ORIGINAL ARTICLE

When cultures collide: What can we learn from frictions in the implementation of design thinking?

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Abstract

Increasing interest in the use of design thinking (DT) in innovation has called into question its integration in organizational settings. We draw upon literature on management innovation and new practice implementation that highlights potential cultural conflicts between the values and assumptions underpinning the new practice and the culture of the organization that adopts it. We investigate the *cultural fit between DT and the adopting firm* through qualitative studies of 13 cases of DT implementation in large established firms complemented with data collected during eight workshops with DT practitioners and scholars. We abductively propose a cultural archetype of DT comprising eight dimensions: *subjective and aesthetic ways of knowing*, *long-term and nonlinear views about time*, *intrinsic motivation and sense of purpose*, *flexibility and change*, *relationships, empathy, and emotions at work*, *collaboration and inclusion*, *team autonomy and informality*, and *external orientation*. We identify challenges and consequences associated with cultural misfits encountered in the implementation of DT: *lack of legitimacy*, *lack of depth*, *disengagement*, *incrementalism*, *poor teamwork and alienation*, *collaboration lip service*, *micromanaged processes*, and *lack of external orientation*. We thus (i) develop a characterization of DT by providing a detailed cultural archetype that we discuss relative to previous literature on DT and (ii) enrich the research on the recursive relationship between organizational culture and DT implementation, contributing to research on emotions in management and innovation culture. We also (iii) contribute to research on the challenges encountered by firms when adopting DT, extending the research on difficulties linked to cultural misfits when implementing new practices. Finally, we (iv) contribute to research on practice implementation and management innovation by highlighting the interplay between cultural fit, legitimacy, and the implementation climate.

KEYWORDS
cultural fit, design thinking implementation, innovation culture, management innovation

1 | INTRODUCTION

In their search for competitive advantage, many companies have adopted new approaches to innovative work such as design thinking (DT). During the last 15 years, several organizations have found DT to be an attractive alternative for fostering innovation and growth (Carlgren et al., 2016b; Dell'Era et al., 2020; Gruber et al., 2015; Johansson-Sköldberg et al., 2013; Liedtka 2018). DT is a human-centered and design-inspired approach that focuses on the user as well as other stakeholders and also on frequent and early experimentation to address complex problems and create innovative products, services, and processes (Brown, 2008; Dunne & Martin, 2006). Although several studies and anecdotal evidence highlight the benefits of using DT in terms of both innovative output and building organizational innovation capability (BenMahmoud-Jouini et al., 2019; Carlgren et al., 2014; Dunne, 2018a; Liedtka et al., 2013; Martin, 2011; McCreary, 2010), other research points to problems linked to its implementation and use (Carlgren et al., 2016a; Dunne, 2018b; Roberto 2019; Schmiedgen et al., 2016). The extant research on DT frequently disregards the setting in which DT is used and treats it to a large extent as a process, a methodology, or a set of tools (e.g., Liedtka, 2015; Micheli et al., 2019)—focusing, for example, on identifying the specific aspects of DT that are conducive to creativity and innovation (e.g., Seidel & Fixson, 2013) or on its contribution to dynamic capabilities (Liedtka, 2020).

In order to better understand and problematize both DT and its implementation, we mobilize and exploit knowledge from research on new practice implementation (e.g., Ansari et al., 2010) and management innovation (e.g., Birkinshaw et al., 2008; Damanpour, 2014; Hamel, 2006) since these streams of research have focused on the implementation of other managerial practices such as total quality management (TQM) (Detert et al., 2000; Mamman, 2009), strategic planning (Berry, 1994; Lozeau et al., 2002), and Six Sigma (Canato et al., 2013). According to Birkinshaw et al. (2008) and Damanpour (2014), the management innovation process mainly includes the generation of practice (when the practice is new to the state of the art) and its adoption/implementation/adaptation (when it is new to the organization). Although compatibility or fit can affect adoption decisions, our study focuses on implementation (adaptation) and use. Hereafter, we refer to these simply as "implementation."

The practice implementation and management innovation literature shows that culture plays a critical role (Klein & Sorra, 1996; Love & Cebon, 2008; Waarts & Van Everdingen, 2005): If the level of "cultural fit" (Ansari et al., 2010; Ax & Greve, 2017; Büschgens et al., 2013) between practice and the adopting organization is low, its

Practitioner points

- Design thinking (DT) is often understood as a practice, method, and tool, yet it can also be characterized by its cultural traits, that is, a cultural archetype.
- A cultural misfit between the cultural traits of DT and the cultural context, where it is implemented can lead to disappointing output, demotivated employees, lack of legitimacy, and poor implementation climate. Therefore, the expected benefits of using DT may not be realized.
- The cultural archetype of DT and the associated challenges presented here can be the starting point to better manage DT adoption and implementation.
- The implementation of DT has the potential to contribute to a culture conducive to innovation in an organization if implemented with care.
- The cultural archetype of DT presented here can foster dialog between DT and other innovation approaches and theories.

implementation and the creation of value in using it become difficult and may lead to its rejection (Lozeau et al., 2002). In the case of implementing DT, in addition to the traditional barriers to change, it appears that there may be cultural gaps between the practice and the adopting organization's values and beliefs (Calabretta et al., 2008; Dunne, 2018b; Dunne & Martin, 2006; Elsbach & Stigliani, 2018). However, the dialogue between research on DT and organizational culture is, to date, sparse: With the exception of Elsbach and Stigliani (2018), definitions of DT tend to ignore its cultural characteristics, and only a few existing studies of DT implementation (Björklund et al., 2020; Carlgren et al., 2016a; Wrigley et al., 2020; Wyrwicka & Chuda, 2019) adopt a cultural perspective.

We argue that in order to understand how cultural gaps may hinder the implementation of DT and its contribution to innovation, precise knowledge about the nature and consequences of these gaps is required, and this is presently lacking. Therefore, we have two objectives in this study to (i) identify a DT cultural archetype and (ii) highlight the challenges associated with this cultural archetype that arise from its lack of fit with the adopting firm. Following a call by Elsbach and Stigliani (2018) for empirical studies, we studied 13 cases of DT implementation in large established firms and collected data during eight workshops with DT experts (practitioners and scholars) who were involved in DT implementation. Inspired

by Detert et al.'s (2000) framework, which describes the organizational culture in terms of eight dimensions and has been used to study practice implementation (e.g., Ax & Greve, 2017), we abductively identify eight cultural characteristics of DT that capture its cultural archetype.

Our contributions are as follows: First, we enrich the existing characterizations of DT beyond a bundle of practices (Liedtka, 2015) by offering a nuanced understanding of DT values and mindsets that have been less researched (Schweitzer et al., 2016). Using the framework proposed by Detert et al. (2000) as our point of departure, we open up the possibility of comparing DT to other popular management innovations, such as lean startup (Ries, 2011), agile development (Cooper & Sommer, 2016; Lichtenthaler, 2020), and user-centered innovation (Von Hippel, 2006), in order to better understand its specificities.

Second, the DT archetype we develop based on empirical work enriches the cultural perspective on DT by extending the literature-based work of Elsbach and Stigliani (2018). This archetype enables studying the dynamic interplay between DT culture and the organizational culture in a more nuanced way, which allows for a better understanding of DT as such because we cannot fully understand its characteristics unless we examine the frictions that arise when DT is used in organizations.

Third, by highlighting the frictions, challenges, and consequences of cultural mismatches that are encountered during DT implementation, we contribute to research regarding the challenges of using DT (Carlgren et al., 2016a; Roberto, 2019; Schmiedgen et al., 2016; Wrigley et al., 2020; Wyrwicka & Chuda, 2019). Specifically, we characterize the type of culture that is conducive to innovation driven by design as well as how design can bring value to organizations (Boland & Collopy, 2004; Dorst, 2015; Elsbach & Stigliani, 2018; Verganti, 2008).

Fourth, by offering a characterization of DT values and culture, we contribute to the work on legitimacy issues in practice implementation (Birkinshaw et al., 2008; Jacqueminet, 2020; Peeters et al., 2014). By linking cultural fit, legitimacy, and implementation climate through the frictions that arise through the practice in use, we also contribute to research on management innovation and practice implementation (Klein & Sorra, 1996), as well as the integrated practice theory perspective (Jarzabkowski et al., 2016). From a managerial point of view, the cultural archetype of DT can be the starting point for a nuanced conversation about the aspects of DT that might pose challenges during its implementation as well as opportunities that could be leveraged. At the end of this article, we provide concrete examples of issues that may arise and potential actions that can be taken by managers.

