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Digital Transformation Toward Data-Driven Decision-Making: Theorizing Action Strategies in Response to Transformation Challenges

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Abstract:

Organizations are increasingly trying to take advantage of opportunities for digital transformation. However, business leaders may be overwhelmed by the technical, organizational, and societal challenges that come with these opportunities. As a result, business leaders face a high level of uncertainty about how to strategize and manage digital transformation. This article investigates and theorizes how business leaders overcome the challenges of digital transformation toward data-driven decision-making. Based on an in-depth, qualitative case study and interviews with the leadership team of Smukfest, one of the largest festivals in Denmark, we show that (1) business leaders face several digital transformation challenges, including fear of surveillance, balancing intuition and objectivity, and knowing how to leverage data-driven decision-making; and that (2) they can manage these challenges through mitigating actions which include developing digital competencies, storytelling to communicate digital transformation potential, and motivating data use. We synthesize these findings and theorize the Executive Action Strategies of Engagement (EASE) framework, which provides a new perspective on digital transformation management grounded in empirical observations. The framework guides practitioners by clarifying the roles of business leaders in digital transformation toward data-driven decision-making.

Keywords: Digital Transformation, Leadership, Data-Driven Decision-Making, Case Study.

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1 Introduction

Organizations are increasingly trying to take advantage of opportunities for digital transformation. However, with the majority of organizations failing to achieve digital transformation objectives (Wade et al., 2021), there is a need for a better understanding and management of the associated challenges. Leadership is one of the more critical challenges organizations encounter during digital transformation (McAfee & Brynjolfsson, 2012; Yokoi et al., 2019). Despite academic interest (e.g., Windt et al., 2019; Davenport & Harris, 2017), we have only limited understanding of the roles and actions of business leaders in digital transformation (Wrede et al., 2020). Carroll et al. (2023) argue that "practitioners and academics alike grapple to understand the specific domain, and how a digital transformation may deliver value using new technologies" (p. 22). Meanwhile, studies show a growing interest in the topic by drawing attention to, for example, the role of the chief digital officer (CDO) (Horlacher et al., 2016; Singh & Hess, 2017) and other business leaders in digital transformation (Cortellazzo et al., 2019; de la Boutetiere et al., 2018; Matt et al., 2015) and how they influence the digital transformation (Certo et al., 2006; Cannella et al., 2009; Porfírio et al., 2021).

Data-driven decision-making, enabled by the development of data analytics capabilities, is one among several goals of digital transformation initiatives (Dremel et al., 2017; Verhoef et al., 2021). However, it is not an end goal in and of itself but rather a means of realizing a range of business values. It supports informed and strategic choices, fosters agility and adaptability, enhances operational efficiency, and improves customer experiences (Korherr et al., 2022). Thus, we refer to data-driven decision-making as capabilities to support the pursuit of competitive advantages (LaValle et al., 2011; Müller et al., 2024; McAfee & Brynjolfsson, 2012), increased business value (Davenport, 2006), superior decision-making (Bean & Davenport, 2019), and innovation (Joergensen & Zaggl, 2024).

Senior leadership plays a crucial role in driving digital transformation toward data-driven decision-making. Leaders must continuously communicate the value of being data-driven, secure critical resources, and foster a data-driven culture (Windt et al., 2019). Research has investigated various leadership styles in digital transformation (Korherr et al., 2022) to understand the difficulties of data-driven transformations and common leadership responses (Windt et al., 2019). To realize the goal of data-driven decision-making, organizational culture is a key challenge (Storm & Borgman, 2020; Vidgen et al., 2017; Bean & Davenport, 2019), and business leaders play a crucial role in fostering a data-driven culture, which influences the organization's ability to realize the value of increased data use (Davenport & Harris, 2017; Seddon et al., 2017). Several studies have explored how leaders create a data-driven culture (Davenport & Harris, 2017; McAfee & Brynjolfsson, 2012; Storm & Borgman, 2020) and have concluded that data-driven decision-making necessitates new leadership roles (Bean & Davenport, 2019; Carillo, 2017; McAfee & Brynjolfsson, 2012). Leaders must develop an analytical mindset (Carillo, 2017). Nevertheless, managers are uncertain about managing the transition from intuitive to analytics-based decisions, and they need "actionable guidance on how to manage the shift to data-driven decision making" (Korherr et al., 2022, p. 1). Leadership challenges and responses have only been discussed conceptually, and practice studies are needed. Specifically, "an investigation of more levels of management, such as C-level management, could enrich the understanding of transformations towards data-driven organizations" (Windt et al., 2019, p. 4995).

Our empirical context is Smukfest, one of the largest festivals in Denmark. Smukfest offers an ideal case study for exploring data-driven decision-making due to its cyclical nature, allowing its leadership team to conduct year-over-year comparisons and make iterative improvements. Our exploration of this case is inspired by a call for research into how business leaders help companies transform themselves in the digital age (Verhoef et al., 2021, p. 896). To that end, the Smukfest case illustrates many of the same challenges other organizations face and can, thus, be considered an ideal case for exploring how to cope with them. This article investigates how business leaders overcome the challenges of transforming an organization toward increased use of data for decision-making. Specifically, our investigation is guided by the following research question: **How can business leaders overcome the challenges of digital transformation toward data-driven decision-making?** In addressing this question, we theorize digital transformation based on our empirical study, juxtaposing empirical results with theory and using the pluralist theory-building methodology (Müller et al., 2020). We have conducted a single in-depth case study to empirically investigate data-driven decision-making in an organization undergoing digital transformation.

Our research reveals multiple digital transformation challenges, specifically strategy formulation and organizational implementation. The study also examines how leaders proactively address these identified obstacles. Based on a synthesis of results and subsequent theorizing, we propose a framework to manage digital transformation challenges. Our contribution is twofold: First, we provide actionable advice to business leaders who plan or are undergoing digital transformation. Second, we add to the understanding of the role of business leaders in digital transformation toward data-driven decision-making.

The article is structured as follows: Next, we develop the theoretical background for this study, accounting for the literature on digital transformation and data-driven decision-making from a leadership perspective. Then, we present our research design, including our data collection and analysis approach. We then present our empirical analysis findings to reveal challenges to digital transformation and corresponding mitigation actions. Building on the analysis, we theorize the EASE ("Executive Action Strategies of Engagement") framework, discuss strategies for managing digital transformation, and emphasize the contribution and implications of our research.

2 Theoretical Background

We used the Scopus and Web of Science databases for structured literature searches. Our focus was on digital transformation and data-driven decision-making from a management perspective. Keywords such as "data", "digital transformation", "leadership", and "management" were used. In the selection of literature, we prioritized information systems (IS) journals and articles with a managerial focus. We applied backward and forward searches as a final step in the literature search (Webster & Watson, 2002) to find additional papers based on already identified references. In total, we identified more than 30 papers.

2.1 Digital Transformation

Digital transformation is a growing area of IS research (Wessel et al., 2021), and scholars have proposed different conceptualizations. Vial (2019) highlights the lack of conceptual clarity by presenting 23 unique definitions by different authors. He proposes a synthesized definition of digital transformation as "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial, 2019, p. 121). Digital transformation can be viewed as a three-phase process. The first phase is digitization, where analog information is changed into a digital format (Legner et al., 2017). The second phase is digitalization, which involves strategically aligning operations and structures with IT (Mithas et al., 2013). The third phase is the digital transformation itself. During this phase, data are generated by digitally connected people, things, and locations; they are analyzed to create business value (Legner et al., 2017). The resulting changes in business processes necessitate new capabilities to support organizations in harnessing digital technologies. This enables the exploration of new business opportunities through data-driven decision-making (Verhoef et al., 2021), and it supports new organizational processes, services, and products (Wessel et al., 2021).

Organizations seek to align their product and project portfolios with transformation objectives (Baslyman et al., 2020), integrating digital technologies to reshape value creation and customer interaction (Gebayew et al., 2018). This integration necessitates adapting business models and improving processes (Ahmed et al., 2021). In this context, data-driven decision-making serves not as an end goal but as a powerful means to enhance customer experience and operational efficiency (Gertzen et al., 2022). By leveraging data insights, organizations can more effectively tailor their offerings to customer needs and streamline their internal operations, ultimately driving the success of their digital transformation initiatives. Thus, Data-driven decision-making is about converting data into a valuable corporate asset and strategic capability (Brynjolfsson & McElheran, 2016). The strategic imperative to leverage data as a corporate asset frequently drives the development of advanced analytics capabilities as part of digital transformation initiatives. (Dremel et al., 2017, Verhoef et al., 2021). We focus on data-driven decision-making as a particular digital transformation challenge worthy of attention.

To achieve digital transformation, companies must adapt their organizational structures, growth strategies, performance metrics, and business goals (Verhoef et al., 2021) and reckon with potential organizational paradoxes (Danneels & Viaene, 2022). As a case in point, organizational structures are impacted by digital transformation. IT departments, for example, need to transform themselves from information enablers to proactive orchestrators of digital value creation (Leonhardt et al., 2017) to support a company's digital transformation. IT departments "have become an eye-level partner producing digital

innovations that strengthen the firm's competitive position" (Urbach et al., 2019, p. 125). However, the many changes associated with digital transformation challenge successful implementation, pushing practitioners to seek managerial insight and advice (Vidgen et al., 2017; Wade et al., 2021). Despite its importance, the existing literature is characterized by an inadequate understanding of digital transformation, leaving companies with limited guidance (Fischer et al., 2020). The roles and actions of business leaders are not adequately understood, and it is unclear how they contribute to transformation success (Wade et al., 2021). This leads to a call for investigations of how business leaders can overcome the challenges of digital transformation by pursuing various strategies specific to data-driven decision-making.

2.2 Leadership in Digital Transformation

Business leaders play a critical role in organizational change as they set strategic directions and motivate employees (Herold et al., 2008; Kotter, 1996; Moran & Brightman, 2000; Nadler & Tushman, 1990). Despite the consensus on the importance of leadership in digital transformation (Wade et al., 2021; Yokoi et al., 2019), empirical studies of the roles of business leaders are limited (Wrede et al., 2020). However, the rise of the chief digital officer (CDO) indicates the strategic importance of digital transformation (Urbach et al., 2019). Appointing a CDO signals a company's change readiness and makes digital transformation a business priority (Horlacher et al., 2016; Singh & Hess, 2017). However, this role may become obsolete as the organization develops and matures its capabilities to integrate and use digital assets (Singh & Hess, 2017; Wrede et al., 2020) as all business leaders acquire digital transformation competencies. Furthermore, making digital transformation the role of a CDO may fuel the view that it only concerns the IT department when, in reality, all business leaders need to strategically manage change efforts and the resulting challenges (Vidgen et al., 2017). The challenges of digital transformation encompass all functional areas and organizational roles (Li, 2020). Digital transformation should be an integral part of the business strategy (Arruda & Madhavji, 2017) as technology is increasingly important to most organizations (Hsu et al., 2018). This perspective on strategy requires coordination and collaboration between all business leaders because digital transformation requires the whole organization's concerted and collective effort (Benlian & Haffke, 2016).

There is limited evidence of theorizing how leaders can overcome digital transformation challenges associated with digital disruption, organizational culture, and leadership changes in existing research (Vial, 2019). The article by Müller et al. (2024) is an exception, as it highlights the critical role of business leaders in digital transformation. Porfírio et al. (2021) assert that an organization's ability to mature its digital transformation efforts depends on the characteristics of its business leaders. A literature study has revealed eight digital transformation leadership characteristics (McCarthy et al., 2022), and other research has concluded that business leaders should assume democratic leadership roles to support employee autonomy in driving digital transformation efforts (Porfírio et al., 2021). Behavioral integrity, defined as the perceived alignment between leadership statements and actions, is also a crucial prerequisite for digital transformation success (Armenakis et al., 2007). In other words, leaders must display behavioral integrity to drive digital transformation initiatives successfully. The importance of business leaders has grown in parallel with increased managerial discretion (Wangrow et al., 2015) and the recognized impact of leadership on organizational performance (Quigley & Hambrick, 2015). In wielding this managerial discretion, business leaders are advised to rely on data in their decision-making rather than intuition and experience (Bean & Davenport, 2019). There is, however, a recognized need for more research on leadership and data-driven decision-making in the context of digital transformation (Abbasi et al., 2016).

