People Transformation at Telco).
	Clarify potentially negative consequences of the activity to participants: <i>'What happens when you even don't play it, what happens when you win it, what happens when you lose it'</i> (Design and Customer Experience Lead at Telco).
	Rules that connect actions with rewards clarify the purpose of playing (Lithoxidou et al., 2020, p. 8).
Ensuring fit to employee target groups and the organizational culture	Ensure fit of gamification to employee target groups: <i>'Not that it is one gamification for all. It [should be] goal oriented, knowing why I do what I do, and above all for whom ... and what (gamification) functions are relevant for them'</i> (Innovation Manager at Airline subsidiary).
	Ensure fit of game rules to employee target groups: <i>'How do we support a process to think that there are no strict rules ... rather to say that we have fundamental principles that are behind and for each target group, for each occasion we reconsider how is that game on that day'</i> (Senior Expert for People Transformation at Telco).
	Among the great variety of approaches, identify those <i>'that fit into the corporate culture, with the corporate purpose ... What is ... feasible? What can ... help us as a company and what can ... help the employees to successfully use gamification?'</i> (Senior Project Manager of HR Digitalization and Innovation at Telco).
	Consider generation Y's attitudes and preferences (Procopie et al., 2015)
	Ensure fit to the current stage of a team's group development (Jovanović et al., 2016).
	Engage participants with diverse attitudes, but avoid confusion caused by unconventional rules or fuzzy guidelines (Breuer et al., 2019, p. 17).
Considering the pros and cons of using games or only game elements	Consider differences in the requirements and acceptance of games among educators and practitioners (Santonen et al., 2020).
	Avoid full-fledged games that constrain creativity by forcing players to comply with rules and use instead individual game design elements that do not involve the constraints found in the gaming world environment (Skaržauskienė & Kalinauskas, 2014, p. 5).
Co-developing with employees to foster adoption and alignment with business objectives	Engage lead users from the workforce: <i>'We have a strong gaming community ... with more than 9,000 subscribers ... You can ask these guys to perhaps also develop a game or think about what makes you play games.'</i> (Design and Customer Experience Lead at Telco).
	Incorporate game tools to engage employees in the definition of corporate values. Foster self-efficacy and a sense of ownership by accompanying top-down definition and promotion of official values by contributions from individual members and newcomers to the organization (Gudiksen & Sørensen, 2017, p. 11).
	Interview stakeholders to consider the special requirements of the industrial work environment (Lithoxidou et al., 2020).

Table 6. Management guidelines to design and implement gamification addressing cultural innovation challenges of strategic management.

Overarching design and implementation guidelines	Recommendations and exemplary quotes
Ensuring fit to the organizational strategy and/or pressing needs or challenges	Use gamified approaches for challenge-based ideation and idea management: <i>'We [provide] every employee with 1000 euros a year to support and work on ideas in our crowdfunding system ... In this platform, one sees ... the challenges that have been defined. And we have different areas in which we look for ideas or where one can propose ideas besides these challenges which become visible to all employees in the company.'</i> (Innovation Manager at Airline subsidiary).
	Reflect on the effectiveness of gamification components to contribute to strategic objectives: <i>'One should really look at what makes sense and why I use gamification functions or ... components and what I want to achieve with them ... and then ... self-reflect on if I really achieve that.'</i> (Innovation Manager at Airline subsidiary).
Considering time and resource expenditures as boundary conditions for implementation and dissemination	Ensure that games can be learned and played quickly: <i>'Ideally, you have something that is easy to understand and easy to scale, because then you can spread it though the whole organization. And if I am talking about the main challenge, which is the cultural challenge, I think we need something that is easily scalable.'</i> (Head of Corporate Gallery at Telco).
	Involve influential stakeholders to support dissemination and scaling throughout the organization: <i>'Gamification is after all ... a new method ... It will be implemented successfully only when it has corresponding [top management] promoters [that motivate employees to try the new method].'</i> (Smart Insurance Project Lead at Insurance company).

Table 7. Management guidelines to design and implement gamification addressing cultural innovation challenges of operational management.