2 | LITERATURE REVIEW

2.1 | DT and management innovation

Following Johansson-Sköldberg et al.'s (2013) distinction between research on "designerly thinking" and on "design thinking," we focus on the latter and consider DT to be the practice that has emerged since the early 2000s, inspired by the way professional designers think and work (Johansson-Sköldberg et al., 2013; Liedtka, 2015). Authors have proposed multiple theoretical perspectives for understanding DT, ranging from a focus on its main themes (Carlgren et al., 2016b), phases, and activities (Liedtka, 2018; Seidel & Fixson, 2013) to a set of tools (Micheli et al., 2019), mindsets (Dong et al., 2016; Schweitzer et al., 2016), and types (Dell'Era et al., 2020). DT has been envisaged as a learning cycle in which individuals with different learning styles are linked to different phases (Beckman & Barry, 2007) and as a way to address the cognitive bias encountered by individuals working on innovations (Liedtka, 2015). Descriptions of DT as a process often include the three phases inspiration/need-finding, ideation, and implementation/prototyping (Brown, 2008; Seidel & Fixson, 2013). Acknowledging that DT is manifested differently in local contexts, Carlgren et al. (2016b) conceive DT as comprising five themes: user focus, problem framing, visualization, experimentation, and diversity. They consider these to be articulations of a bundle of values that guide behavior, practices that can be performed in isolation or iteratively, and specific techniques such as journey maps and personas.

We argue that the diffusion and implementation of DT can be understood in the context of management innovation (e.g., Birkinshaw et al., 2008; Damanpour, 2014; Klein & Sorra, 1996) as the generation and implementation of new managerial practices, processes, and structures that are intended to further organizational goals, ranging from new-to-the-state-of-the-art to new-to-the-organization (e.g., Birkinshaw et al., 2008; Damanpour, 2014; Volberda et al., 2014). The literature on the diffusion, adoption, and adaptation of new practices (e.g., Ansari et al., 2010) often refers to the same practices as those addressed in management innovation research such as TQM. In fact, DT has been compared with TQM (Liedtka, 2016), and since our focus is not on the generation of the practice but rather its intraorganizational implementation (e.g., Klein & Sorra, 1996; Peeters et al., 2014), we draw upon both these strands of literature. Canato et al. (2013, p. 1725) define a practice as "a bundle of behavioral routines, tools, and concepts used to accomplish a certain task," using Six Sigma as one example. Research on management innovation uses both the terms "practice" (e.g., Birkinshaw et al.,

2008; Damanpour, 2014) and "innovation" (e.g., Klein & Sorra, 1996; Volberda et al., 2014). In this article, we do not distinguish between the terms and use one or the other, depending on the literature we refer to.

During the implementation of a new practice, both the adopting organization and the practice itself are adapted in an ongoing recursive process (Ansari et al., 2010; Canato et al., 2013; Elsbach & Stigliani, 2018). Ansari et al. (2010, p. 71) refer to adaptation as "the process by which an adopter strives to create a better fit between an external practice and the adopter's particular needs to increase its 'zone of acceptance' during implementation." Indeed, beyond an essentialist view focusing on what a practice "is," which has been criticized (e.g., Engwall et al., 2005), both ostensive and performative views are necessary to understand the "abstract, generalized idea of the routine" as well as the "specific actions, by specific people, in specific places and times" (Feldman & Pentland, 2003, p. 101).

2.2 | Management innovation and organizational culture

A practice can be associated with a range of prescribed values, beliefs, behaviors, artifacts, and symbols and the power distribution among actors (Ansari et al., 2010), while an organizational culture, according to Detert et al. (2000, p. 851), who build on the work of Pettigrew (1979) and Schein (1985), is a "combination of artifacts (also called practices, expressive symbols, or forms), values and beliefs, and underlying assumptions that organizational members share about appropriate behavior." Schein (1985) maintains that culture can be viewed at three different levels, ranging from visible organizational structures, processes, and artifacts to espoused beliefs and values to the underlying assumptions that operate on a subconscious level. In this view, all management practices are underpinned by values and assumptions that are reflected in norms and expectations and inform formal and informal working practices, artifacts, symbols, rituals, behaviors, and patterns of speech (Canato et al., 2013; Chatman & Jehn, 1994).

Many studies of practice implementation focus on the adopting firm's organizational culture (Ansari et al., 2010; Ax & Greve, 2017; Büschgens et al., 2013; Taveira et al., 2003), which is analyzed using a range of tools (e.g., Cameron & Quinn, 1999). These studies build on several of the main dimensions of organizational culture that have been conceptualized during decades of research, focusing, for example, on internal or external orientation (Schein, 1985) or power and the individual's need for security (Chatman & Jehn, 1994; O'Reilly et al., 1991). Drawing on these and other studies focusing on cultural dimensions,

Detert et al. (2000) identified a robust set of dimensions that can characterize organizational cultures and proposed a framework of eight dimensions: (1) the basis of truth and rationality; (2) the nature of time and the time horizon; (3) motivation; (4) stability versus change/innovation/personal growth; (5) orientation to work, task, and coworkers; 6) isolation versus collaboration/cooperation; (7) control, coordination, and responsibility; and 8) internal and/or external orientation and focus. This framework has been used to explain the adoption of practices such as management accounting innovations (Ax & Greve, 2017) and TQM (Taveira et al., 2003) in relation to the organizational culture.

It has been shown that the implementation of a new practice can result in conflicts arising from the values associated with the practice and the culture of the adopting organization. Lozeau et al. (2002) describe this as a "compatibility gap" between the cultural characteristics of the practice and those of the adopting organization. Ansari et al. (2010, p. 78) refer to "cultural fit" and "the degree to which the characteristics of a diffusing practice are compatible with the cultural values, beliefs, and practices of potential adopters." Other authors (Klein & Sorra, 1996; Love & Cebon, 2008) highlight the role of the value consistency between the organization and the practice. Indeed, the implementation of a practice depends on the implementer's assessment of the practice and thus involves legitimacy judgments (Birkinshaw et al., 2008; Jacqueminet, 2020; Suddaby et al., 2017; Tost, 2011). In addition to the "innovation–value fit," Klein and Sorra (1996, p. 1060) discuss the effectiveness of the innovation implementation in relation to the "implementation climate," defined as "targeted employees' shared perceptions of the extent to which their use of a specific innovation is rewarded, supported, and expected within their organization." When there is a poor implementation climate, the targeted users may lack incentives and opportunities to develop the necessary skills and may encounter organizational obstacles to the use of the innovation, such as a lack of resources (Helfrich et al., 2007; Klein & Sorra, 1996).

The literature also highlights that both the cultural assumptions underlying the practice and the culture of the adopting organization evolve and adapt during the implementation process (Ansari et al., 2014; Canato et al., 2013) and also through the active cultural work undertaken by employees (Bertels et al., 2016) in a dynamic interplay between the organizational culture and the values and beliefs embedded in the practice (Ax & Greve, 2017). Based on an analysis of strategic planning and TQM implementation, Lozeau et al. (2002) identify four evolving scenarios when there exists a compatibility gap, ranging from the practice transforming the organization to the practice being completely transformed, reproducing the existing roles and power structures within the organization. They

conclude that a large compatibility gap between the practice and the organization increases the likelihood that the practice will be transformed and integrated into the existing organizational dynamics (i.e., corruption of the practice) rather than changing the organization to be consistent with the objectives of the practice (i.e., the transformation of the organization). However, Canato et al. (2013) demonstrate how a coerced practice implementation in a situation where the cultural fit was very low produced a lasting cultural change in the organization. Therefore, a cultural perspective on practice implementation needs to focus on both the practice and on the adopting organization (Ansari et al., 2010).

2.3 | A cultural perspective on DT implementation

Research that addresses the implementation of DT through a cultural perspective is rare, apart from the work of Elsbach and Stigliani (2018), who, based on a literature review, focus on the three central DT tools (need-finding, idea generation, and idea testing) and how these can influence and transform the organizational culture by affecting its norms, values, and underlying assumptions. The authors claim that, at the same time, the culture of the organization can influence the adoption of DT either positively, by supporting the use of DT tools, or negatively, by impeding such use. They demonstrate that an organizational culture defined by the values of collaboration and experimentation will support the use of DT tools, whereas one defined by the values associated with productivity, performance, and siloed specialization will inhibit their use. Wrigley et al. (2020) identify the "right organizational conditions" for integrating design, which includes strategic vision, physical spaces, and resources dedicated to design activities and cultural capital (workforce understanding, knowledge, and capability in design).