2.3 Data-Driven Decision-Making and Leadership

Digital transformation is closely related to developing data analytics capabilities (Verhoef et al., 2021), and enabling data-driven decision-making (Provost & Fawcett, 2013). Data-driven decision-making relies on data analytics for more informed decision-making among business leaders, although it simultaneously changes their leadership roles (McAfee & Brynjolfsson, 2012). Companies are increasingly interested in data-driven decision-making because they see opportunities for achieving competitive advantages through data analytics (LaValle et al., 2011; McAfee & Brynjolfsson, 2012), increased business value (Davenport, 2006), and superior decision-making power (Bean & Davenport, 2019). Data-driven decision-making is about generating insights and challenging current business practices (Kiron & Shockley, 2011), acquiring the data to make informed decisions (Kiron et al., 2012; LaValle et al., 2011), understanding how to leverage analytics (LaValle et al., 2011), and using data for product and service development (LaValle et al., 2011). Data-driven decision-making is directly related to digital transformation, as

transformation efforts take advantage of increased data availability and involve the development of data analytics capabilities (Verhoef et al., 2021). To realize the benefits of data-driven decision-making, companies must overcome the challenges of digital transformation, the most prominent being organizational culture (Bean & Davenport, 2019; Storm & Borgman, 2020; Vidgen et al., 2017). Davenport & Harris (2017) argue that data-driven decision-making requires a data-driven culture; leadership is essential to nurture this culture. The importance of leadership in digital transformation toward data-driven decision-making is supported by Seddon et al. (2017). Business leaders must display supportive behavior in change management by being empowering, engaging, and visionary (Nadler & Tushman, 1990). They must set clear digital transformation goals, define success criteria, know which questions to ask, and stimulate a data-driven culture (McAfee & Brynjolfsson, 2012; Windt et al., 2019). To this end, Storm & Borgman (2020) propose that business leaders communicate unambiguously, articulate the relevance of digital transformation initiatives, show concrete results, and foster an open environment of experimentation and innovation.

Data-driven decision-making involves new leadership roles. Instead of basing decisions on human intuition, experience, and judgment, data enable business leaders to make decisions more objectively and informally (Henry & Venkatraman, 2015). Leadership based on data-driven decision-making requires an analytical mindset (Carillo, 2017) and data analytics (Bean & Davenport, 2019). Leaders must let themselves be overruled by data to act convincingly as role models (McAfee & Brynjolfsson, 2012). This highlights a need for business leaders to balance intuition and objectivity and to know in which situations to use human judgment (Provost & Fawcett, 2013). Business leaders should continue to use their domain expertise to identify opportunities and challenges, including which problems to manage (McAfee & Brynjolfsson, 2012). Although academic interest in challenges and roles in digital transformation and data-driven decision-making is evidenced by extant research, the subject is primarily discussed at a conceptual level (Abassi et al., 2016; Carillo, 2017). For example, a recent literature study provides a competency portfolio framework that can be used "to evaluate any discrepancy in digital transformation leadership competencies between what is required and the current skill sets available" (Müller et al., 2024, p. 8). There are, however, to the best of our knowledge, no empirical insights into the role of business leaders in data-driven decision-making.

3 Method

3.1 Research Context

Smukfest is one of the largest Danish festivals. It takes place annually. During the five-day festival, approximately 35,000 visitors are welcomed daily by 14,000 volunteers and 7,000 commercial partners.

Its planning and organizing span the entire year. The organization has continually digitalized its services and processes. A few examples are: 1) the development of smartphone applications for guests to access festival information and services (introduced in 2010), 2) the implementation of smart wearable wristbands for payment and identification (introduced in 2014), and 3) an automated bar ordering system for restocking the inventory based on predictive modeling. Efforts are also being made to develop apps specifically for employees and customers, such as "a chatbot like ChatGPT, where you can ask anything within our data sources. It's brilliant. If someone asks something, we get information about the questions that we currently cannot answer" (CIO). The Smukfest digitalization is partly motivated by visionary leaders' desire to be perceived as innovative and creative by the industry. It is also a strategic move to keep pace with societal trends and consumer expectations regarding digital solutions while staying within the boundaries of data protection regulations.

The organization is undergoing a digital transformation toward data-driven decision-making to leverage the potential of guest data collected from wearables and other sources. The CIO initiated early transformation efforts in 2019, such as an automated bar ordering system, which digitalizes business processes through predictive algorithms.

> *Of course, we look into data to optimize some things and create a sound business. What also plays a big role is using data to solve tasks in the smartest possible way, so that [employees] are not overburdened with work. Can we remove the task of a bar manager placing daily orders, so that it's just an AI engine doing it based on all kinds of data? This is where, for example, we bring in music data and weather data, which we haven't used in this context before* (CIO).

This automation and other transformation efforts prompted the need to change established routines and ensure worker acceptance of new digital processes.

3.2 Research Design

Because the topic of the roles of business leaders in digital transformation is relatively new and there is scarce empirical evidence, we decided on an in-depth single case study to investigate and theorize the phenomenon. The rationale for choosing a single case study is to closely examine the practices of an organization amid digital transformation (Yin, 2018). Relying on a case study design allows us to explore and explain digital transformation by investigating a contemporary phenomenon and taking the specific business context into account. Furthermore, a case study is also an appropriate research design because we intend to describe, explain, and theorize digital transformation.

This investigation is a single, exploratory case study focusing on the Smukfest Festival, one of Denmark's most prominent festival organizers. Smukfest represents an interesting digital transformation case, exemplifying an organization with abundant data and recognized strategic opportunities but lacking the capabilities to utilize this asset fully. The selection of Smukfest was deliberate, providing rich, multilayered data and access to executive-level informants. As an annual five-day event, Smukfest is an example of organizations grappling with digital transformation to capitalize on their data. This case study aims to explore the intricacies of this transformation process in a real-world context, potentially offering insights applicable to organizations facing comparable challenges.

The organization has undergone digitization of information and business processes and services and is currently in the middle of digital transformation toward data-driven decision-making. We established an overall understanding of the organization before selecting Smukfest as our case. We had been working with the company since September 2020. Our background knowledge had several advantages: 1) we knew that the case would be suitable for this study; 2) we knew the organization's digitalization history; and 3) we had established a relationship with business leaders, which gave us unique access to informants at the executive level. The exploratory case study reveals critical insights into an organization undergoing a digital transformation toward data-driven decision-making. The nature of this case makes it an excellent candidate for describing and explaining the phenomenon and making a theoretical contribution.

The pluralist theory-building methodology by Müller et al. (2020) was used (for details, see Appendix A) for theorizing. Following this methodology, we sought to answer the research question by generalizing from empirical observations to theoretical statements. The resulting framework is the result of generalization from empirical observations and not an attempt at empirical generalization. Pluralist theory building draws on Lee and Baskerville's (2003) generalization framework and Mingers' (2001) pluralist research strategy and offers a practical approach to theorizing. We analyzed our data to create single-perspective accounts grounded in contrasting theoretical perspectives. Specifically, after completing the thematic network analysis, we applied theoretical perspectives on digital transformation, leadership in digital transformation, and data-driven decision-making and leadership to our empirical accounts. This led to several individual, complementary accounts of managing digital transformation challenges. These were synthesized into a multiperspective account, which was used as a basis for identifying patterns and creating theoretical fragments. To transform our findings into elements of theory (i.e., theoretical fragments), we examined the relationships between our empirical account and existing theories. We analyzed which overarching themes were prevalent and salient, which mitigating actions were taken in response to the experienced challenges, and, in turn, how this information could be conceptualized. We validated the emerging theory fragments by returning to the single-perspective accounts. By leveraging the existing literature to synthesize these elements of theory, we theorized the Executive Action Strategies of Engagement (EASE) framework. This synthesis involved an iterative process, moving between theoretical fragments, existing literature, and empirical observations. We related the framework to existing theory and our case study to validate its usefulness and novelty (Müller et al., 2020).

3.3 Data Collection and Analysis

The data collection consists of two rounds of semi-structured interviews with the leaders of Smukfest. We interviewed the same nine informants twice in February and April 2021. In addition, in April 2024, we conducted a post-transformation focus group meeting with two key stakeholders involved in the digital transformation toward data-driven decision-making: the CIO and the data-responsible IT staff member. We invited them for a discussion (which lasted for 1 hour and 28 minutes) as they are the two people most

heavily involved in the implementation and operational side of the digital transformation. At the meeting, we had the opportunity to present the EASE framework for feedback and validation purposes, and the presentation prompted reflection and discussion. We learned from the discussion that the digital transformation is ongoing and not considered a project with a fixed end date. An overview of the informants is presented in Table 1.

Table 1. Overview of Informants

Role	Management Level	Gender	Age	Tenure	Interview (min.)*
Chief Commercial Officer (CCO)	Executive board	Male	45	4	51; 32
Chief Financial Officer (CFO)	Executive board	Female	32	2	32; 33
Chief HR Officer (CHRO)	Executive board	Female	44	2	54; 58
Chief Volunteer Officer (CVO)	Executive board	Female	38	2	47; 48
Executive board spokesperson	Executive board	Male	43	6	28; 34
Bar and sales manager	Top management	Female	49	6	43; 34
Creative Director	Top management	Male	48	17	55; 25
Chief Information Officer (CIO)	Top management	Male	43	2	53; 38
Chief Security Officer (CSO)	Top management	Female	49	2	51; 47

*Note: Length of the first and second interviews, respectively.

The first interview round focused on understanding the perceived benefits of data-driven decision-making, the challenges of digital transformation toward data-driven decision-making, and how business leaders manage these challenges. As a basis for these interviews, we used an interview guide from a study by Wrede et al. (2020) on leadership roles in the digital age and leadership responses to digital transformation, adapted for our research purposes. The revision includes additional questions grounded in digital transformation and data-driven decision-making theory. The table in Appendix B shows how the interview questions relate to extant research, including the Wrede et al. (2020) framework and the background literature. The interviews were conducted virtually through Microsoft Teams. The length of the first round of interviews ranged from 28 to 55 minutes, with an average of 46 minutes (Table 1). The interviews were manually transcribed verbatim, and the data was coded in NVivo. We used Miles and Huberman's (1994) first- and second-order coding approach to analyze our collected data to create thematic networks. NVivo software assisted us in creating a hierarchical organization of the themes identified through first- and second-cycle coding. During the first coding cycle, we used a pre-established coding scheme based on the theoretical framework of managerial responses to digital transformation by Wrede et al. (2020). This was complemented by in vivo coding. While some instances of in vivo coding led to new codes, not all did. For example, when one leader spoke of "the creative mind", no new code was defined, as this topic was unique to that informant and not mentioned by others. Conversely, "Balancing intuition and objectivity" emerged as a new code because multiple informants emphasized the importance of intuition as a counterbalance to data-driven decision-making—a theme not prominently featured in the existing literature. These were evaluated based on their theoretical relevance, link to the research question, and frequency of use. This evaluation process was essential given the diverse backgrounds of our interviewees and their varying levels of familiarity with digital transformation and data-driven decision-making. For example, the Creative Director discussed a more creative and practical approach to festival planning. While insightful, these comments were neither theoretically relevant nor supported by other informants' interviews.

During the second round of interviews, "unifying the executive team" emerged as a new theme and was incorporated into the coding scheme, as shown in the revised version in Appendix C. The "Source" column indicates whether the codes are derived in vivo or from theory. The second round of interviews was coded, and the first round was recoded using the revised coding scheme. Two authors coded the interviews one at a time to ensure intercoder reliability (ICR) through check-coding, i.e., by comparing and discussing coding output (O'Connor & Joffe, 2020). As recommended by Miles & Huberman (1994), our goal was 80% intercoder reliability. The resulting ICR was 77% for the first, 86% for the second, and 93% for the third (see Appendix D for a detailed calculation). These calculations show increased reliability for each coded interview, which is attributable to our reaching a consensus through check-coding regarding how to code the data (Miles & Huberman, 1994). We compared and discussed the codes and their

definitions and changed the coding scheme (the columns “Code definition” and “Example coding”) as needed for clarification purposes. In the end, we reached an intercoder reliability of 88%.

During second-cycle coding, we analyzed recurring patterns by evaluating relationships between codes. Some codes were merged, and we used thematic clusters to organize relationships. We recognized a need to visualize these clusters and created a thematic network (Miles et al., 2014). We identified recurring themes related to the benefits and challenges of data-driven decision-making, as well as leadership attitudes and styles. We used these themes to categorize our codes and found it necessary to add “strategy” and “skills”, which emerged during the analysis. This analysis aimed to clarify the meaning of the codes, their relationships to the categories and each other, and how to organize them into thematic clusters by examining patterns, similarities, and differences. The resulting thematic network presents a detailed account of the complex patterns in the empirical data from the first round of interviews. This network was updated after collecting and analyzing the data from the second round of interviews.