Overarching design and implementation guidelines	Recommendations and exemplary quotes
Ensuring sufficient support from middle and top management	<p>Indicate the importance of the activity: <i>'to see that the key bosses are also participating in the game session.'</i> (Senior Expert at Transformation Office at Telco).</p> <p>Help to foster engagement and ensure intrinsic motivation by having top managers participate on an equal footing with other employees (Procopie et al., 2015, pp. 1145f.).</p>
Ensuring professional moderation	<p>Have facilitators clarify the purpose in advance: <i>'[They] must ... talk about what is actually done ... Are [they] doing organizational development and trying to change people, to influence teamwork, to optimize processes? [They] should not be scared away if there is resistance.'</i> (Senior Expert for People Transformation at Telco)</p> <p>Have an experienced facilitator for commenting on the game process and purpose, ordering tasks, warming up, relaxing, and engaging the participants (Parjanen & Hyypiä, 2019, p. 31).</p> <p>Ensure game success by engaging facilitators with prior experience playing the game before moderating it.</p> <p>Have experienced facilitators to guiding participants using boundary objects (LEGO bricks) in building models and formulating metaphors (Zenk et al., 2021, p. 10).</p>
Avoiding misleading incentives	<p>Prevent disincentives, cheating to maximize game performance (posting many ideas with poor quality), or straying from the organization's objectives (Procopie et al., 2015, p. 1146; Breuer et al., 2019, p. 17).</p>
Adjusting balance between reward systems and intrinsic motivation	<p>Design games that are not based on monetary incentives: <i>'[They] should be so well designed that people have fun playing it. And this is the core ... you want to release people from this profit orientation ... With a new game thinking about CO2 reduction ... the winner [and] ... the telecom sponsors... [could invest in] sustainable projects ... [for] a societal benefit.'</i> (Design and Customer Experience Lead at Telco).</p> <p>Emphasize intrinsic (values) rather than extrinsic (monetary incentives) motivations (Järvilehto et al., 2011, p. 7).</p> <p><i>'When intrinsic motivation is supported by extrinsic stimuli, individuals may feel less motivated to work without a boost from the outside sources.'</i> (Skaržauskienė & Kalinauskas, 2014, p. 5),</p> <p>Generation Y players are more likely to pursue intrinsic rather than extrinsic motivations, such as learning or feeling good about helping others (Procopie et al., 2015, p. 1145).</p> <p>Avoid external incentives have little to no direct impact on the quality of proposed ideas, and provide instead intrinsic motivation such as real-time performance feedback and goal setting to have a positive impact on performance (Zimmerling et al., 2019).</p>
Adjusting task complexity and game characteristics	<p>Avoid strict rules that limit creativity even though playfulness can distract from main objectives: <i>'Gamification should not mean that there will be a set of rules, imposed, forced that limit too much creativity and free space.'</i> (Senior Expert for People Transformation at Telco).</p> <p>Do not compromise the personal privacy of participants: <i>'To organize myself through such a gamification approach that is very connected with my daily life and pushes a lot on my personal daily routine ... that doesn't work when it becomes too personal ... [or] if one violates the rules or does not hold on to what he/she has set to achieve.'</i> (Senior Expert for People Transformation at Telco).</p>

	<p>Consider task characteristics and complexity when integrating game elements into crowdsourcing systems. Simple points and leaderboard-based designs are more appropriate for crowd rating and crowd processing, whereas crowdsolving and crowd creating can benefit from a variety of gamification designs that engage broad target groups in the short and/or long term (Morschheuser et al, 2017a).</p>
	<p>Design tasks that are sufficiently challenging (confront business assumptions) to motivate participants (Patrício et al., 2018, p. 506).</p>
	<p>Gamify desired behaviours by dividing them into small and easily fulfilled actions following the so-called Tiny Habit theory (Lithoxidou et al., 2020, p. 8; see Fogg, 2019).</p>
Balancing competitiveness which fosters motivation to play, but can also put pressure on participants	<p>Integrate community (team-based) aspects to improve motivation, internal communication, and collaboration: <i>'Some sort of a community should emerge so that ... a sense of togetherness is discovered ... exactly like with that sport app... One can find people who walk the same routes ... and walk together.'</i> (Järvillehto et al., 2011).</p>
	<p>Design games based on cooperation, or a combination of cooperation and competition rather than competition alone in order to be more supportive in achieving a common output or goal.</p>
	<p>Encourage individual creativity in a competitive environment for ideation but be aware that the setting is less controllable than in a collectivistic setting and may provoke negative outcomes (Skaržauskienė & Kalinauskas, 2014).</p>
	<p>Motivate crowdsourcing participants more effectively using rankings or public visualizations of achievements as opposed to individual-level elements (Morschheuser et al, 2017a).</p>
	<p>Be aware that some gamification features that stimulate autonomy, competence, and social relatedness (such as design patterns for setting of shared goals or design principles for the design of motivational affordances) are more fit for developing cooperative formats than others (Morschheuser et al., 2017b).</p>
	<p>Ensure a networking environment to provide dialogue, information sharing, empathy, and transparency in gamification (Patrício et al., 2020, p. 152).</p>
Using non-technical language to facilitate understanding	<p>Define game goals and objectives in a non-technical manner so that they are understandable for all participants (Procopie et al., 2015, p. 1145).</p>
	<p>Be aware that participants' task domain knowledge may heavily impact how useful they perceive a game (Santonen et al., 2020).</p>
	<p>Use a skill-building phase when introducing participants to new formats or mediums of play (LEGO bricks). Use a sense-making phase at the end of innovation workshops to retranslate insights generated from unconventional material to the existing organizational language (Zenk et al., 2021, p. 10).</p>
Using physical tools to promote communication and collaboration	<p>Encourage interaction, consensus building, cognitive and creative thinking among participants by using physical tools such as cardboard, decks, art craft materials, or board games (Patrício et al., 2018).</p>
	<p>Use metaphoric boundary objects like notes, cards, and media as a coordinating mechanism to encourage knowledge sharing (Parjanen & Hyypiä, 2019, p. 31).</p>
	<p>Use LEGO bricks as they are more enjoyable and inspiring than moderation cards and are more suitable for aiding collaboration in the initial phases of the innovation process (ideation, conceptualization). Use traditional moderation cards in the later stages of implementation, project specification, planning and budgeting, etc. (Zenk et al., 2021, p. 12).</p>