Carlgren et al. (2016a) highlight seven challenges that firms can encounter when using DT: there exists a misfit with existing processes and structures, the resulting ideas and concepts are difficult to implement, the value of DT is difficult to prove, DT principles/mindsets clash with the organizational culture, existing power dynamics are threatened, DT skills are hard to acquire, and the communication style is different. The authors do not adopt a cultural perspective on DT per se but rather link these challenges to specific themes associated with DT. Although only one of their proposed challenges explicitly refers to culture, several others seem linked to gaps in values. They highlight that although many of the perceived challenges are linked to known barriers to innovation (Kanter, 2006) and adoption such as organizational rigidity and the existence of a dominant design (Assink, 2006), some aspects are unique to DT and make it particularly difficult for firms to integrate DT in their work on innovations, including its communication style through the use of various visualization methods, its different power dynamics based on a flat, democratic way of working, and the need for a different type of skill set that is uncommon in many traditional firms.

To conclude, we find that a cultural perspective based on empirical research focusing on DT implementation is lacking. We claim that there is a need for a common framework grounded in a cultural perspective through which both DT and the adopting organization can be analyzed in order to identify the potential frictions or cultural gaps and that the identification of these frictions will improve our understanding of DT implementation challenges as well as DT per se. Our research questions are therefore: What are the cultural characteristics of DT that might represent a cultural archetype and what are the associated challenges that adopting firms might encounter when implementing DT? By investigating these characteristics and challenges, we aim to enhance the understanding of DT and to promote a dialog with innovation theories related to innovation implementation and the role of culture.

3 | METHOD

3.1 | The research process

This study was motivated by our previous empirical research on firms implementing DT (BenMahmoud-Jouini et al., 2019[1]; Carlgren et al., 2016a, 2016b), along with the literature on practice implementation (e.g., Ansari et al., 2010; Detert et al., 2000; Lozeau et al., 2002) and management innovation (Birkinshaw et al., 2008; Damanpour, 2014; Klein & Sorra, 1996). To address our research questions, we use a systematic combining approach (Dubois & Gadde, 2002) that is centered on multiple qualitative case studies of DT implementation (Eisenhardt, 1989; Yin, 2011). We collected the main data on 13 organizations during 2011–2016 and focused on understanding the concept of DT, DT implementation journeys, and perceived benefits and challenges. We have reexamined the data using a cultural perspective lens to analyze and code them. The case studies were complemented by data collected during eight multiple-day workshops on DT implementation involving DT experts (scholars and practitioners). Following an abductive approach (Dubois & Gadde, 2002; Locke et al., 2008), we conducted iterative empirical analyses and literature reviews to identify the cultural characteristics of DT and the challenges

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[1]This citation was anonymized during the review process.

associated with implementing DT within an organization. In what follows, we describe the research setting and the data collection and analysis.

3.2 | Empirical setting and case selection

The cases were selected based on three criteria. First, at the time our research began in 2011, few firms had adopted DT and stated this publicly, so we initially used snowball sampling to identify cases. This yielded access mainly to large (several billions of euros in revenue and thousands of employees) and established (at least 30 years old) companies that were dominant in their sector. Therefore, when we looked for more cases of DT implementation to enrich our data and enlarge our sample, we used purposive sampling (Eisenhardt & Graebner, 2007) and targeted large established firms in order to achieve coherence in our sampling. Second, to ensure extensive access to data and multiple perspectives within each case, we considered companies in which at least one of the authors had secured access to the players central to the DT implementation and their teams (DT team members, innovation managers, engineers working with DT, etc.) (Siggelkow, 2007). Third, we selected firms that had already adopted DT several years earlier (between 2 and 10 at the time of data collection) so that the informants would have accumulated sufficient experience with this approach and the challenges associated with its adoption. The sampling resulted in a study of 13 large companies in a range of sectors (software, consumer products, food, healthcare, high tech, industry, services), operating as BtoB as well as BtoC, and located in different countries (France, Germany, Sweden, and the United States) (cf. Table 1). The companies' adoption of DT was aimed at improving creativity and innovation, and DT was used to identify new opportunities, to innovate internal processes and ways of working, and in some cases to devise strategies. Although some interviewees indicated limited use of DT in specific projects or limited parts of their organization, their overall view of it remained positive and they considered that using DT had created value.

3.3 | Data collection

We conducted a total of 73 semi-structured interviews within the 13 firms. These lasted between 45 and 90 min and involved individuals who had different responsibilities with respect to DT (cf. Table 1). For each case firm, we conducted four to seven interviews with the person responsible for or central to the implementation of DT in the firm, DT team members/designers (if teams had been set up), innovation and/or R&D managers, line managers, and members of the organization who had been exposed to DT activities but were not members of the DT implementation team. We asked the interviewees to provide information about the DT activities undertaken in their firms, their DT implementation journeys, and the outputs, perceived benefits, and challenges linked to using DT. We used open-ended questions that allowed respondents to discuss a range of issues. Most of the interviews were recorded and transcribed. In 9 of the 13 firms, we were able to attend between 5 and 10 meetings such as DT workshops, project selection meetings, and meetings with clients, which allowed us to observe behaviors, comments, and reactions. The observational data were recorded in written notes and provided us with a context for interpreting qualitative statements. Additionally, attendance at these meetings provided us with opportunities for informal discussions with participants. The interviews and observations were complemented by secondary data (such as internal documents, memos, reports, presentations, filmed sessions, and emails).

Like Dell'Era et al. (2020) and Töytäri et al. (2018), among others, to complement the data collection described above, we also gathered data through participation in eight workshops during 2015–2019. Each of these workshops lasted 2–3 days and included 25–45 participants (1/4 scholars and 3/4 experienced DT practitioners). The scholars were all interested in DT implementation, and the practitioners belonged to different organizations and sectors and either managed DT implementations or were central to them. A typical workshop agenda included sessions allowing practitioners to share their experiences (of their implementation journeys, accomplishments, and problems) in order to obtain feedback and advice, sessions on DT tools, discussions of topics such as design and ethics, and sessions allowing the scholars to share their early research for the purpose of receiving feedback. The accompanying social activities also facilitated informal conversations. We took notes during the sessions and wrote reflections immediately afterward. Continuous informal conversations with workshop participants allowed for a discussion of these reflections in addition to the results from earlier interviews and observations. Consequently, the discussions that took place during these eight workshops were important for deepening our understanding of DT implementation in large organizations.

3.4 | Data analysis

Based on our data (interviews, observation notes, workshop minutes, and secondary data), we developed a set of case narratives in line with Yin (2011). In the first phase of the abductive process (Dubois & Gadde, 2002),

TABLE 1 Case study characteristics

Case	Sector	Size (empl.)	Years of DT exp.	Data collected	Position of interviewees
A	Financial services	>5000	4	Four interviews; observations	DT initiative leader, Innovation manager, designer, DT facilitator
B	Software	>5000	4	Five interviews	DT manager, DT facilitator, R&D manager, Innovation manager, HR manager
C	Consumer products	>100,000	7	Seven interviews; observations	Director DT initiative, DT manager, DT facilitator, R&D manager, R&D engineer, Senior manager, Business development manager
D	Food	>100,000	3	Four interviews; observations	DT initiative leader, innovation manager, 2 DT specialists
E	Consumer electronics	>100,000	5	Five interviews	DT leader & VP R&D corporate unit, R&D manager, Strategy manager R&D, Concept developer
F	Telecommunication	>50,000	4	Seven interviews; observations	DT initiative leader, two DT specialists, Head of PD unit/site manager, R&D Manager, innovation coach, technical developer
G	Financial services	>50,000	3	Five interviews	Director DT initiative, Innovation manager, Innovation manager, HR manager, DT specialist, and internal consultant
H	Aeronautics	>100,000	4	Six interviews; observations	DT initiative leader, innovation manager, four business developers
I	Healthcare	>100,000	9	Seven interviews; observations	Director DT initiative, Senior manager, DT manager, DT specialist and nurse, DT specialist and designer, VP Performance improvement, Nurse manager
J	High tech industry	>50,000	3	Five interviews; observations	DT initiative leader, designer, three business developers
K	Industry	>50,000	3	Six interviews; observations	DT initiative leader, VP R&D, four DT specialists, and designers
L	Software	>50,000	6	Seven interviews	Director DT initiative, DT manager and facilitator, VP Product Design, Design leader, Designer, Innovation manager, R&D manager
M	Industry	>50,000	2	Five interviews; observations	DT initiative leader, R&D Manager, Innovation manager, three DT specialists

we followed an iterative inductive process of sequential coding (Eisenhardt, 1989) using the qualitative methodology proposed by Gioia et al. (2012). We identified material related to culture (values and practices) that addressed how DT was used, its perceived benefits, and its effects. We extracted the most relevant quotes, which we then used to form first-order elements. Based on similar codes and conceptual patterns, these were then regrouped into second-order themes. In the second phase of the abductive process, inspired by the organizational culture dimensions proposed by Detert et al. (2000), we wrote a short formulation for each dimension to enhance the quality of the coding (see Table 2). We revisited and sorted the first-order elements and second-order themes with these descriptors in mind and returned to the data to identify additional quotes and first-order elements, which further informed the second-order themes.