The second round of interviews focused on leaders’ reflections on our analysis results from the first round of interviews and their actions to manage digital transformation challenges. An interview guide (Appendix E) was established based on the perceived challenges emerging from the thematic network analysis of the first round of interviews. The semi-structured interviews allowed informants to address the questions based on their expertise. These interviews were also conducted virtually and varied from 25 to 58 minutes, with an average of 38 minutes per interview (Table 1). The interviews were again transcribed verbatim and imported into NVivo. We analyzed the data from the second round of interviews through in vivo coding, using the informants’ descriptions of mitigating actions in response to digital transformation as a basis (Miles et al., 2014). The analysis was concluded by adding one new theme, “unifying executives”, to the thematic network. The discovery of only one additional theme with a clear connection to our existing thematic clusters during the second round of interviews indicates empirical saturation, and the ease with which this new theme integrated into our existing network further validates the comprehensiveness of our initial analysis.

Table 2. Secondary Data Sources

Source	Type	Relevance
Company strategy	PDF document	Insight into the organization’s strategic focus and current status.
Leadership discussion	Group interview	Initial conversation with leadership on Smukfest’s data-driven decision-making plans to assess the case’s research relevance.
Employee dialogue	Interviews	Conversation on staff-level data usage and perspectives in relation to leadership’s digital transformation and data-driven decision-making.
Digital strategy	PDF document	Details on digital transformation goals and status.
Power BI	Festival wristband data	Access to data variety and usage, supporting statements and verifying data-driven decision opportunities.
Leadership presentation	Workshop	Presentation and discussion of findings with Smukfest leaders to validate the theorizing.
Observations	Notes	Examples of digital transformation initiatives, creating data-driven opportunities and posing challenges.

We had access to rich, multilayered data, which enabled triangulation and validation of the interview findings. This secondary data (Table 2) included internal documents, such as the company’s strategy and the CIO’s digital plan. We also had access to information regarding the company’s collection of user data through festival wristbands and how this data was used for process improvement and as a basis for new innovative initiatives. Additionally, we conducted conversations and interviews at the employee level, for example, with the data-responsible IT staff member. Due to our focus on digital transformation leadership, these have not been the subject of separate analysis. Instead, these interviews, conversations, and other data listed in Table 1 have been used for triangulation and analysis of the interviews with the leaders. For example, the strategy documents have contributed to a richer understanding of the digital transformation goals, conversations with employees have grounded the sometimes slightly abstract managerial considerations in the realities of day-to-day practice, and the visualization of the wristband data in Power BI has provided a clearer picture of how data is used in decision-making within the organization as a driver of digital transformation. Among the decisions the data have supported is deploying three apps, which we have observed in practice at the festival. Smukfest offers three apps: SmukCrew, designed for

volunteers with a dictionary, map, and FAQ; Smukfest, for guests to explore food and drink options, create a personalized music schedule with notifications, and receive festival updates; and SmukLab, a playful app allowing guests to track their drink consumption, participate in contests, find friends via geo-location, and enabling the festival to collect guest data for behavior insights. Our observations and field notes have helped us understand the connections between the strategy, data-driven decisions, and these new innovative products (apps) at the festival.

4 Findings

Our analysis identifies challenges Smukfest faces in its digital transformation journey toward data-driven decision-making and the actions employed to overcome these obstacles. The challenges identified can be broadly categorized into organizational and strategic issues. Organizational challenges include resistance to change within the company culture, complications arising from democratic leadership styles, fears of surveillance, and apprehension about potential failure. Strategic challenges encompass balancing intuition with objectivity, unifying leadership around digital transformation goals, ensuring cultural fit, and developing the know-how to leverage data-driven decision-making effectively. To address these challenges, Smukfest's leaders have implemented various mitigating actions. These include creating a sense of digital urgency, developing digital competencies, using storytelling to communicate the potential of digital transformation, and acting as role models. Leaders also demonstrate support for digital initiatives, motivate data use, communicate openly about transformation efforts, and integrate digitalization into the corporate strategy. The following sections delve deeper into these challenges and mitigation actions, thoroughly examining how Smukfest navigates its digital transformation journey.

4.1 Digital Transformation Challenges

When interviewed about current and past digital transformation initiatives, leaders described numerous challenges. These challenges share common characteristics and can be categorized as organizational or strategic. An overview of the challenges is provided in Table 3.

Table 3. Overview of Perceived Challenges

Type	Description	Prevalence*
Organizational challenges	Organizational culture	9
	Democratic leadership	3
	Fear of surveillance	3
	Fear of failure	2
Strategic challenges	Balancing intuition and objectivity	9
	Unifying leaders around digital transformation	9
	Ensuring cultural fit	7
	Knowing how to leverage data-driven decision-making	7
*Note: The total number of informants identifying the challenge.		

4.1.1 Organizational Challenges Identified by Leaders

The organizational challenges revolve around organizational culture, democratic leadership, fear of surveillance, and fear of failure. Organizational culture is a challenge that relates to values influencing digital transformation. All leaders point to the difficulty of fostering a shared and positive attitude toward digital transformation in a company with a long tradition of working in a particular way. The CSO explains that it is complicated to digitally transform and change the mindset of employees when their immediate reaction is to ask: "Is what I'm doing not good enough anymore?" The CIO sees resistance leading to employees falling back on old habits. However, resistance is not only tied to Smukfest employees. It is also prevalent at the management level. Due to the varying analytical competencies and perceptions of the importance of digital transformation, leaders react differently to digital transformation initiatives. These reactions reflect personal experiences and beliefs that, in turn, influence how their departments react to digital transformation. The CIO states:

> *Data are revelatory. It's no longer a question of believing in something, it's about the factual state of matter, which creates friction. We have to be careful not to create a conflict with opposing factions when revealing things we could not see clearly before.*

Smukfest is divided into two groups of people who either believe in the digital transformation of the business or in maintaining the status quo. This creates a challenge due to the organization's commitment to democratic leadership with shared responsibility, employee participation in decision-making processes, and the lack of non-compliance sanctions. On the one hand, those who advocate for transformation pursue it through democratic leadership by empowering employees to make autonomous business decisions. The democratic leadership of Smukfest is an organizational asset that empowers employees to assume responsibility and participate in the digital transformation. However, it also leads to almost anarchistic behavior in some instances. The CHRO explains:

> *Those who call for more authoritarian leadership are the same people who would feel terrible if they were constantly told what to do. Balancing democratic and authoritarian leadership styles is very complex, and it is an issue that will always exist. They just have to co-exist.*

When speaking to those who want to maintain the status quo, they point to fears related to digital transformation. The CIO and CVO mention the fear of failure, as past digital transformation initiatives have not been perceived as successful. Smukfest has previously invested a disproportionate amount of resources compared to the realized value in, e.g., developing administrative systems and operationalizing data access. Previous digital transformation failures linger in people's minds and affect current initiatives. The CIO elaborates that "there are big risks involved in implementing things like data-driven decision-making. If it fails at first, which often happens with these things, you are punished. And making it right is a time-consuming process".

They also mention the fear of surveillance through data collection and use, to which the bar and sales manager says: "When I presented the employees with [automated ordering], they said everything was becoming Big Brother and robotics. Today, they applaud the technology because they get four more hours of sleep every night".

4.1.2 Strategic Challenges Identified by Leaders

When reviewing the organization's progress toward digital transformation, Smukfest leaders identify several strategic challenges: balancing intuition and objectivity, unifying leaders around the digital transformation, ensuring cultural fit, and knowing how to leverage data-driven decision-making. They describe the challenge of balancing intuition and objectivity, claiming that other companies could learn from how Smukfest is managed by values, although they also admit that the organization relies too heavily on them. Values hinder the transformation of digitalized processes because routine rigidity leads to organizational inertia. The consensus among leaders is that decisions need to be made more objectively. They believe there is a middle ground between objectivity and intuition and that striking a balance is desirable. However, many employees lack the competencies to actively use data for decision-making purposes. As the creative director professes: "It's difficult to find data, I don't know how to access it. I can't bring it forward and I have a hard time extracting data. I'm not smart enough to do that".

All informants mention the challenge of unifying leaders around digital transformation. According to the CIO, they must establish a common understanding of digital transformation and shared competencies. In its absence, they cannot achieve a shared strategic perspective on digital transformation. He adds: "One of the managerial challenges I have experienced is teamwork. Understanding each other's approach to leadership and genuinely supporting each other's decisions". The bar and sales manager further points out that leaders can decide not to participate in decision-making processes and then later question and oppose decisions regarding the company's digital transformation. This results in tension and lack of unity, obstructing digital transformation initiatives.

Concerning cultural fit, they see a need to adapt digital transformation approaches to the organizational context. The executive board spokesperson points out that "becoming too data-driven can be a disadvantage for a company like ours. Unruliness and being daring is part of our essence". Ensuring cultural fit is about asking how Smukfest should implement data-driven decision-making. The CHRO elaborates:

> *Our role as executives is to evaluate the strategy and our brand against what is attractive to the company. There are so many exciting prospects when it comes to data-driven decision-making and business intelligence. We are obliged to stop when and if it damages our core values.*

To balance intuition and objectivity and ensure cultural fit, Smukfest leaders need to adopt an analytical mindset. This leads to another challenge for the leaders. They struggle to know how to leverage data-driven decision-making. This challenge is described by the CCO:

> *In some ways, Smukfest is more digital than many others in the industry. I believe the company has made a quantum leap years ago. And now it feels like we are operating without the competencies to take advantage of the digital opportunities and all the data we collect.*

The CVO reflects on this, stating, "Increased data availability opens up a new world for us, but how should we use the data, and how can we use them as a management tool?" The CHRO criticizes the way that audience and volunteer surveys are currently conducted. If leaders want to extract real value from the responses, they must first ask what they want to achieve by leveraging the data.

4.2 Mitigating Digital Transformation Challenges

In an attempt to address the challenges during the digital transformation toward data-driven decision-making, Smukfest leaders take different mitigating actions. These actions help negate or diminish the extent to which challenges threaten successful transformation. Table 4 presents an overview of the challenges and the corresponding actions in response to the identified challenges.

Table 4. Overview of Challenges and Mitigating Actions

Challenge	Mitigating Action
A) Organizational challenges	
Organizational culture	Creating digital urgency
	Developing digital competencies
	Storytelling to communicate digital transformation potential
Democratic leadership	Acting as role models
	Demonstrating support for digital transformation initiatives
	Motivating data use
Fear of surveillance	Communicating openly about digital transformation initiatives
Fear of failure	Communicating clear digital transformation goals
B) Strategic challenges	
Balancing intuition and objectivity	Challenging practices through data-driven insights
Unifying leaders around digital transformation	Recognizing digital transformation as all-encompassing change
	Demonstrating behavioral integrity
	Assuming ownership of digital transformation
Ensuring cultural fit	Integrating digitalization into the corporate strategy
	Redesigning organizational structure
Knowing how to leverage data-driven decision-making	Questioning internal processes and products
	Understanding the benefits of data-driven decision-making
*Note: The total number of informants identifying the challenge.	

4.2.1 How Leaders Manage Organizational Challenges

To manage the challenges associated with organizational culture, Smukfest leaders communicate digital transformation as a necessity rather than an option, creating a sense of digital urgency. The general attitude is that transformation needs to occur sooner rather than later. "We need to take the plunge, and then it will pay off in the long run. Our business can't survive if we don't get started", says the CSO. The CIO agrees and adds that they need to face any setback or problem that may occur head-on. The CCO

states, however, that not everyone understands the necessity of transformation, which is problematic in a situation where “we need to take it to the next level. We have collected a huge amount of data. So much data that we have no idea what to do with it”.

The CSO sees the need to help employees and leaders develop the necessary competencies for digital transformation to better promote employee openness. The CIO explains that various opportunities for competency development are offered based on employees’ readiness to change.

> *We are working to help people at their own pace. We start by including those who want and have the competencies required to participate in digital transformation initiatives. Then, we guide the rest more solicitously and try to make them feel secure in the process.*

Some leaders emphasize how success stories motivate others. The CIO explains that “the bar coordination is an important player when it comes to the transformation because they can show us the way. They can act as ambassadors”. Furthermore, he states: “When the employees have seen it work, they are game and can’t understand why we didn’t do it ten years ago”. The bar and sales manager adds: “Some of our colleagues who previously said that digitalization was a pain in the ass are now opening up to the fact that it doesn’t have to be dangerous”.

Regarding managing the challenges associated with Smukfest’s democratic leadership, most leaders emphasize the importance of acting as role models and leading the change by example. To nurture employee support for digital transformation initiatives, leaders show the way by embracing new software tools and actively using data for decision-making purposes. Consequently, they adopt the same work practices that are expected of employees. They see this as an essential behavioral characteristic of a democratic leader. The CFO describes: “It is paramount. If we don’t demonstrate to employees that we are participating in the digital transformation and that it represents the future, they won’t adapt to the change”. They also manage the challenge of democratic leadership by actively supporting digital transformation initiatives and participating in transformation efforts. This, in turn, inspires and motivates employees to engage more in digital transformation initiatives.

The Smukfest leaders perceive the CIO as an invaluable asset in transforming the company. The CSO describes:

> *He is a gatekeeper who knows how to sort through digital possibilities. I’m sure we won’t end up with something irrelevant because he’s so good at his job and because he knows the organization. I’m completely comfortable with that. He’s got it.*

The other leaders mention that the CIO needs to provide them with relevant information to make sound decisions. Meanwhile, they cannot ignore their responsibility to ensure the success of digital transformation. The CHRO says: “It won’t be successful unless we are all on board. It would evolve irrespectively, sure, but to substantially transform, we have to be aboard”. They demonstrate support by motivating others to adopt the initiatives, use data in their work, and continuously question the validity and reliability of the information. They motivate each other and their employees. The CHRO who has taken responsibility for the transformational changes states:

> *It is part of my job to continuously help our leaders develop. Part of that is reminding them to make educated decisions by looking at the data. It’s about moving away from gut feelings and discussing whether or not we have some factual knowledge in the area.*

They manage the fear of surveillance by publicly communicating about digital transformation initiatives and their implications for employees. They believe in transparency and clarifying how data are used to improve processes and not to measure employee performance and productivity. They describe communication and active engagement as means of alleviating employee concerns. The CCO says:

> *Our role as executives is to support this decision and show that it is right for our organization. Our most important task is to support the initiatives and lead by example by implementing the initiatives in our functional areas.*

To counter the fear of digitalization failure, Smukfest leaders communicate the goals of data-driven decision-making and digitalization of work processes. This shows how current efforts differ from previous ones and what strategic actions are taken to mitigate risks. In their experience, communicating goals helps build employee trust in the success of the digital transformation. It ensures transparency and a focus on common goals. Increased transparency also aids in creating a more holistic view of the organization and supports leaders in planning digital transformation initiatives based on the current state

of affairs. Functional leaders are responsible for realizing the goals within their respective areas with the support of other leaders who must work together and agree on a common approach. This requires a change of mindset since they have a history of disagreements and work toward local rather than common goals. The CVO asks the other leaders to live up to their responsibilities and "dare to be much more explicit about what we want and what we don't want. To clear the fog and to ensure that the CIO is not secluded from us".

4.2.2 How Leaders Manage Strategic Challenges

When trying to balance intuition and objectivity, leaders challenge existing practices through data-driven insights. They analyze current practices based on available data to evaluate which areas would benefit the most from a more objective basis for decision-making and when decisions can be made based on intuition. Because decision-making based on intuition and gut feelings is part of the culture and historical legacy of the organization, the leaders have decided that digital transformation must be adapted to the organizational conditions for decision-making. Data-driven decision-making does not imply abandoning autonomy and flexibility in decision-making or increasing bureaucracy and surveillance. The CIO reflects on how data inform decisions:

> *When experienced leaders make decisions based on intuition, they can't show the facts. We just have to trust them. With data-driven decisions, we can explain the basis for decisions, and then we can start combining data sets and make even more complex decisions. You can't necessarily do that based on 40 years of experience.*

The leaders balance intuition and objectivity by continuously evaluating how and when to utilize data. The CHRO explains: "It is a discussion of values and where we can be better at making data-driven decisions. In which cases can we increase our net income or streamline decisions by using data".

Unifying leaders is a challenge of continuous reflection. First, they highlight the importance of considering digital transformation as an integrated change that affects the entire organization rather than being an IT departmental issue. None of the Smukfest leaders sees digital transformation as an isolated effort. They believe in involving themselves and actively collaborating on digital transformation initiatives. The CSO, CHRO, CVO, executive board spokesperson, and bar and sales manager agree that digital transformation is all-encompassing while recognizing that some functional areas are more affected than others. The CHRO explains:

> *The CIO has a big role in this, both as a leader and on a personal level. His approach to leadership affects how it is introduced and supported by the executive board. His take on digital transformation is the key to our success.*

When collaborating to support digital transformation initiatives, they emphasize the importance of demonstrating behavioral integrity. They make clear that they need to stay true to their words in support of unifying leaders around digital transformation, showing genuine support, and being loyal to joint decisions. The bar and sales manager summarizes:

> *Our most important task right now is to show commitment and loyalty to the changes. We need to support the initiatives, even if we don't use or understand them ourselves. When it has been decided, we need to zip it and get in line. That is damn important to me.*

The Smukfest leaders see a need to improve how they participate in digital transformation continuously. The leaders demonstrate unity by taking ownership of transformation efforts. The CVO encourages all leaders to become better at taking strategic ownership. She believes, along with other leaders, that they are not visible enough in their support, which makes them seem insincere. The CVO states:

> *If we are to succeed in our digital transformation, we have to take ownership and be at the forefront of it. That is what it takes. We have to talk about it in our departments, focus on it, and follow up on data-driven initiatives.*

To ensure cultural fit, Smukfest leaders integrate digitalization aspects into the business strategy through a new long-term digital strategy. According to the CHRO, this is accomplished by reviewing Smukfest's history of technology use and charting a course for the future. The CIO describes:

> *I was employed about a year ago and started talking about implementing business intelligence and data-driven initiatives without making it as concrete as we are doing now. I believe it motivates the other executives that we're doing it.*

In addition to integrating digitalization aspects into the business strategy, they make organizational changes to ensure cultural fit. According to the CHRO, this has been an ongoing process over the past few years. The organization has matured from unstructured to standardized work processes, and the organizational hierarchy has been flattened. Members of the leadership team were removed, allowing the remaining leaders to share an expanded decision-making mandate with employees and make decisions more transparent. The leaders also manage the challenge of ensuring cultural fit by encouraging horizontal cooperation. The increased focus on cooperation makes it easier for leaders to share knowledge across functions and helps align digital transformation initiatives with existing values. The CVO explains:

> *Some departments close themselves off, and because they experience inertia horizontally in the organization, they embark on things by themselves. In the past, the departments kept to themselves. It's still a relatively new concept listening to each other and sharing experiences. It used to be unheard of in our organization.*

Smukfest leaders describe two actions to manage the challenge of knowing how to take advantage of data-driven decision-making. First, they critically examine internal processes and products to understand how data-driven decision-making would impact them. This helps them set clear strategic digital transformation goals, including business process support to increase process flexibility and mitigate security risks by employing predictive analytics. Clear, strategic digital transformation goals help them decide how to leverage data-driven decision-making. Instead of reacting to changes in the business environment, they proactively anticipate change by making strategic decisions based on available data and predictive analytics. As the CIO puts it: "I believe that we as an organization have transformed because we have considered how we work. The way we communicate, the way we place orders, and the way we operate as a festival have all been digitalized over time".

Second, they describe the need to understand the implications of digital transformation, such as anticipated challenges, how the company can benefit from data-driven decision-making, and how to apply it in practice. One of digital transformation's most frequently mentioned benefits is increased operational efficiency. This increase is related to services and processes because information flows are augmented, and knowledge sharing is aided across functions. This helps counteract pseudo-work (characterized by irrelevancy and non-existent value creation). Efficiency gains free resources for other tasks and supports enhanced value creation. The creative director mentions that "many things can be streamlined by digitalization, giving us more time to develop the festival". The leaders also leverage data to increase their impact on decision-making because other leaders show interest and support for management decisions based on facts. The CVO explains:

> *One of the benefits of the data-driven approach is increased participation, awareness, and qualification of processes. That is beneficial for a company like ours, where everything is a discussion of gut feelings. This festival is fucking built on gut feelings.*

5 Theorizing Digital Transformation Leadership

By following the pluralist theory-building methodology (Müller et al., 2020), we identify and theorize four action strategies in response to different challenges of digital transformation. We present these as the Executive Action Strategies of Engagement (EASE) framework (Figure 1). The framework relates to data-driven decision-making by providing action strategies for business leaders to overcome challenges in digital transformation toward increased use of data for decision-making purposes. Specifically, it offers guidance on uniting a leadership team around data initiatives, organizing data capabilities, managing cultural change to embrace data, and fostering employee participation in data-driven practices. In theorizing the framework, we are inspired by studies showing that organizations either have no digital strategy or are experiencing digital strategy fragmentation with limited alignment across functional areas, although a coordinated digital transformation strategy is linked to better financial performance (Wade et al., 2021; Yokoi et al., 2019). During our theorizing process, we considered different ways of presenting our findings to business leaders and settled on a framework that uses familiar language and concepts. Our analysis highlighted a key differentiator among the mitigating actions: their intended target audience. This led us to propose an internal-external dimension, distinguishing between actions aimed at the leadership team versus those targeting employees. We also considered their temporal aspects, categorizing actions as expressions of proactive or reactive strategies. We present these strategies in a

2x2 matrix format to underscore the interconnectedness of the internal-external and proactive-reactive dimensions, offering a comprehensive understanding of the mitigating actions within our model.

The framework is based on the view of digital transformation as a process (Kane, 2017; Verhoef et al., 2021; Wessel et al., 2021), during which challenges may occur at any time and without any particular order. The framework contains four action strategies in response to specific digital transformation challenges, namely taking strategic ownership (unite strategy), aligning IT and business (organize strategy), transforming the organizational culture (manage strategy), and pursuing democratic leadership (participate strategy). Each strategy is color-coded and placed within an inner matrix diagram with attributes describing the strategy type: internal, external, proactive, and reactive. The internal-external attributes characterize the type as either internal to the leadership team or externally directed toward employees. The proactive-reactive attributes describe the level of prognostication, with proactive strategies being anticipatory and reactive strategies responding to uncertainty. The inner matrix boxes are separate to illustrate that the strategies are not necessarily connected, though they may be combined if several challenges are present simultaneously. Leaders can pursue each strategy to mitigate the organization's current challenges of digital transformation. Based on our findings and drawing on existing theory, we detail the action strategies and how to use them next.

We offer four action strategies to aid business leaders in managing digital transformation challenges:

- **Strategy A: Unite.** In response to challenges related to strategic ownership.
- **Strategy B: Organize.** In response to challenges related to IT and business alignment.
- **Strategy C: Manage.** In response to challenges related to organizational culture.
- **Strategy D: Participate.** In response to challenges related to democratic leadership.

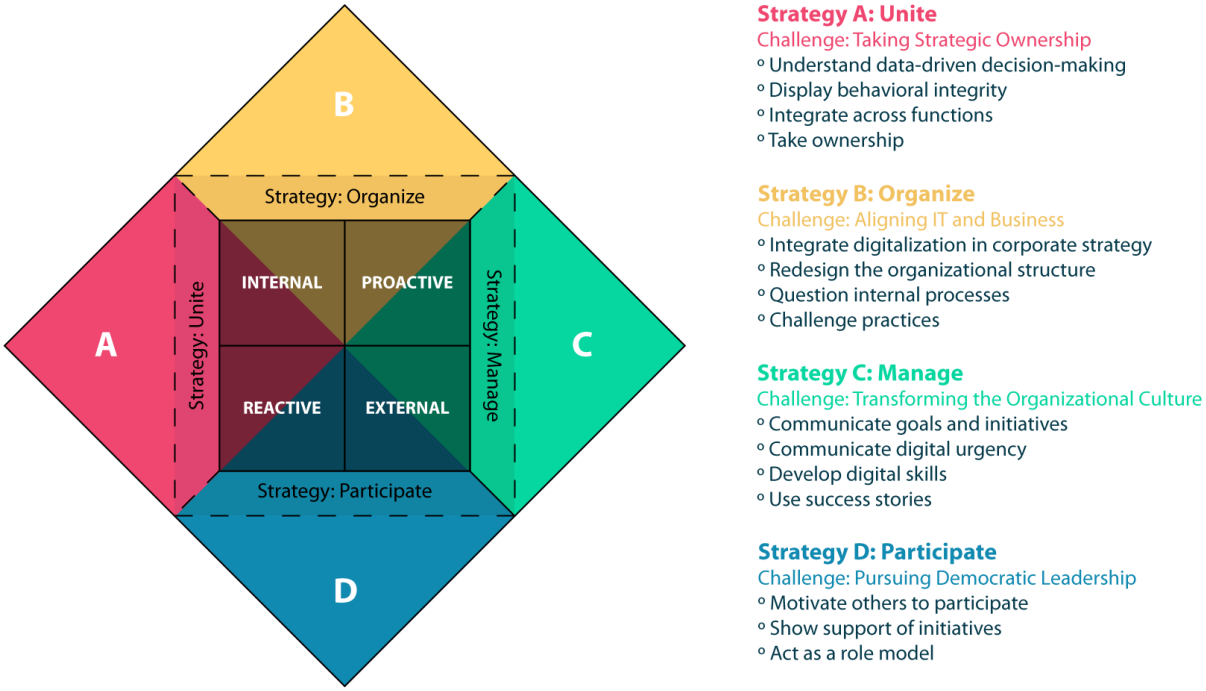

Figure 1. The Executive Action Strategies of Engagement (EASE) in Digital Transformation Framework

Each strategy is explained in turn and is related to the existing literature. Table 5 shows how the different strategies relate to the empirical findings and extant research. For each strategy, we provide example quotations and literature sources for the different constituent elements.