Each author independently conducted the different steps of the analyses, and we jointly discussed the results after each step and revised them as necessary throughout the process. Finally, we aggregated the second-order themes into eight cultural characteristics. The full data structure for the cultural characteristics is presented in Figure 1. Using the emerging descriptions of the cultural characteristics, we recoded our data to investigate the challenges and difficulties linked to the implementation and use of DT that were mentioned by the interviewees and potentially associated with these characteristics and identified emerging themes of challenges associated with the cultural characteristics. In this process, insights about the challenges added details to the cultural dimensions of DT and vice versa. The final cultural characteristics along with their associated challenges are presented in Table 3.

TABLE 2 Descriptions of elements used for coding, inspired by the framework of Detert et al. (2000)

Truth and rationality	Describes what is considered real and true, and how truth can be discovered
Time and time horizon	Describes the importance given to time, and how time is related to value creation. Influences planning, strategy and goal setting, and what activities are allowed to take time. How are activities undertaken with respect to time
Motivation	Describes what kind of motivation is used to guide human behavior and how it is enforced (punishments/rewards)
Stability versus change	Describes the orientation toward, and basic human desire of, stability or change, and how it is addressed in regard to the individual and/or the organization
Work, tasks, and coworkers	Describes the role of work, tasks, and colleagues in the lives of coworkers. Focus on accomplishment and productivity or a comfortable life of employees
Isolation versus collaboration	Describes the attitude to individual versus group work and underlying beliefs about what work style leads to efficiency and task completion
Control, coordination, and responsibility	Describes where control and power are localized and the role and nature of rules
External versus internal	Describes where the organization puts its focus—inward or outward oriented. Does the company orient itself on the environment or is it self-directed?

3.5 | Feedback session with DT experts

During one of the eight workshops (2017), we presented our preliminary findings on the identified cultural characteristics and the related challenges and discussed them with 36 participants. The 2-h workshop began with the researchers' presentations, after which the practitioners were asked to comment individually on the cultural elements/themes/characteristics of DT that we had identified and also to describe potential misfits and challenges related to the cultural characteristics of DT within their own organization. This was followed by a discussion to which all participants could contribute, about cultural characteristics and how the analysis would support efforts to implement DT. In the end, our findings resulted from successive rounds of coding and were informed by the literature on MI implementation and feedback from DT experts.

4 | RESULTS

Through our analysis of the data, we identified eight cultural characteristics of DT (cf. Figure 1) and their associated challenges. The results, which are summarized in Table 3, are presented below with illustrative quotes selected from the data.

4.1 | Cultural characteristic 1: Subjective and aesthetic ways of knowing

In DT, truth is viewed as emergent and subjective: Events cannot be understood in isolation from their context, meanings vary, and causality can be difficult to establish.

Therefore, qualitative, ethnographic approaches are at the heart of user research, based on the assumption that rich qualitative data are a better foundation than (or complementary to) generalizable large sample data for understanding users. During the workshop in which we presented our first results, DT practitioners with many years of experience stressed that a focus on subjective insights is what sets DT apart from the strong objective focus they faced in their organizations. However, they also highlighted the value of combining objective and subjective knowledge and rational and intuitive thinking. One DT team decided to obtain training in scientific methods of improvement and combined the approaches into what they called "evidence-based design":

> If people believe there is a world beyond figures and rationality, it is easier for them to start with DT. (L)

In DT, arguments can be built on narratives that capture users' stories. Visual representations are used to explain patterns and disentangle the complexity. The team members' experience and intuition allow for the development of insights and conclusions that gain acceptance in the team:

> It is a human approach, not only towards the users but as well from our side. We have biases that we acknowledge and accept, and we have intuition that we rely on. (I)

DT is also characterized by its use of aesthetic knowledge, that is, what we know about a situation through our senses of touch, sight, hearing, and smell. This aesthetic knowledge emerges from the deliberate use of materials

First order elements	Second-order elements	Aggregate Cultural Characteristic
Qualitative research gives richness and depth Acknowledging context Narratives and stories to convince and demonstrate Subjective and objective data can be combined to strengthen validity	Truth can be subjective, multi-faceted / and context-bound	SUBJECTIVE & AESTHETIC WAYS OF KNOWING
Empathy and emotional insights as a way to develop understanding Team members bias are acknowledged and accepted Experience and intuition of team members are valid input for decision-making	Empathy, Experience and intuition matter for insights and decisions	
Engagement of bodily senses and hands-on experience Making/prototyping to understand, reflect, build hypotheses and communicate Bias to action over analysis	Aesthetic experience to build knowledge and communicate	
Learning and exploration take time and create long-term value Long-term focus allows depth	Long-term future-oriented focus	LONG-TERM & NONLINEAR PERSPECTIVES ON TIME
Process with defined phases or fluid, situation-dependent Timers, working against the clock Focused work in structured design sprints	Pace of work can be rapid, time-boxed and fluid.	
Iterative work-style within and between phases Iterations of problem formulations and concepts based on feedback	Non-linear view on how to progress	
Meaningfulness and stories get people excited and passionate about work Expressions of joy and passion when talking about work	Sense of purpose, meaningful work	INTRINSIC MOTIVATION & SENSE OF PURPOSE
Focus on empathy, doing good and creating value for others Deeply human-centric view outside of innovation purposes Wish to make a difference for others	Passionate about creating value for others	
Feeling of being listened to, being included, having a say Getting tools to have an impact	Personal development and empowerment	
Starting without complete understanding of situation / problem Openness to unknown output	Openness to ambiguity both in problems and solutions	FLEXIBILITY & CHANGE
Allowing insights about users change initial problem formulations Welcoming changes of direction as new insights occur	Openness to reframing problems	
Individual openness to making mistakes and being exposed in doing so Risk taking is encouraged as it enables learning Taking small risks early on, trying cheaply	Risk taking is encouraged as learning opportunities	
DT is a social process at heart Connection of people and good relationships seen as prerequisite for task completion Empathy for users opens up empathy for coworkers which deepens relationships	DT is social and relationship-focused	RELATIONSHIPS, EMPATHY & EMOTIONS AT WORK
Focus on emotions of users and team members Being emotional is accepted and can be an advantage in DT work Emotionally charged language	Emotion and empathy with peers	
Play to foster curiosity, open-mindedness and innovativeness Fun and unexpected formats for presentations / workshops to create engagement Playfulness and a fun atmosphere foster relations	Playfulness and having fun	
Collaboration leads to efficiency and speed over individual work Collective intelligence; issues are better solved by teams than individuals.	Collaboration and teamwork is the foundation for productive and efficient work	COLLABORATION & INCLUSION
Diversity increases innovativeness, novelty and originality of output. Participants from other parts of business facilitate implementation An inclusive atmosphere creates acceptance of diverse backgrounds and competencies.	Multi-disciplinary or diverse teams	
Space that allows for flexibility and visualization Space that enables focused and spontaneous teamwork Space that encourages play and curiosity	Physical space to foster collaboration and creative work	
Teams need autonomy especially in early phases High-level goals and vision set by senior management, project work is autonomous	Teams have operational autonomy	TEAM AUTONOMY & INFORMALITY
Everyone's opinion counts within a team, democratic decision-making Relaxed atmosphere Team leadership not by hierarchy but by skills or specialized knowledge	Flat hierarchy in teams	
Encouraging teams to break rules to foster innovative spirit Breaking rules to push boundaries of what is allowed as a way to catalyze change	Rule-breaking	
User focus gives direction for what offers, services, products to make User feedback gives direction for how to proceed and what solutions to develop Interaction with users to challenge own ideas and "truths"	Focus on users is essential for the three phases of a DT project (inspiration, ideation and experimentation)	EXTERNAL ORIENTATION
Curiosity is crucial Taking inspiration from adjacent sectors Going outside frame of reference by studying settings very different from the own. Engaging with external networks	Inspiration from adjacent sectors and networks	
Involving users in ideation and concept generation Joint projects with design agencies and universities	Co-creation with external partners	