Table 5. Overview of Challenges and Mitigating Actions

Strategy	Element	Example quotation	Source
Strategy A:Unite	Understand data-driven decision-making	*One of the benefits of the data-driven approach is increased participation, awareness, and qualification of processes. That is beneficial for a company like ours, where everything is a discussion of gut feelings. This festival is fucking built on gut feelings.* (CVO)	Kiron et al., 2012; McAfee & Brynjolfsson; Wrede et al., 2020
	Display behavioral integrity	*Our most important task right now is to show commitment and loyalty to the changes. We need to support the initiatives, even if we don't use or understand them ourselves. When it has been decided, we need to zip it and get in line. That is damn important to me.* (Bar and sales manager)	Armenakis et al., 2007; Porfírio et al., 2021
	Integrate across functions	*Our role as executives is to support this decision and show that it is right for our organization. Our most important task is to support the initiatives and lead by example by implementing the initiatives in our functional areas.* (CCO)	Benlian & Haffke, 2016; Hsu et al., 2018; Provost & Fawcett, 2013; Vidgen et al., 2017
	Take ownership	*It won't be successful unless we are all on board. It would evolve irrespectively, sure, but to substantially transform, we have to be aboard.* (CHRO)	Quigley & Hambrick, 2015; Wangrow et al., 2015
Strategy B: Organize	Integrate digitalization in corporate strategy	*I was employed about a year ago and started talking about implementing business intelligence and data-driven initiatives without making it as concrete as we are doing now. I believe it motivates the other executives that we're doing it.* (CIO)	Arruda & Madhavji, 2017; Hsu et al., 2018
	Redesign the organizational structure	*Some departments close themselves off, and because they experience inertia horizontally in the organization, they embark on things by themselves. In the past, the departments kept to themselves. It's still a relatively new concept listening to each other and sharing experiences. It used to be unheard of in our organization.* (CVO)	Benlian & Haffke, 2016; Mithas et al., 2013; Verhoef et al., 2021
	Question internal processes	*I believe that we as an organization have transformed because we have considered how we work. The way we communicate, the way we place orders, and the way we operate as a festival have all been digitalized over time.* (CIO)	Bean & Davenport, 2019; Storm & Borgman, 2020; Verhoef et al., 2021; Vidgen et al., 2017; Wessel et al., 2021
	Challenge practices	*When experienced leaders make decisions based on intuition, they can't show the facts. We just have to trust them. With data-driven decisions, we can explain the basis for decisions, and then we can start combining data sets and make even more complex decisions. You can't necessarily do that based on 40 years of experience.* (CIO)	Kiron & Shockley, 2011; Porfírio et al., 2021; Verhoef et al., 2021; Vial, 2019; Vidgen et al., 2017
Strategy C: Manage	Communicate goals and initiatives	*[We must] dare to be much more explicit about what we want and what we don't want. To clear the fog and to ensure that the CIO is not secluded from us.* (CVO)	Herold et al., 2008; Moran & Brightman, 2000; Nadler & Tushman, 1990; Seddon et al., 2012; Storm & Borgman, 2020; Verhoef et al., 2021
	Communicate digital urgency	*We need to take the plunge, and then it will pay off in the long run. Our business can't survive if we don't get started.* (CSO)	Armenakis et al., 2007; Kotter, 1996; Li, 2020; Storm & Borgman, 2020
	Develop digital skills	*We are working to help people at their own pace. We start by including those who want and have the competencies required to participate in digital transformation initiatives. Then, we guide the rest more solicitously and try to make them feel secure in the process.* (CIO)	Dremel et al., 2017; LaValle et al., 2011; Legner et al., 2017; Provost & Fawcett, 2013; Verhoef et al., 2021
	Use success stories	*Some of our colleagues who previously said that digitalization was a pain in the ass are now opening up to the fact that it doesn't have to be dangerous.* (Bar and sales manager)	Davenport & Harris, 2017; McAfee & Brynjolfsson, 2012; Seddon et al., 2017

Strategy D: Participate	Motivate others to participate	*It is part of my job to continuously help our leaders develop. Part of that is reminding them to make educated decisions by looking at the data. It's about moving away from gut feelings and discussing whether or not we have some factual knowledge in the area.* (CHRO)	Horlacher et al., 2016; Singh & Hess, 2017
	Show support of initiatives	*The CIO has a big role in this, both as a leader and on a personal level. His approach to leadership affects how it is introduced and supported by the executive board. His take on digital transformation is the key to our success.* (CHRO)	Quigley & Hambrick, 2015; Wangrow et al., 2015
	Act as a role model	*It is paramount. If we don't demonstrate to employees that we are participating in the digital transformation and that it represents the future, they won't adapt to the change.* (CFO)	McAfee & Brynjolfsson, 2012; Windt et al., 2019

5.1 Strategy A: Unite

The **unite** strategy responds to the challenge of taking strategic ownership. It is about collectively uniting the leadership team around a shared strategy, ensuring visible support, ownership, and focus. In the Smukfest case, there is an emphasis on working together to ensure the success of the digital transformation. The executive board spokesperson summarizes it succinctly: "If we don't want to walk the talk and use the initiatives, or take what our data shows into consideration, then it's certainly going to have an effect downward in the organization". The attributes of the strategy are internal-reactive because it aims to unite the self-management efforts of the leadership team around digital transformation efforts. According to this strategy, business leaders must first acquire the competencies to use data for decision-making. Implementing and using new technologies increases the available data, enabling data-driven decision-making. To exploit its value-creation potential, leaders must learn how to leverage their domain knowledge to identify opportunities and challenges in using data. Leaders must develop their data literacy and analytical competencies to better determine how to create value from data strategically. Second, business leaders must display behavioral integrity to promote unity within the leadership team. It is not enough to provide verbal support; digital transformation requires action. Honoring one's commitment is, therefore, a necessity. Leaders must be authentic and committed to change efforts, not to undermine digital transformation plans. Third, business leaders must integrate digital transformation initiatives across functional areas to ensure the pursuit of common goals. The level of integration should be continually discussed as needs change over time. Integrating initiatives across functional areas is often necessary because successful digital transformation requires alignment and a collective effort across the organization. Fourth, business leaders must take ownership of digital transformation and share responsibility and credit for success. This helps avoid the risk of digital transformation becoming an IT departmental issue, resulting in multiple problems. In the worst case, outcomes are not aligned with organizational needs, and change efforts are slowed down to a halt because of, e.g., bottleneck problems. Business leaders should dare to call each other out when someone does not live up to this ownership of digital transformation.

The existing literature supports the claim that digital transformation enables the development of data-driven capabilities and decision-making (Dremel et al., 2017; Vial, 2019). To benefit the organization, business leaders must understand how to create value from digital transformation (Wrede et al., 2020) and increased data availability (Kiron et al., 2012; McAfee & Brynjolfsson). As demonstrated by Smukfest, a few examples of value creation include the increased efficiency of information dissemination, knowledge sharing, and process optimization. The literature highlights the need for business leaders to collaborate to utilize resources better and manage challenges systematically (Benlian & Haffke, 2016; Vidgen et al., 2017). They must integrate digital transformation across functions and involve the entire organization to avoid digital transformation becoming an IT departmental issue (Provost & Fawcett, 2013; Vidgen et al., 2017) and show behavioral integrity to avoid undermining efforts (Armenakis et al., 2007). Although the CIO is a key player in digital transformation, other business leaders are also responsible for transformation success (Li, 2020). Due to managerial discretion, business leaders must keep their organizational influence in mind because leader behavior has a powerful impact on the organization's potential to digitally transform itself (Quigley & Hambrick, 2015; Wangrow et al., 2015).

5.2 Strategy B: Organize

The **organize** strategy responds to the challenge of aligning IT and business. It involves redesigning the organizational structure, challenging existing practices, and integrating digital transformation efforts into

the corporate strategy. To achieve this, it is essential to promote knowledge sharing and breaking down the silo mentality. The executive board spokesperson explained: “Transparency is a well-developed capability; everybody needs to know what’s going on. It doesn’t have to be a closed environment. It’s such a good attitude, and I think it’s quite prevalent”. The attributes of the strategy are internal-proactive because they involve the internal management of strategic activities that can be planned ahead of digital transformation efforts.

According to this strategy, business leaders must first integrate digitalization into the corporate strategy to bridge IT and business. This integration of strategy is synonymous with a commitment to implement IT across all functions, which motivates leaders to adopt the long-term strategic perspective necessary for digital transformation. Integrating digitalization into the corporate strategy is a prerequisite for digital transformation because it is all-encompassing and requires participation across all organizational functions. Second, business leaders must reevaluate and possibly redesign the organizational structure. A reevaluation is necessary, as the current design may be outdated in light of change efforts and goals. Leaders need to determine whether departments are adequately organized and staffed, whether the number and types of leaders are appropriate in the digitally transformed organization, and whether and how democratic leadership and autonomous decision-making structures can and should be implemented. Ideally, business leaders should plan in anticipation of organizational challenges. Leaders may, however, find it helpful to reevaluate the plans continually, as it is not always possible to predict the needs and required changes. Third, business leaders must challenge organizational practices by, for example, critically examining current work practices and exploring available data to identify where and how to leverage data-driven insights. To this end, leaders need analytical competencies and a pragmatic approach to help them accept data as a more objective basis for informed decisions. By challenging existing practices, leaders learn how digital transformation can improve the organization and what needs to change.

As evidenced by the existing literature, business leaders must align the digital transformation with the overall corporate strategy and plan for benefits realization (Arruda & Madhavji, 2017; Hsu et al., 2018; Wrede et al., 2020). As part of the reevaluation and redesign of the organizational structure (Fischer et al., 2020), business leaders need to decide if the IT function should have a strategic mandate and be tasked with proactively coordinating digital value creation (Legner et al., 2017; Leonhardt et al., 2017; Verhoef et al., 2021). They must also decide whether to delegate the formal responsibility of digital transformation to a CDO (Horlacher et al., 2016; Singh & Hess, 2017). Another question leaders should ask is whether the organization may benefit from increased horizontal cooperation and a flatter organizational hierarchy, as in the case of Smukfest. In organizations undergoing a digital transformation toward data-driven decision-making, leaders first need to develop an analytical mindset (Carillo, 2017) and learn the basics of data analytics (Bean & Davenport, 2019; LaValle et al., 2011) to be able to challenge organizational practices through data-driven insights (Kiron & Shockley, 2011). Using data-driven insights necessitates new leader types because business leaders need to allow themselves to be overruled by data in support of more objective decisions (Henry & Venkatraman, 2015), although they still need to use professional judgment to determine when to act based on intuition rather than data (Abbasi et al., 2016; LaValle et al., 2011; McAfee & Brynjolfsson, 2012).

5.3 Strategy C: Manage

The **manage** strategy responds to the challenge of transforming the organizational culture. It is about fostering a culture change that involves cultivating essential skills among employees and leaders, establishing clear and transparent communication channels, and leveraging success stories to inspire and motivate. The CSO exemplifies this by stating: “In my opinion, our CIO is great at spotting where the IT department can support us. Noticing who needs 10 minutes of advice on how to do things more efficiently. Right now, we’ve had sessions about how to improve and get more out of online meetings”. The attributes of the strategy are external-proactive because it revolves around employee management and can be planned ahead of digital transformation. According to this strategy, business leaders must communicate digital transformation initiatives and goals to the entire organization to counter fears, doubts, and uncertainties. Negative attitudes and internal gossip can fester and hinder digital transformation initiatives if they are not addressed. Action should be taken to create a common understanding of current events and transformation milestones and to reassure employees that data are not used for workforce surveillance and management overreach but for innovation of work processes. Second, business leaders must communicate the urgency of digitalization across the organization to create a positive attitude toward digital transformation. By explaining its importance, stimulating employee curiosity, and underscoring the

necessity of digital transformation, leaders can build support and gradually transition toward a data-driven organizational culture. These actions should be taken in conjunction with leaders explaining their strategic vision for the future whenever employees question digital transformation initiatives. Third, business leaders must support employees in building digital competencies that enable them to participate in digital transformation initiatives and use state-of-the-art technology. Employees should have opportunities to develop competencies and skills through formalized training. This should be planned in parallel with the implementation of technology, and the training should meet the needs of the individual employee. Fourth, business leaders should use success stories to inspire and motivate employees. In creating an organizational culture that celebrates successes, employees should be reminded of the organization's digital journey and legacy and that digital transformation is not only possible but also valuable. If past transformation efforts have failed, current initiatives may be viewed negatively, penalizing leaders for their past decisions. Digital transformation involves risks, and leaders must highlight previous and current successes to boost employee morale. Leaders should use success stories at the start of digital transformation initiatives to stimulate a positive change environment, especially during the change process when progress is slow.

Strategic organizational changes require strong leadership to overcome challenges (Herold et al., 2008; Moran & Brightman, 2000) when complex changes such as digital transformation are involved (McAfee & Brynjolfsson, 2012). The existing literature and our case findings show that organizational culture is a key leadership challenge in the digital transformation toward data-driven decision-making (Storm & Borgman, 2020; Vidgen et al., 2017; Bean & Davenport, 2019). Business leaders must foster a data-driven culture (Davenport & Harris, 2017; McAfee & Brynjolfsson, 2012; Seddon et al., 2017) by leveraging success stories that describe the potential of digital transformation in a way that employees can relate to. The literature also highlights the importance of communication in digital transformation (McAfee & Brynjolfsson, 2012; Storm & Borgman, 2020). As our case shows, business leaders must communicate openly and transparently about digital transformation initiatives and how they differ from previous digitalization attempts to motivate employees and curb fear of change. We emphasize the need to demonstrate the digital urgency of transformation initiatives, which, compared to classical management theory (e.g., Kotter, 1996), may be driven by external factors such as societal digitalization, data protection regulations, and digital consumer expectations. Business leaders must communicate and respond rather than simply creating a sense of digital urgency. Finally, employees need strengthened digital competencies to enhance their self-efficacy and ensure that their efforts contribute to organizational capability building (Armenakis et al., 2007), supporting successful digital transformation.

5.4 Strategy D: Participate

The **participate** strategy responds to the challenge of pursuing democratic leadership. It involves the leadership team actively participating in digital transformation initiatives to motivate employees and each other, serving as role models. The CSO expresses this by saying: "Our role is clear. We need to be ambassadors or bannermen. I also believe we need to be attentive to ensuring that those affected feel it's valuable or supports their work. It shouldn't be bureaucratic". The attributes of the strategy are external-reactive because the strategy involves employee management and the development of new leadership competencies in reaction to the current leadership style in the organization. According to this strategy, business leaders must motivate employee participation in digital transformation initiatives. Employees are motivated by the prospect of responsibility and autonomy in decision-making. By inviting them to participate in designing the digital transformation initiatives, they will feel included and take greater ownership of the initiatives. Employees who are not motivated to participate will resist digital transformation initiatives or even work against them. Voluntary participation of employees is a critical part of democratic leadership. Leaders should, therefore, focus on employee motivation and empowerment when their participation is required. Second, business leaders must demonstrate support for digital transformation initiatives by actively involving their departments and positively communicating about the initiatives. If leaders are perceived as insincere and unsupportive of digital transformation initiatives, employees will also feel discouraged and hesitant to participate. This action should be taken throughout transformation initiatives to hold leaders accountable. Third, business leaders must act as role models by leading the way through their participation in initiatives. In other words, business leaders must lead by example. Leaders motivate employees to participate in digital transformation by acting as role models. When digital initiatives move from plans to organizational implementation, action should be taken to accelerate employee adoption and participation.

As democratic leadership is associated with increased digital transformation performance (Porfírio et al., 2021), leaders should strive to master this leadership style. Smukfest leaders use democratic leadership to facilitate digital transformation by empowering employees to take responsibility. However, our case study also reveals challenges in learning how to exercise democratic leadership effectively. Pursuing democratic leadership involves motivating and empowering employees to participate in digital transformation. Voluntary participation is necessary because democratic leadership can lead to anarchistic behavior when employees are not motivated to participate. Anarchistic behavior results from a lack of leadership and a negative attitude, especially when employees do not see the value in working toward a common goal. Democratic leadership encourages participation through motivation rather than coercion. Business leaders' support for digital transformation initiatives is one way to motivate employees (Fischer et al., 2020). Support is critical to making employees believe in digital transformation success, and lack of support undermines transformation efforts (Armenakis et al., 2007). The existing literature supports the claim that leaders should strive to be role models by being authentic and enacting the change they want to see (McAfee & Brynjolfsson, 2012; Windt et al., 2019).

6 Discussion

6.1 Summary of the EASE Framework

Our theorizing efforts result in four novel action strategies to mitigate and manage the challenges of digital transformation. The EASE framework supports the perspective on digital transformation as not limited to a singular process but one with different goals and drivers (Kane, 2017). We propose action strategies that may be engaged as needed and not necessarily pre-specified ahead of time. Digital transformation should be perceived as an ongoing process with milestones toward an overarching goal that is communicated throughout the organization (Windt et al., 2019). As evidenced by our framework, a primary focus is on how employees interact with digital technology (Baiyere et al., 2017). The EASE framework focuses on the management of people in a broader digital context rather than in the context of localized IT implementation efforts.

Our theorizing supports the perspective on digital transformation as distinct from IT-enabled organizational transformation. As suggested by Wessel et al. (2017), digital transformation uses technologies to redefine an organization's value proposition and involves the emergence of a new organizational identity. Smukfest's digital transformation is not an incremental change (Nader & Tushman, 1990). It is a strategic transformation of the entire organization, during which business leaders critically question business processes, transform organizational culture, and challenge current practices. Digital transformation is also a learning process that requires leaders to adapt to new roles and employees to acquire new digital competencies. Digital transformation radically changes and creates new organizational processes, services, and products, leading to numerous challenges that must be managed if organizations are to succeed. Our goal with the EASE framework is to reimagine how we conceptualize and theorize digital transformation. We hope to inspire scholars and practitioners to examine digital transformation more holistically as an all-encompassing organizational change through which technology merges with human work processes. In practice, the framework focuses on the human aspects of digital transformation in organizations and should be used by business leaders to identify and manage the associated challenges holistically.

The existing literature shows that most business leaders identify digital disruption as having a transformative impact on organizations, although they do not know how to respond appropriately (Wade et al., 2021). Through our theorizing effort, we emphasize the need for a new understanding of the roles of business leaders in digital transformation and data-driven decision-making. The EASE framework provides practitioners with strategies that target organizational challenges associated with digital transformation and is a direct response to an articulated need to strategize digital transformation (Wade et al., 2021; Yokoi et al., 2019).

6.2 Implications for Theory

The EASE framework makes several important theoretical contributions to our understanding of digital transformation and data-driven decision-making. First, it extends existing conceptualizations of digital transformation by providing an empirically-grounded theoretical framework that explains how organizations can address transformation challenges (Vial, 2019; Wessel et al., 2021). While previous research has identified various challenges and leadership roles (Wrede et al., 2020; Wade et al., 2021),

our framework uniquely integrates these elements into actionable strategies that bridge the gap between theoretical understanding and practical implementation.

Second, the framework advances our theoretical understanding of the relationship between leadership and digital transformation success by demonstrating how different types of challenges require distinct strategic responses. This builds upon earlier work highlighting the critical role of leadership in digital transformation (McAfee & Brynjolfsson, 2012; Yokoi et al., 2019), but moves beyond simply identifying leadership characteristics to show how leaders can successfully drive transformation through specific action strategies.

Third, our study also contributes to the theoretical discourse on data-driven decision-making by revealing the intricate interplay between organizational culture, leadership approaches, and technological implementation. While previous research has emphasized the importance of developing data analytics capabilities (Dremel et al., 2017; Verhoef et al., 2021), our findings demonstrate that successful transformation requires a more holistic approach that addresses both technical and social dimensions simultaneously.

Fourth, the framework's distinction between internal-external and proactive-reactive dimensions provides a novel theoretical lens for understanding digital transformation challenges. It goes beyond the categorizations of existing stage-based models of digital transformation (Legner et al., 2017) by acknowledging the dynamic and often non-linear nature of transformation processes.

Fifth, our research enriches the theoretical understanding of how organizations can foster a data-driven culture. While previous literature has identified culture as a key challenge (Storm & Borgman, 2020; Vidgen et al., 2017; Bean & Davenport, 2019), our framework explicates the specific mechanisms through which leaders can systematically influence and transform organizational culture through strategic actions.

Sixth, the study also contributes to leadership theory in digital transformation by demonstrating how democratic leadership principles can be effectively integrated with data-driven decision-making approaches (Porfírio et al., 2021). This addresses a theoretical gap in understanding how different leadership styles interact with digital transformation initiatives.

Finally, our research extends existing theory by providing a more nuanced understanding of how organizations can balance intuition and data-driven decision-making (Henry & Venkatraman, 2015; Provost & Fawcett, 2013). Rather than viewing these as opposing forces, our framework suggests a more sophisticated theoretical perspective that recognizes their complementary nature in digital transformation.

These theoretical contributions collectively advance our understanding of digital transformation by providing a more comprehensive and nuanced framework for analyzing and implementing organizational change in the digital era. The EASE framework thus serves not only as a practical tool but also as a theoretical foundation for future research in this rapidly evolving field.

6.3 Implications for Practice

Our study offers actionable advice to leaders planning and participating in digital transformation. The EASE framework helps to overcome anticipated or experienced challenges by offering these strategies, increasing the likelihood of transformation success. It can be used as a diagnostic tool. Leaders can use it to assess the challenges their organization is facing in its digital transformation journey. They can identify areas that need attention by mapping their current situation to the four quadrants (**unite**, **organize**, **manage**, and **participate**). Once the challenges are identified, they can use the corresponding action strategies to develop targeted plans. For example, if they identify challenges related to organizational culture, they can focus on the **manage** strategy, which includes creating digital urgency and developing digital competencies. The framework provides clear guidance on leadership actions for each strategy, which we will summarize on in the following paragraph.

The EASE framework indicates that business leaders pursuing the **unite** strategy must acquire analytics competencies, display behavioral integrity, integrate digital transformation initiatives across functional areas, and take ownership of digital transformation efforts. Business leaders who want to follow the **organize** strategy must integrate digitalization aspects into the corporate strategy, redesign the organizational structure, and challenge current practices. Executing the **manage** strategy requires clear communication of the digital transformation goals and the digital urgency of change, the development of the digital competencies of the employees, and the use of success stories to inspire employees. Lastly,

implementing the **participate** strategy requires business leaders to motivate employees to participate in digital transformation initiatives, demonstrate support for the initiatives, and act as role models.

The framework was positively received by Smukfest leaders. For example, the CIO stated: "For me, it is a model to highlight the important things for actually reaching the [digital transformation] goals". The data-responsible IT staff member added: "In many ways, it makes a lot of sense in terms of being aware of how to implement it. It puts some good words on it". At the meeting, they reported that the culture is changing and that data-driven management has become a part of everyday life. "It's no longer just something we talk about, asking 'What did you experience?', 'What do you think?', or 'What have you heard?', but instead saying, 'What can we measure through some data source we've created or have available?'. This way, we can supplement our gut feelings with real knowledge" (CIO). As a result of this cultural shift, data drives the questions that are asked and the decisions that are made. The data-responsible IT staff member elaborates: "Sometimes we have collected some data where we find questions we can answer that we did not think we needed to answer. Other times, there are specific questions that require us to collect some data in order to be able to answer them". Moreover, data are being used throughout the organization, and leaders and employees alike have access to them, which means that decisions at all levels are increasingly data-driven. "Over the past few years, we have built a catalog, so we can invite people to explore data. You can, for example, sit and look around in the data catalog with direct access to our data sources. We have created a platform they can work from to gain an understanding of the data. It has become easier to work with data because it runs on a cloud platform" (Data-responsible IT staff member).

Based on this validation, we argue that the EASE framework has practical value for organizations facing similar conditions as Smukfest. It provides guidance on effectively pursuing data-driven decision-making as a digital transformation goal.