FIGURE 1 Data structure: Cultural characteristics of design thinking

and visual practices such as sketching, prototyping, and role-playing to make sense of data, reflect, develop unfolding concepts, and communicate. Closely linked is a bias toward action: In ambiguous and uncertain situations, experimentation is viewed as a better decision-making approach than analysis:

> I would say that the experiential parts in both the discover and testing phases are where design thinking is empowered by what I'd call little-d design, aesthetic knowledge via reflective practice, often with stuff being made and interpreted over and over. (D)

4.1.1 | Challenges related to subjective and aesthetic ways of knowing → Lack of legitimacy

Frictions occur when the organization members' views about how to determine what is a true conflict with how truth is apprehended in DT. It is difficult to fit the subjective and human-centered insights associated with DT with established rationales for objectivity based on quantitative results. Insights that cannot be translated into technical requirements are difficult to communicate and therefore, it is hard to have them accepted. The difficulties related to measuring and evaluating DT activities are a source of misfit in organizations focused on key performance indicators, and the DT teams feel pressure to demonstrate the value of using DT:

> I think the key challenge is, particularly in the early phase, that the information that is created is often very different from the type of business measures we apply later on and which managers are used to. And there is no way to create these business measures early on. (C)

In organizations that trust information built on quantitative data, it is difficult to achieve acceptance of visual communication and art/design vocabulary. The use of videos, role-playing, and other experience-based presentation styles are also considered inadequate. Sensemaking and communication using visual and aesthetic knowledge are barriers to DT fitting in "traditional" organizations. Some organizational members are reluctant to acknowledge or accept the results of the DT approach as it is seen as not representative or generalizable because it relies to a large extent on subjectivity and intuition:

> There was going to be a strategic training around innovation and we were given the task to design and deliver the training. And our managers were really worried. They were like 'okay, you are probably the guys to do this, but you can also make a fool of our unit.' Because they always had this idea that the team might make a fool of itself because of how we would express ourselves or present stuff. (F)

4.2 | Cultural characteristic 2: Long-term and nonlinear views about time

Assumptions about time horizons determine how much time is perceived to be appropriate for a given task. At a strategic level, DT planning and goal setting inherently have a long-term perspective, since they promote learning and exploration rather than efficiency. DT learning activities provide insights rather than outputs that can be implemented in the near future. Such activities (e.g., extensive user research, iteration, reframing of problems, prototyping, and testing) are considered valuable because they increase the likelihood of "designing the right thing." DT entails dedicating time to acquiring knowledge rather than making choices too early:

> Especially teams that are given a longer-term view, so not just what revenue results are you delivering this month or within three months, but maybe even encourage think in a year out [...]. The teams with maybe a little bit longer perspective have more opportunity to apply design thinking, I would say. (C)

However, at an operational level, DT work is done in defined projects and described as both fast-paced (creating and testing quick prototypes) and slow (e.g., investing more time upfront). In DT, time is seen as synchronized rather than sequential, with an acknowledgment that many activities/roles may occur simultaneously. It is characterized by an iterative view of work progress, where a large number of iterations is seen as more efficient than linear work with strict milestones. Yet time is often deliberately managed to increase creativity and progress—for example, by creating tight artificial deadlines and design sprints:

> The most alluring thing, or what got her convinced, was that it's such a structured approach. At the surface it looks soft and fluffy, but then Joan and her team were super-structured in terms of which steps to take, for how long, and evaluating every action. (I)

4.2.1 | Challenges related to long-term and nonlinear views about time → Lack of depth

Challenges arise when DT team members and the management do not share the same views about time, that is, how time is related to value creation, how much time is allowed for which activities, and how progress is perceived. This results in DT teams with little operational autonomy being allowed too little time to address the problem at stake, resulting in tensions that impede iterations:

> I think the main problem [...] is that companies intend to have a very short-term focus, and design thinking takes time. I mean it's time well invested, but you need to be able to invest in that and I think that doesn't always work. (L)

Different assumptions about time lead to different views about whether the time is being wasted and hence about efficiency and productivity. Differences in how time is valued leads to DT being dismissed as inefficient or difficult to integrate into existing operations:

> People have busy schedules, there is a life of shortcuts and hacks. No time and mind space for doing design thinking. They constantly want shorter versions of design thinking: one day, half a day, two hours, one hour.... So the desire for speed and quick wins is so strong, but you can never go deeper, which leads to a lot of incrementalism. At some point it is not enough to pull good things out of design thinking, you do not manage to go deep enough. (H)

4.3 | Cultural characteristic 3: Intrinsic motivation and sense of purpose

DT is oriented toward intrinsic motivation, where work is seen as a means to a meaningful end. Individuals who subscribe to DT are often passionate about making things better and making a difference. Empathy, inclusiveness, cocreation, and the focus on user needs underlying DT to create a sense of purpose among individuals working with DT. In some firms, individuals using DT report feelings of growing empowerment and of being listened to. Other values aligned to intrinsic motivation that can found present in our data are optimism and an attitude that there is "nothing that can't be done":

> Some people are just wired that way and they find it so incredibly refreshing to look at

innovation through a more human-centered lens. And I've had people come up to me after a training and say, 'I've always thought this way, but I never had any way to name it, or any community of people to feel like I wasn't on this journey alone,' right, so now they've got a network of like minds, and really a permission to say it's okay to think like this. (I)

4.3.1 | Challenges related to intrinsic motivation and sense of purpose → Disengagement

Challenges arise when there is a mismatch between what drives and motivates employees and the mechanisms that are put in place to motivate them. Employees who are likely to do their best work if they are challenged and given autonomy are not exclusively motivated through economic incentives. Challenges also arise when employees feel that their motivations for using DT conflict with organizational values that limit the opportunity to fully exploit DT. They thus feel disillusioned:

> Many ideas identified were put on hold or rejected because they do not fit in the current business model. We lost enthusiasm and passion because we were not trying to serve the customers differently anymore. We lost the meaning of all of this because we were expected to contribute to the traditional business of the firm the old way. (G)

4.4 | Cultural characteristic 4: Flexibility and change

DT is strongly oriented toward change, tackling uncertainty and ambiguity through risk-taking and an experimental mindset. DT is specifically suitable for ill-defined situations where neither the problem nor the solution is well understood. Therefore, being comfortable with ambiguity and finding it acceptable to embark on addressing an issue without a complete understanding of the problem is crucial. DT is about reframing problems iteratively, and thus it promotes acceptance of changing goals and not knowing the outcome in advance. This occurs at both the individual and organizational levels. At the individual level, people engaging in DT stress that it is important to be willing to take risks, make mistakes, fail, and learn from these shortcomings. At the organizational level, there may be pressure for continuous improvement and a belief that change is an opportunity for innovation and growth:

Design thinking is a path where you have to fail, but fail in the right way, and we have that flexibility to, well, it's a failure, but we made such a small investment that we can easily change ourselves and not throw away an enormous amount of work and effort. (E)

4.4.1 | Challenges related to flexibility and change → Incrementalism

Challenges arise if the firm does not embrace ambiguity and uncertainty and considers ambiguous situations as a problem to avoid rather than an opportunity for change. If the organization is reluctant to change, it will not encourage risk-taking. Not knowing the outcome in advance may cause anxiety for those who feel an urge to control the outcome of a project. Problem reframing might result in changing goals that lead to clashes with predefined project objectives or product plans:

In that culture it was very difficult to handle that the outcome is not certain. What exactly are you going to deliver and when? We could say when, but we don't have a clue what we are going to deliver. Nobody in the organization was capable of handling that ambiguity. And they tried to micromanage it, because the fear of failure was very strong. (F)

When managers do not see the value of exploration and learning, going in unknown directions and outside of the initial project scope, DT teams struggle to obtain resources and time for what they see as necessary and valuable work:

The nature of this work is that it can and will take unexpected turns. Yet, our organization sets tight conditions that do not allow explorations outside of that frame. They are too rigid and general: strict deadlines, waterfall processes, forms to fill out, intermediary reports with set formats. We could not fit in that frame. We struggled. We had to renegotiate constantly. (K)