6.4 Limitations and Future Research

Although our study offers actionable advice to leaders managing digital transformation challenges, it has limitations. First, the EASE framework is the result of theoretical generalization from empirical observations and not an attempt at empirical generalization. We recognize that the empirical findings may have limited applicability to other contexts and future research needs to test the applicability of our framework across empirical settings (Lee & Baskerville, 2003). The CIO says they drive digital transformation like any other company. The only difference is that the business is not required to generate a surplus because it is owned by a non-profit organization, not private owners or shareholders. However, since we propose action strategies from a single case study, future research should validate and extend the EASE framework across different organizations and industries. Second, it is essential to test the applicability of the strategies for various digital transformation goals, thereby further validating the framework's generalizability across organizational contexts. For example, it is crucial to test the applicability of the strategies in digital transformation efforts with goals other than data-driven decision-making, such as implementing digital platforms or product-as-service business models (Verhoef et al., 2021). Our theorizing is based on the view of digital transformation and data-driven decision-making as connected at a fundamental level. However, we acknowledge that data-driven decision-making can be implemented without undergoing digital transformation, for example, in organizations with existing data-driven business models. Third, our case study emphasizes the democratic leadership style as a digital transformation challenge. We recognize that this leadership style is neither appropriate nor desirable in all business contexts. However, we include an action strategy to pursue democratic leadership because the existing literature highlights it as very important in advancing digital transformation (Porfírio et al., 2021). Future research should investigate appropriate action strategies under different leadership styles. Fourth, we acknowledge the limitation in our focus on the executive management level. Making data-driven decision-making a reality across an organization involves not only the leadership team but also employees at all levels. Studies of employees' roles and behaviors are encouraged, including investigations of employee responses to the outlined strategies.

Because the EASE framework is based on our empirical investigation, we have theorized digital transformation strategies based on the challenges confronting the leaders in the Smukfest case. However, we recognize that the challenges presented do not necessarily represent an exhaustive list of the issues facing organizations undertaking digital transformation. For example, in addition to the described challenges, Smukfest alluded to issues related to their inadequate IT infrastructure. We assume that IT infrastructure issues are prevalent in most, if not all, organizations and thus require management

regardless of ongoing digital transformation efforts. However, these issues may be especially significant and critical during such initiatives. We acknowledge the limitations of our study in not addressing this issue and invite future exploration of this and other challenges within the context of our framework.

7 Conclusion

With the wide interest of business leaders in digital transformation as a means of ensuring long-term competitiveness, but a high failure rate among organizations and limited research on the roles of business leaders, it is important to understand how these leaders can overcome digital transformation challenges in data-driven decision-making. In this article, we interview the leadership team in an in-depth and qualitative case study to identify digital transformation challenges and mitigating actions. By synthesizing our findings and following the pluralist theory-building methodology (Müller et al., 2020), we present the EASE framework and four action strategies for managing digital transformation challenges. Although the framework needs to be verified by future research, it guides business leaders currently planning or undergoing digital transformation in their organizations. It also supports a better understanding of the role of business leaders in digital transformation and data-driven decision-making.

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Appendix A: Description of the Theorization Process Using Pluralist Theory-Building Methodology

We use the pluralist theory-building methodology as our approach to generalizing from data (i.e., empirical observations) to theory (i.e., theoretical statements) by iteratively moving between four steps, namely: 1) creation of perspective accounts, 2) synthesis of multi perspective account, 3) creation of theory fragments, and 4) synthesis of pluralist theory (Müller et al., 2020). Using the guidelines of the pluralist theory-building methodology, our theorization proceeded as follows.

In our review of the literature on digital transformation and data-driven decision-making, we adopted an inclusive approach while restricting the results to leadership perspectives. The literature streams included big data analytics, organizational transformation, top management teams, leadership roles, and digitization. Based on the review, we identified knowledge gaps regarding executive-level management of digital transformation in organizations, which inspired the development of our research question that focuses on overcoming digital transformation challenges.

To accommodate contrasting theoretical perspectives, we discussed the options of establishing our own or utilizing an existing multi perspective framework. We decided to adapt Wrede et al.'s (2020) framework of roles and actions of top managers in digital transformation. We found the framework applicable to our context, although it was necessary to supplement it with theoretical perspectives on leadership and data-driven decision-making (e.g., Armenakis et al., 2007; McAfee & Brynjolfsson, 2012; Vidgen et al., 2017). Based on the adapted theoretical framework, we created a coding scheme (Appendix C) to analyze the challenges of digital transformation and leadership actions, as detailed in the Data Collection and Analysis section of this article. We analyzed the data using the Miles et al. (2014) first and second cycle coding approach and supplemented our use of the coding scheme with in vivo coding. Following the coding of the data, we created single perspective accounts to describe the identified challenges and leadership actions as seen from the perspective of each informant. To facilitate the creation of these perspective accounts, we organized the codes into a thematic network (Appendix E).

Subsequently, we compared the single perspective accounts with respect to challenges and actions and synthesized them into a unified empirical description and coherent storyline. This allowed us to enrich the description of the individual challenges and mitigating actions and to organize the data in a revelatory manner. During the process, we relied on the previously established theoretical framework and our knowledge of the case from collaborating with Smukfest. By combining the two and critically reflecting on our results, we were able to arrive at a more holistic understanding of how leaders try to overcome the challenges of digital transformation toward data-driven decision-making. The resulting multiperspective account is presented in our Findings section.

Moving from the multiperspective account to the creation of theory fragments, we generated the basic elements of our theory (i.e., the EASE framework) by returning to the existing literature and comparing theoretical constructs with patterns in the multiperspective account. We moved back and forth between different theoretical propositions and empirical evidence with an ambition to expand on known challenges and mitigating actions. We avoided overinterpreting the case and theorizing beyond the data by returning to the perspective accounts for empirical validation. This resulted in the removal of one action strategy, which was not adequately supported by the data. The fragments of emerging theory consisted of challenges to digital transformation and mitigating actions, which were grounded in both the existing literature and the case.

Lastly, we synthesized the theory fragments into a pluralist theory with two goals in mind. First, our objective was to contribute a novel and holistic interpretation of digital transformation. Second, we wanted to respond to the call for research in the literature and provide practitioners with actionable advice (Vidgen et al., 2017; Wade et al., 2021). Our synthesis efforts were iterative processes of abstraction, moving between the theoretical fragments, the existing literature, and empirical observations. Eventually, we were able to divide individual mitigating actions into four overarching action strategies that correspond to different challenges of digital transformation. We repeatedly revisited the data to consider the context and limitations of our theory.

Appendix B: Interview Guide for the First Round of Interviews

Table B1. Interview Guide

Construct	Interview Questions	References
1. Background		
Background	1. Name, position, age, gender, years in the organization, and previous experience	Wrede et al., 2020
2. Ice Breaker		
DT	1. What does digital transformation mean for your company?	Wrede et al., 2020
	a. What areas are affected by the digital transformation?	
DT's role	2. What is the role of digital transformation in your firm?	Wrede et al., 2020
	a. Importance of digitalization / Digitalization as a driver of success	
	b. Explicit (openly communicated) digitalization strategy (goals)	
	c. How has digitalization evolved in the last few years?	
Digital scale	3. "How digital" do you consider your firm to be?	Wrede et al., 2020
	a. If you were to give Smukfest a grade (1-10)	
	b. Why?	
Executives	4. How do you define the top management team?	Wrede et al., 2020
	5. How do you define data-driven management?	Verhoef et al., 2021
3. Executives and Digital Transformation		
Executive roles in DT	1. What is the role (responsibility) of top management in the digital transformation?	Wrede et al., 2020
	a. Directorate	
	b. Management	
Executive functions in DT	2. What designated functions within top management are related to digital transformation (e.g., Chief Digital Officer)?	Wrede et al., 2020
	a. What are their roles / responsibilities?	
	i. Directorate	
	ii. Management	
Commitment to DT	3. How does the commitment of executives to digital transformation manifest itself?	Wrede et al., 2020
	a. Digital transformation as a key concern (priority) on the executive's agenda?	
	b. Active promotion by executives of digital transformation?	
	c. Open dedication of executives to digital transformation (e.g., openly stressing the importance of digitalization for the business)	
4. Challenges of Digital Transformation and Data-Driven Management		
The specific context of digital transformation		
Challenges	1. Do you see any challenges in digital transformation?	Kiron & Shockley, 2011; Storm & Borgman, 2020; Vidgen et al., 2017
Readiness to change	2. Is Smukfest ready for the digital transformation? (If not, what do you think should be changed in the company?)	McAfee & Brynjolfsson, 2012

DDDM	3. What is your position on data-driven decision-making?	McAfee & Brynjolfsson, 2012
	a. What benefits do you see in data-driven decision-making?	
	b. What disadvantages do you see in data-driven decision-making?	
Data	4. How are data used today?	Kiron et al., 2012; LaValle et al., 2011
	a. Do you use data to make decisions?	
	b. Have you experienced that others use data to make decisions?	
DDDM	5. Do you lack access to data from your own department to be able to make data-driven decisions?	Storm & Borgman, 2020;
	a. What about data from other departments?	
Potential	6. Where do you see potential in terms of data use?	McAfee & Brynjolfsson, 2012
	a. Would you like to use data more to make decisions?	
	b. Will Smukfest gain a competitive advantage through greater use of data?	
5. Executives Promoting Digitalization		
Individual-level: Top managers as facilitators of digitalization		
Executives and DT	1. How do (specific) executive members act as role models in digital transformation?	Wrede et al., 2020
Key enablers	2. Are there specific members of the top management team who are regarded as key enablers of digital transformation efforts? Who are they and how do they deal with digital transformation?	Wrede et al., 2020
Leadership style	3. How does the leadership style / behavior of top managers influence the digital transformation efforts of the firm? What about the values and personalities of top managers?	Wrede et al., 2020
	a. Directorate	
	b. Management	
Firm-level results: Implicit and explicit decisions and actions by executives to promote the organization's digital transformation		
Digital strategy	1. To what extent is digitalization integrated into the overall strategy of the firm?	Wrede et al., 2020
	a. Mission and vision	
Digital strategy	2. Did the top management communicate a specific digitalization strategy? How?	Wrede et al., 2020
	a. Definition of concrete digitalization goals?	
KPI	3. Did top management define key performance indicators (KPIs) related to the digital transformation of the organization? How are KPIs defined and evaluated (e.g., regular digital performance evaluations of implementation speed and quality)?	Wrede et al., 2020
Commitment	4. How is the commitment of top management to digital transformation reflected in the organizational structure of the firm?	Wrede et al., 2020
	a. People & culture: firm culture, HR processes (recruitment, training, incentives, compensation, performance evaluations), roles and responsibilities, nature of work (e.g., "new work", communication modes)	
	b. Organizational structure: team formations (e.g., specialized or cross-functional teams), hierarchy, reporting lines	
	c. IT: big data, analytics, AI, etc.	
Executive DT initiatives	5. Can you think of specific initiatives from executives that are meant to advance digital transformation? Does top management encourage the workforce to "think digital" (i.e., to include topics and approaches to digitalization in decisions)?	Wrede et al., 2020
Executive support for DT	6. How does top management support the workforce in dealing with digital transformation?	Wrede et al., 2020
	a. Building capabilities (e.g., networking events, workshops, training, etc.)	
	b. Funding / budget	
	c. Support tools (e.g., knowledge platforms, tailored software, etc.)	