4.5 | Cultural characteristic 5: Relationships, empathy, and emotions at work

DT involves team-based working in which social aspects are important. Relationships at work are critical and seen as a prerequisite for high-quality and efficient work. The human-centered attitude of DT with a focus on empathy

for users is also associated with empathy for coworkers, and DT practitioners emphasize dialog as a way to foster team relations. Due to human centricity, emotions are considered to be natural elements, and this is reflected in the use of language about feelings, desires, and engagement. Supportive relationships, empathy for coworkers, and emotions lead to teamwork that is characterized by encouragement, constructive feedback, playfulness, and humor. As part of DT work, playful warmup exercises and activities act to reduce fear of failure and promote a safe and trusting environment, both of which are crucial for DT work:

If you reduce design thinking to a set of power point slides, it looks pretty common sense—it's not until you do it and you see it in action and you really capture all social dynamics within the team and kind of just the effect of, like, working in these kinds of settings and really creating a nurturing environment for those involved. (L)

4.5.1 | Challenges related to relationships, empathy and emotions at work → Poor team climate, alienation

Challenges arise in organizations where work is exclusively seen as a productive activity and where the importance of relational and social dimensions is not acknowledged. In such organizations, DT is not considered a serious activity or sufficiently efficient because DT requires an environment where people accept that goals cannot be accomplished in the absence of good work relationships:

We tell them that we can be more efficient and come up with more interesting results if we can spend time with each other. Time that isn't necessarily productive or linked to this or that project. It's like, you know, psychological safety doesn't just appear from thin air. But it's like they don't get that the work is done by flesh and blood individuals. (A)

In such organizations, having fun, favoring playful environments, and showing emotions can lead to the perception of employees engaged in DT as nonprofessional and not conforming to professional norms and attitudes. An employee who displays his or her emotions may be perceived as being inappropriate and out of place in organizations with a low tolerance for emotional outbursts:

Often people misunderstand if you say people have fun with their work, that they are not really cranking hard. Because for them fun is not serious work, you know. (M)

Further, the strong focus on relationships and bonding within a DT team can create an "us/them mentality," contributing to tensions and resistance to DT.

4.6 | Cultural characteristic 6: Collaboration and inclusion

DT is strongly oriented toward collaboration in exploring problems and implementing solutions, which leads to better decisions and output. Work is perceived as most productive when individuals from different functions, disciplines, and educational backgrounds with diverse perspectives, experiences, and cognitive and learning styles are involved. It is argued that such different perspectives help to increase the innovativeness, originality, and feasibility of the output. DT teams often collaborate with users and other stakeholders as well. DT is characterized by openness, curiosity, and acceptance of diverse backgrounds and competencies—an inclusive atmosphere where everyone's opinion counts:

We believe that cross-thinking people, or people from other backgrounds, are important for design thinking because we will always have people which [our organization] would never consider to be staff in an ideal environment, but in design thinking they are extremely valid. (G)

In many organizations, the implementation of DT begins with the establishment of a creative collaboration space. Apart from signaling innovativeness in the approach, these flexible spaces are designed around teamwork and can host different groups.

4.6.1 | Challenges related to collaboration and inclusion → Collaboration lip service

Challenges arise in organizations that encourage and favor individual work and accountability over group work and that see collaborative work as leading to inefficiency and a violation of individual autonomy. Such challenges are even more salient in organizations where reward systems and performance evaluations are designed to value individual work rather than collaboration:

Even though collaboration is held forward, that is not always what helps you in salary negotiations and employee appraisal meetings, when the focus is often on what a single individual can achieve. This created problems in our team when some team members were perceived as egoistic when they had tried to push for their own contributions in these meetings with their managers. Those were the first cracks in the team, and they eventually grew exponentially. (F)

In addition, diversity can be hard to attain when budget constraints steer the focus to core competencies. This was also found to hinder the spread of DT through its use in projects:

In DT, it is preached that work is best done in multi-disciplinary teams. But I have realized that it is very difficult to get invited to projects when you are a design generalist and the firm does not acknowledge design as a competence. When there is a strict budget focus and you have to report all your hours in projects, every project leader has a tight budget and is careful with how to spend the money. To then bring a diverse competence is not something you prioritize as a project leader. (D)

Challenges also arise when the organization values a consensus-driven climate and fully controlled communications with customers, while DT prioritizes collaboration with external players such as users, potentially leading to discussion and debate. Further, the espoused value of collaboration means little if only individuals working with DT get access to spaces suitable for collaborative work, and this also creates tensions with people who are not allowed to use those spaces.

4.7 | Cultural characteristic 7: Team autonomy and informality

DT is oriented toward decentralization: DT teams need high degrees of autonomy and trust to be able to perform their work. Due to the iterative nature of DT, the teams need to be able to decide when it is time to move on, how much time to allocate to a specific phase, when to be generative, and when to converge to a single solution. Therefore, control, coordination, decision-making, and responsibility are largely located at the team level. However, high-level goals and visions are set by or together with senior management.

Furthermore, due to their collaborative and inclusive characteristic, DT teams are characterized by a flat hierarchy:

> Just things like design thinking and lean startup, you know, in a way they can actually take a lot of power away from the traditional hierarchical way of working. (A)

A "rule-breaking" attitude is often promoted to boost the team's feeling of autonomy and to instill a feeling that anything is possible in order to increase creativity. Gently breaking rules can also be seen as a way to push the boundaries of what is allowed, as a way to catalyze change.

4.7.1 | Challenges related to team autonomy and informality → Micromanaged processes

Challenges arise when control, power, and responsibility in the organization are concentrated at the top and when the control is tight, with many formal rules and procedures that guide behavior. Team autonomy can be frustrating for managers who value tight control and for top management who are keen to demonstrate their decision-making power:

> We need to make our own decisions for our process to work. When do we move on, what do we settle on solving, how much time do we use in this phase, how far back can we iterate, I mean, can we go all the way back to interview users again? But our managers who wanted to make sure we made progress, they were really frustrated. (M)

Challenges arise in a rule-following culture as well, because of the rule-breaking orientation of DT, which is considered as a specific way to undertake work on innovations.

4.8 | Cultural characteristic 8: External orientation

Almost all DT-related practices are governed by the belief that innovation can be achieved only by attending to users' and, more generally, stakeholders' needs. In most cases, user insights determine which problems to address, how they are framed, and which solutions to pursue through user research, cocreation, and feedback. The inspiration and experimentation phases demonstrate DT's external orientation: Ethnographic research provides a good understanding of users and their latent needs, while user feedback is useful for decisions about the development of new offerings. In cases of cocreation with users, the users play an even more active role in developing the concept together with the organization. Furthermore, inspiration from other industries and searching for analogies are also proposed as promoting an innovative framing of the problem and identification of a novel solution:

> They had us going to flight schools and supermarkets. You know they found; one was even a wedding planner. So we were all sent out to do observations. They tried to push you as far out of your sort of frame of reference as they could. (L)

4.8.1 | Challenges related to external orientation → A lack of external orientation

Challenges occur in organizations where it is assumed that coworkers, internal experts, and managers have the correct answers and know how an offering should be improved and in what direction. These firms do not consider that users and customers are sufficiently competent, or they see engaging with external partners and stakeholders as losing control or both: For these firms, success does not depend on customers, stakeholders, or the environment but is instead linked intrinsically to the internal coherence of the firm's road map and offerings:

> For our people, innovation goes with confidentiality and secret and risk of losing control and giving signals to the competition [...]. They do not want us to test or even to discuss without any previous IP arrangement. (E)

5 | DISCUSSION

Our aim was to identify the cultural characteristics of DT and the associated challenges that are encountered by adopting firms when they implement DT. In this section, we discuss the implications of our findings for DT, innovation, and management innovation theories, and we detail potential avenues for further research. We also point out some inherent cultural characteristics of DT that prove to be particularly challenging or promising.

5.1 | Specificities and role of the proposed cultural archetype of DT

One question that should be answered is what a cultural perspective adds to our current understanding of

DT. We have proposed a cultural archetype composed of several characteristics, including *subjective and aesthetic ways of knowing* and *relationships*, *empathy*, *and emotions at work*, that acknowledge the humanity of DT team members through their relations, emotions, and playfulness. Through this, we enrich the work on DT that has mainly emphasized the human centricity associated with users and stakeholders (e.g., Beckman & Barry, 2007), we complement the cognitive approach to DT proposed by Liedtka (2015), and we extend the work on emotions in management (e.g., Amabile, 1997; Cartel et al., 2019; Voronov & Vince, 2012; Vuori & Huy, 2016). The proposed cultural archetype of DT and its associated challenges specifically focus on values and their enactment, in contrast to the practice- and tool-based descriptions in the literature (e.g., Carlgren et al., 2016b; Dell'Era et al., 2020; Liedtka, 2018; Micheli et al., 2019; Seidel & Fixson, 2013). Such a focus on values is necessary for studying the recursive relationship between the organizational culture and the use of DT (Dell'Era et al., 2020; Elsbach & Stigliani, 2018).

Several of the identified values can be found in previous research on DT, and we have positioned each characteristic of the archetype with respect to the relevant literature on DT in the Supporting Information provided online. This comparison reveals that these values are scattered here and there in the previous DT literature and are largely related to explicit DT practices, themes, and mantras such as tolerance of ambiguity, user focus, an experimental mindset, diverse collaboration, and aesthetic and qualitative explorations (e.g., Carlgren et al., 2016b; Elsbach & Stigliani, 2018; Liedtka, 2015). By building on established dimensions from research on organizational culture (Detert et al., 2000) rather than the dimensions put forward in the DT literature, we have been able to infer values associated with, for example, motivation, relationships, and autonomy, which have been less explored in DT research and which shift the focus to the individuals engaged in using DT. This approach enables a comparison between DT and other popular innovation practices and thus facilitates knowledge transfer regarding implementation issues and value creation. However, proposing a cultural archetype does not imply a static view of either DT or organization culture; rather the archetype can be seen as an ostensive representation (Feldman & Pentland, 2003) of values and assumptions inherent in DT. A practice such as DT will evolve in specific contexts through use, just as the values and beliefs of the individuals in those contexts will be renewed and renegotiated through the actions and interactions of employees using the practice in an ongoing recursive process (Ansari et al., 2010; Canato et al., 2013; Elsbach & Stigliani, 2018; Lozeau et al., 2002).

5.2 | Opportunities for building a culture of innovation

Several of the identified cultural characteristics of DT are in line with values that have been put forward for an organizational culture that is conducive to innovation (e.g., Büschgens et al., 2013; Pisano, 2019): *external orientation* through user-centered innovation (Christensen, 1997; Petersen et al., 2003; Von Hippel, 2006) and open innovation (Chesbrough, 2006), *collaboration and inclusion* (Clark & Wheelwright, 1992; Sobek et al., 1999), *team autonomy and informality* (Bernstein et al., 2016; Burns & Stalker, 1994; De Brentani & Kleinschmidt, 2004; Harborne & Johne, 2003; Robertson, 2015), *flexibility and change* through emergent strategies (Burgelman, 1991; Robertson, 2015) and psychologically safe environments (Edmondson, 1999; Jassawalla & Sashittal, 2002), *intrinsic motivation and sense of purpose* through alignment of values, meaningful work, and empowerment (Dik et al., 2013; Frohman, 1999; Kahn, 1990; Steger, 2017), and *long-term and nonlinear views of time* through an orientation toward learning and exploration (BenMahmoud-Jouini et al., 2016; Lenfle, 2008; Lenfle & Loch, 2010; McGrath & MacMillan, 2009) as well as iteration and bias toward action in lean startups (Ries, 2011).

Beyond further characterizing DT through these dimensions, the suggested cultural archetype and associated challenges provide details about the potential sources of friction that might be expected and the opportunities one might seek to achieve by implementing DT. The work of Elsbach and Stigliani (2018) points in this direction, but it is based on the literature. Our work extends theirs in terms of offering nuanced insights into how DT might impact an organization and vice versa. For example, outlining the human centricity of employees engaged in DT by highlighting *relationships*, *empathy*, *and emotions at work* should offer new possibilities for building a collaboration- and relationship-oriented culture that is conducive to innovation. Anticipating the hurdles and resistance that might arise among both those using the practice and the surrounding organization is useful when a new practice is implemented with the larger goal of changing the organizational culture rather than simply having a short-term focus on the outcome in terms of products and services (e.g., Elsbach & Stigliani, 2018). Indeed, in a longitudinal single-case study, Canato et al. (2013) describe how the coercive implementation of a new practice in a case of very low cultural fit (Six Sigma at 3M) eventually resulted in lasting cultural change, despite several years' reluctance and friction.

TABLE 3 Summary of the cultural archetype and the associated challenges

Cultural characteristics	Description	Associated challenges and main consequences
1. Subjective and aesthetic ways of knowing	• Truth can be subjective, multi-faceted, context-bound, and the result of a combination of analytical/inductive approaches • Empathy, experience, and intuition matter for insights and decisions • Aesthetic experience to build knowledge and communicate (the engagement of bodily senses, material visualization practices, and hands-on experience)	*Lack of legitimacy* • Difficulty to convince decision-makers without numbers. Creates difficulties in moving concepts forward, gaining legitimacy for both solutions, and the DT approach as such • Alternative means of expression are not accepted, understood, or appreciated
2. Long-term and nonlinear views on time	• Long-term future-oriented focus (learning and exploration before efficiency) • Pace of work can be rapid, time-boxed, and fluid • Non-linear view on how to progress (iterative way of working)	*Lack of depth* • Desire for speed and quick wins reduce the time for doing DT • Stressed coworkers cannot fully engage in DT activities
3. Intrinsic motivation and sense of purpose	• Sense of purpose, meaningful work • Passionate about creating value for others • Personal development and empowerment	*Disengagement* • Disillusion when individual values considered as drivers for DT conflict with organizational values • Reward systems that clash with what motivates employees
4. Flexibility and change	• Openness to ambiguity both in problems and solutions • Openness to reframing problems • Risk-taking is encouraged as learning opportunities	*Incrementalism* • Low tolerance for ambiguity and uncertainty • Changed direction and divergence from plans seen as problematic • Risk adversity hinders learning
5. Relationships, empathy, and emotions at work	• DT is social and relationship-focused • Emotion and empathy with peers • Playfulness and having fun (for building relations, being innovative, and creating engagement)	*Poor teamwork and alienation* • Strong focus on productivity impacts relationships and team climate • Fun and play not perceived as serious creates tensions • Us/them mentality
6. Collaboration and inclusion	• Collaboration and teamwork is the foundation for productive and efficient work • Multidisciplinary or diverse teams: an inclusive atmosphere creates a greater acceptance of diverse backgrounds and competencies. • Physical space to foster collaboration and creative work	*Collaboration lip service* • Individual-focused reward systems conflict with teamwork • Consensus culture and a narrow view on core competencies prevents diversity • Difficulty to maintain a dedicated space for DT work
7. Team autonomy and informality	• Teams have operational autonomy (to make decisions about their work) • Flat hierarchy in teams (to encourage engagement and participative behavior) • Rule-breaking	*Micromanaged process* Micromanagement of teams when managers fear the loss of control and authority • Employees are not encouraged to make decisions, autonomy is not valued either encouraged • Employees breaking rules challenge existing structures and roles
8. External orientation	• Focus on users is essential for the three phases of a DT project (inspiration, ideation, and experimentation) • Inspiration from adjacent sectors, networks, and outside examples are seen as valuable • Cocreation with external partners	*Rejection of external orientation* • Managers do not value external expertise especially users' (difficult to get access to users for insight and feedback) • Experts are afraid of minimizing their expertise and losing their mandate

5.3 | Implementation challenges linked to cultural misfit

The cultural archetype and associated challenges offer added detail and/or root causes to some challenges that have been identified in previous research (e.g., BenMahmoud-Jouini et al., 2019; Björklund et al., 2020; Carlgren et al., 2016b; Dunne, 2018b; Wrigley et al., 2020). For example, Carlgren et al. (2016a) highlight the difficulty involved in proving the value of DT work, the communication style, the misfit with processes and structure, and the threat to power dynamics. These can be understood in light of DT cultural characteristics such as *subjective and aesthetic ways of knowing* and *team autonomy and informality*. Wrigley et al. (2020) point to the importance of long-term strategic vision in DT implementation, and our identified challenges related to *long-term and nonlinear views of time* and *flexibility and change* explain why this is so important in the case of DT. Björklund et al. (2020) identify three pitfalls associated with a mismatch between DT and the adopting organization: ineffective cross-functional collaboration, unactionable DT, and fragmented design efforts with no common framework. Our results show that a mismatch in values may give rise to various types of negative consequences related to both implementation efforts and the results of DT work. Thus, an implementation strategy that relies solely on training in design expertise risks leading to "unactionable DT" (Björklund et al., 2020), since implementing DT requires acceptance of its associated experiential and contextual elements, which can be understood in the context of *flexibility and change*, *team autonomy and informality*, *and external orientation*.

By highlighting the *subjective and aesthetic ways of knowing* in DT, we add to the literature on legitimacy issues that are critical to innovation adoption and implementation (Birkinshaw et al., 2008; Peeters et al., 2014) and that have also been pointed out with respect to DT by Rauth et al. (2014). Indeed, the literature on practice implementation has shown that it depends on the organizational units' judgment of the appropriateness of the practice (e.g., Birkinshaw et al., 2008; Suddaby et al., 2017; Tost, 2011), which is strongly linked to that units' own organizational values (Kostova & Roth, 2002). Therefore, to explain the successful implementation of a practice, the implementer's assessment of the practice should be examined (Suddaby et al., 2017). One of the most fundamental values held by a group or organization is the assumption of reality and how to establish what is real (Schein, 2004). The way a group defines which inputs are valuable for decision-making requires agreement about which information is relevant and how it is proven. The rationale underlying a new practice, either in line with or contradicting these values in the organization, might thus determine whether the knowledge that is created and the results that are achieved using the practice are accepted as true and legitimate (Hall, 1976; Schein, 2004). These issues may, more than others, explain why it can be difficult for DT teams to achieve credibility and obtain organizational support, resources, and acceptance of their ideas.

Further, in addition to the explanation that is provided on a methodologic level (e.g., Norman & Verganti, 2014), the output-related issues we have identified (*lack of depth*, *incrementalism*, *micromanaged processes*, *lack of external orientation*) provide a contextual explanation regarding why, when there is a cultural mismatch, the use of DT may mainly result in incremental solutions. Psychosocial issues such as *disengagement and poor team climate* may also hinder the innovation of meaning since it requires a healthy team climate where individuals can criticize and debate with a sense of curiosity in order to move past compromises and weak ideas (Dell'Era et al., 2020; Verganti & Norman, 2019). Thus, several aspects of cultural mismatch can affect both the actual outcome of the work that is being done and the perceived relative advantage of the practice (Rogers, 2003).

5.4 | The interplay between value misfit and the implementation climate

Whereas Klein and Sorra (1996) treat value fit and the implementation climate as separate entities, our results in terms of specific values, challenges, and their consequences help explain why the climate for implementation may be poor and how the interplay between the practice in use and the organizational culture may influence the implementation climate. This is in line with Jarzabkowski et al. (2016), who clarify the feedback loop between the practice in action and the outcome and how it affects the context, which in turn affects the practice in action. For example, it has been suggested that senior management support is one of the primary antecedents to a good organizational climate for implementing a practice (Helfrich et al., 2007; Klein & Sorra, 1996). According to Peeters et al. (2014), corporate-level managers contribute to the effectiveness of practice implementation through their authority to legitimize the new practice and direct attention in the organization. The legitimacy and output issues identified in this study risk entailing managerial skepticism or lack of interest. This may lower managerial support for using an adopted practice (Bitektine & Haack, 2015), potentially resulting in a vicious circle of increasing friction, restricted use, and reduced output. Our findings regarding legitimacy and output issues thus have implications for research on practice

implementation and value fit by pointing to the importance of the level (Aarons et al., 2011), that is, whether the misfit concerns the values of targeted users (those using the concept and internal change agents) or those of decision-makers at the middle and senior levels or both (Lozeau et al., 2002).

All this demonstrates the usefulness of applying Detert et al.'s (2000) dimensions of organizational culture framework to a specific practice such as DT, not only to further our understanding of the practice as such but also the implementation of management innovation within an organization. By revealing insights about frictions that are linked to the cultural mismatch, we illuminate the underlying reasons why an innovation may be "operationally complex," "challenge authority and power," and have a "perceived unclear impact" (Damanpour, 2014). Recent overviews of the state of the art of management innovation research (e.g., Damanpour, 2014; Volberda et al., 2014) lack a focus on culture. In the present work, we point to the importance of culture for both management innovation discussions and DT research.

6 | MANAGERIAL IMPLICATIONS

Our work has several managerial implications. First, the cultural archetype can be used to create awareness and foster dialog in order to understand and limit potential tensions, thereby better managing the adoption of DT. It can be used to assess and address specific cultural gaps that might cause frictions and to uncover potential discrepancies between espoused values and the values actually in use in their organization. By not paying attention to a cultural mismatch, some of the expected benefits of using DT may not be realized, resulting in a delegitimization of DT that is linked to clashes in fundamental assumptions about truth and knowledge. Lack of depth, incrementalism, micromanaged processes, and lack of an external orientation are likely to yield few results or only incremental ones and to evoke disappointment and lack of trust. Further, the success of an initiative in its early stages often depends on a small number of key individuals who can muddle through organizational hindrances and engage their coworkers with enthusiasm, grit, and creativity. Cultural gaps linked to motivation, relationships, emotions, and collaboration as well as not being able to use DT to its full potential can cause these valuable ambassadors to become disillusioned. Our results thus point to the importance of taking such "soft"/psychosocial aspects into account in order to nurture and shield these individuals.

Cultural awareness supported by the cultural archetype realized at the beginning of an implementation

initiative can facilitate discussions about what to accomplish by implementing DT and how. For example, if a broad culture change is desired, what specific characteristics could and/or need to be considered? What systems and policies are in place that reinforce unwanted values? Could the use of DT be a catalyst to change these values directly or indirectly? Just as there is a growing awareness that exploration and exploitation thrive in different environments, there needs to be an awareness that using DT may require a different cultural setting. It is important to assess where it is desirable and/or possible to create a change in values, and where it is not useful or possible. An awareness of both the cultural characteristics of DT and the factors in the organization that are impossible to change can open up possibilities for creating alternative strategies, such as the creation of microclimates, as proposed by Zuber and Weberg (2020).

Managers can work proactively on creating awareness by setting and describing goals for an ideal culture where DT is used as well as identifying hindrances and enablers and their indicators. Managers should make the ideal culture visible and wanted, identify weak signals to monitor changes in the right direction, and encourage self-assessment in DT teams, all of which could be supported by the cultural archetype. Taking inspiration from the identified challenges, managers could partner with HR to identify systemic hindrances to collaboration, such as reward systems based on individual achievement. Managing the interface between cultures within a firm and creating space for using DT requires "bilingual" managers who can marry design and business and thus act as champions for design in the business world. They should be able to identify pockets where DT has a chance of survival and success and then use these to build convincing stories for scaling and building legitimacy.

7 | LIMITATIONS

Our research has some limitations. In terms of methodology, for example, we have used data collected from previous case studies that were not specifically focused on culture. However, these case studies were already addressing the implementation of DT, and we coded the data by mobilizing relevant analytical frameworks such as Detert et al.'s (2000) framework. Moreover, we augmented the data through multiple workshops involving DT users at the working level and managers in different positions. Combining the interviews and observation data with a workshop approach thus allowed triangulation, confirmation, and nuanced insights.

Another limitation is that we focus only on large, established organizations rather than SMEs. Although most of the research working on MI implementation generally addresses large established firms, we believe that it would be interesting to explore DT implementation in SMEs, which might result in different challenges. Research addressing the prevalence of the challenges identified on a larger sample of organizations could also be interesting.

Another issue is that the studied firms' experience using DT ranges from 2 to 10 years. Thus, depending on where the companies were on their implementation journeys at the time of the interviews and observations, some cultural gaps could have decreased or increased with time. In this research, we were interested in describing the characteristics per se as well as the types of challenges they entail, and not in quantifying the gap or linking challenges with years of experience. However, further research could address the trajectories of cultural change, the reasons behind shifts in cultural fit, and the role of the time that has elapsed.

We emphasize that our data (interviews, observations, and workshops) do not allow us to make robust correlations between gaps in specific dimensions and the implementation performance in the different firms we studied. As one workshop participant concluded, "Culture is one piece of the puzzle, but it doesn't fully explain why DT fails. We also struggle with other things than cultural non-fit, especially the noise of there are all those other things to do." Future research could compare successful and failed implementations to identify cultural patterns. In the same line of thought, the cultural characteristics of DT could be compared with either established cultural archetypes or empirical work on different industrial sectors, professions, and organizational units to understand whether implementation of DT might be especially difficult in specific organizational settings.

CONFLICT OF INTEREST
The authors declare that there is no conflict of interest.

ETHICS STATEMENT
The authors have read and agreed to the Committee on Publication Ethics (COPE) international standards for authors.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.
Supplementary Material

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