Executives and firm capabilities	7. How do the executives ensure that the "digital knowledge and capabilities" are incorporated and distributed throughout the firm?	Wrede et al., 2020
	a. IT-supported processes: big data and analytics, knowledge exchange platform, wikis, etc.	
	b. Knowledge exchange (across various functions and levels)	
6. Executive Background Characteristics		
Potentially implicit background characteristics		
Executive characteristics	1. Can you think of specific characteristics of executive members, which can be indicative of the understanding and commitment / approach of top management to digital transformation?	Wrede et al., 2020
	a. Personal background (e.g., age, functional background, education, etc.)	
	b. Previous experiences and specialized knowledge (industry, international, etc.)	
	c. Attitude (e.g., technical / digital affinity)	
Self-development	2. How do members of top management educate / inform themselves about the digital transformation (i.e., build understanding, knowledge, and capabilities)?	Wrede et al., 2020
External enablers	3. Which external enablers / support functions help executives understand and approach the digital transformation (e.g., advisors / informants, consulting firms, fairs, seminars, etc.)?	Wrede et al., 2020
7. Final Reflection		
Reflection	1. Is there any final reflection or comment you would like to make that we did not talk about already?	Wrede et al., 2020

Appendix C: Coding Scheme

Table C1. Coding Scheme

Concept code	Code definition	Source	Example coding
Human judgment in DDDM	Required judgment and expertise of the decision-maker in DDDM	Arruda & Madhavji, 2017; McAfee et al., 2012	CHRO: "There needs to be room for perception, stances, culture and value discussions".
Objectivity of DDDM	Perception of decisions as fact-based and not reliant on intuition	Arruda & Madhavji, 2017	Executive board spokesperson: "It's about having decisions based on facts and evidence rather than gut feeling".
Openness to DDDM challenging practices	Perception of openness towards changing work processes based on data-driven insights	Storm & Borgman, 2020	CFO: "I fucking love it. It eliminates all discussions about whether it's blue or green".
Need for DT	Perception of the necessity of DT in the organization	Armenakis et al., 2007	Creative director: "Again, regarding digitalization, it's simply a necessity".
Need for DDDM	Perception of the necessity of DDDM in the organization	Armenakis et al., 2007; McAfee et al., 2012	CSO: "I don't think we'll save a lot of money right off the bat, but I don't believe we can afford not to".
Change management	Perception of executive commitment to DT and change management	Herold et al., 2008; Moran & Brightman, 2000; Storm & Borgman, 2020	CSO: "This needs to be done without ruffling any feathers, you know? Or at least we need to involve people and create ownership of the digitalization processes".
Role model	Perception of whether or not top management acts as role models and if it is necessary	McAfee et al., 2012; Windt et al., 2019; Wrede et al., 2020	CFO: "... If we don't demonstrate to employees that we are participating in the digital transformation and that it represents the future, they won't adapt to the change".
Behavioral integrity	Perception of whether or not the executives walk the talk and do what they say	Armenakis et al., 2007	Bar and sales manager: "Our most important task right now is to show commitment and loyalty to the changes…".
Openly proclaiming support	Perception of executives supporting digital transformation initiatives	Armenakis et al., 2007	Bar and sales manager: "We need to trust what the next line of leadership say is necessary, and then support it".
Customer knowledge	Opinion on whether or not data can result in increased insight into customers	McAfee et al., 2012	CHRO: "Then we can break down the value of examining what our guests want quantifiably, instead of what we think they need".
Competitive advantages	Opinion on whether or not greater use of data provides the organization with competitive advantages	LaValle et al., 2011; McAfee & Brynjolfsson, 2012	CIO: "The biggest value of the potential is that we'll receive data across our departments and can combine them to gain new insights and improve our product".
DDDM attractiveness	Perception of organizational value in the implementation of DDDM	Armenakis et al., 2007	Creative director: "Continuous evolution is attractive".

Knowledge sharing	How knowledge sharing is accomplished in the organization	Leonhardt et al., 2017	CSO: "You could say that our work is also going to become more transparent horizontally".
Efficiency	Opinion on whether or not DDDM leads to streamlining of processes and organizational decision-making	Davenport & Harris, 2017; Provost & Fawcett, 2013	Creative director: "There's a lot of opportunities, for instance streamlining digitalization and freeing up resources to create and develop the festival".
Agility and flexibility	Opinion on whether or not DT leads to increased flexibility and agility in the organization	Vial, 2019; Wrede et al., 2020	CIO: "There's an advantage when it comes to adaptive readiness in some situations where we didn't have data available…".
Data improves decisions	Expression of opinions on whether DDDM and data improve decisions	McAfee et al., 2012	Bar and sales manager: "When the bar managers are too busy to make decisions about orders, we can look back at data and make estimations".
DDDM entails personal benefits	Opinion on the potential personal benefits of DDDM	Armenakis et al., 2007	CSO: "If you have numbers or facts to support your arguments, people will sometimes be more receptive".
Lack of access to data	Expressing a lack of relevant and timely data or information	Arruda & Madhavji, 2017	CFO: "I definitely experience moments where I think 'Why aren't we comparing this' or 'Why don't we extract data here'".
Viewing DT as an IT departmental issue	Perception of whether or not executives take ownership of digital initiatives or if they believe the IT function should handle the challenges on their own	Vidgen et al., 2017; Provost & Fawcett, 2013	Creative director: "The CIO is obviously THE person with his area of expertise".
Organizational culture	Expressing specific challenges with regard to values and people or general organizational challenges with regard to DT and DDDM (derived from big data analytics)	Vidgen et al., 2017; Storm & Borgman, 2020	CSO: "That's what I believe is the challenge. We've done it this way for many years, why isn't it good enough anymore?"
Confidence in the top management skills	Perception of executive skills to manage DT and DDDM	Armenakis et al., 2007	CVO: "... You can point out people who can't or won't, but there's also people who want, but don't possess the competencies".
Organizational silos	Perception of organizational silos and how they affect business processes and knowledge sharing	Arruda & Madhavji, 2017	CVO: "Some departments close themselves off, and because they experience inertia horizontally in the organization, they embark on things by themselves…".
Confidence in organizational skills	Perception of organizational capabilities and employee skills in DT and DDDM	Armenakis et al., 2007	CSO: "We need to be good at asking if people have the prerequisites to participate, when we experience resistance. How we can help them".
Communicating clear goals with respect to DT	Opinion on communicating the digital strategy and transparent goals	Windt et al., 2019	CHRO: "In my opinion, we still need to define where we want to end up as an organization, digitally".
Investing in digital training	Opinion on supporting the employees to think about digitalization and giving them the right tools (e.g., offering tailored training to employees)	Wrede et al., 2020	CIO: "To be specific, we pushed Power BI to all the users who work with budget monitoring. That was important".

Reassuring employees about their job security	Opinion on the need to communicate to employees that DT will not result in layoffs or diminished need for workers	Wrede et al., 2020	CSO: "Maybe we'll end up freeing one or two employees, but we're just going to give them other tasks".
Critically questioning internal processes and products	Expressing critical reflections on organizational processes and products	Wrede et al., 2020	CVO: "The executive board has fought a bit, in a good interaction with management, employees and the board of directors, about finding its place. The executive board was green".
Redesigning the organizational structure	Perception of the development of the organizational structure and need for transparency in terms of decision-making power	Wrede et al., 2020	CIO: "I believe that we as an organization have transformed because we have considered how we work…".
Allocating budgets for DT initiatives	Opinion on allocating resources for digitization initiatives	Wrede et al., 2020	Creative director: "We've allocated resources. As far as I'm aware, the CIO's budget is increasing".
Perceiving DT as a learning opportunity	Expressing that DT provides opportunities for learning	Wrede et al., 2020	CFO: "The advantage is always getting smarter. Data makes you incredibly smart, in my opinion".
Communicating about DT	Perception of executive engagement in communicating about digital transformation	Wrede et al., 2020	CVO: "Not enough, in my opinion. I don't think we're good enough at taking strategic ownership".
Expanding on digital affinity and openness	Expression of degree of openness towards learning new digital skills	Wrede et al., 2020	Creative director: "It's not going to be me. I can't read those… I have a hard time extracting data".
Getting coached on digital topics	Opinion on the use of external help to improve digital capabilities and skills	Wrede et al., 2020	Creative director: "We have a lot of people out of house that we collaborate with, and who offer us different tools".
Leveraging knowledge from previous experience	Whether or not the personal backgrounds of the executives are advantageous in managing DT or DDDM (e.g., from previous roles, firms or industries)	Wrede et al., 2020	CIO: "Many don't know what it is, specifically. They have a natural skepticism. I'm a huge proponent myself due to my background and knowledge".
Seeking insights from inside the firm	Opinion on asking employees and assistants for information or help with regard to DT and DDDM	Wrede et al., 2020	CFO: "For example, with Google Analytics, we know this person is knowledgeable in the area. Then you go to him instead of Googling on your own. We try to have a designated person you go to with these things".
Motivating others to use data	Perception of executives in motivating employees and each other to use data	In Vivo	CSO: "It's lovely, he's pro making data-driven decisions. He supports us in a major way".
DT as an organization-wide change	Perceiving DT as involving multiple functions and causing organization-wide change	In Vivo	Bar and sales manager: "I can't really think of an area where this won't have a positive effect. But how each of us implement and make use of it will vary greatly".
Positivity towards digitalization	Expression of a positive attitude when talking of digitalization	In Vivo	Creative director: "There's clearly a lot of reason and common sense in digitizing many of my colleagues' areas".
Skepticism towards DDDM	Expressing skepticism when speaking of DDDM	In Vivo	Creative director: "There's a large group where, when we're in the forest, we don't want to deal with data".
Skepticism towards digitalization	Expressing skepticism when speaking of digitalization	In Vivo	CHRO: "There's probably a couple of people who are old school. But apart from that, I think we're reasonably positive collectively".

DDDM development	Expression of the use of DDDM to develop the product or processes	In Vivo	Executive board spokesperson: "You keep getting wiser over the years, and the accumulated knowledge helps you make an even more awesome festival".
How to apply DDDM	Lack on knowledge of how to apply DDDM and general lack of analytical skills	In Vivo	CSO: "Well, is it the data regarding operating for eight days in the forest or is it also data to aid our corporate processes when we're planning. I think there's more levels to it".
Data presentation	Opinion on available data visualization tools to understand data	In Vivo	Bar and sales manager: "Take our audience survey, for instance. The format is boring as hell, and our approach is tedious. We don't use it enough because it's dull".
Organizational transparency	Expression of opinions on transparency in organizational processes	In Vivo	CIO: "I believe some things will be more transparent with digitalization".
Success stories	Perception of using previous successful examples of managing DT	In Vivo	CIO: "There are big risks involved in implementing things like data-driven decision-making. If it fails at first, which often happens with these things, you are punished. And making it right is a time-consuming process".
Balancing intuition and objectivity	Opinion on balancing intuition and objectivity, i.e., experience / gut feeling versus data and facts	In Vivo	Bar and sales manager: "We have a single one weeklong event annually. So, if a leader doesn't know what's going on out there, and just looks at data, we lose terrain immediately".
Democratic leadership	Challenges to collaboration and the desire to collaborate due to democratic leadership	In Vivo	Bar and sales manager: "Sometimes I'd say we experience a bit of anarchy where people don't want to say anything, but rather just do it and show the results afterwards".
Limitations	Expressing situations where the festival industry perceives limitations in relation to DDDM	In Vivo	Creative director: "You can't just sit at home and do it digitally. That is, we need to physically get outside and assemble the festival".
Cultural and strategic fit	Expressing that DT and DDDM do not necessarily fit with the organizational strategies and values (consequent need to tailor / adapt initiatives)	In Vivo	CIO: "We don't want to immediately implement data-driven decision-making universally in Smukfest. We need to do it in a controlled way and expand where it makes sense".
Fear of surveillance	Expressing concern or perceived concern about data monitoring / surveillance	In vivo	CSO: "We can't use it to punish people, we need to start talking about it and create change"
Fear of digitalization failure	Expressing concern or perceived concern about previous digitalization failures affecting current initiatives	In Vivo	CVO: "We have accidentally created systems that have required a disproportionate number of resources before".
IT-infrastructure	Expressing concerns about systems, workflows, and the overall IT infrastructure	In Vivo	CSO: "It can be found in this system, if we're lucky. But which version is applicable?"
Integrating digitalization aspects in the corporate strategy	Perception of digitalization and DT integration in business strategy	In Vivo	Executive board spokesperson: "If we turn it around and see that this is the means to get wiser and make better decisions, then it's implicitly mentioned that this is what we need to work towards".
Unifying the executive team	Opinion on the need to unite the executive team and work as a unified entity in order to collaborate on DT	In Vivo	Bar and sales manager: "Our most important task right now is to show commitment and loyalty to the changes. We need to support the initiatives, even if we don't use or understand them ourselves…".

Appendix D: Calculation of Intercoder Reliability

Table D1. Intercoder Reliability

Interview	Disagreements	Total Codes	Calculation	Inter-Coder Reliability	Total References
1st	15	51	51/(51+15)	77%	320
2nd	9	54	54/(54+9)	86%	342
3rd	3	41	41/(41+3)	93%	244
4th	7	50	50/(50+7)	88%	235

Appendix E: Interview Guide for the Second Round of Interviews

Since the questions in the interview guide for the second round of interviews are based on the thematic network analysis from the first round of interviews (see Appendix B), the column with references is omitted.

Variable	Interview Questions
Skills	**1. You identify the importance of executives understanding data-driven decision-making as a basis for managing the changes it brings.**
	1. We have heard some of you say that you feel you lack some skills to manage digital transformation. What are your thoughts on that?
	a. In your opinion, are you working now or have you previously worked on managing this challenge?
	b. Can you think of any skills that you could benefit from now or in previous situations in relation to data-driven decision-making and management of digital transformation?
	2. Some of you mention a lack of access to courses or workshops on digital topics. Why is it not offered when so many of you are asking for it?
Leadership styles	**2. You see challenges in relation to managing digital transformation.**
	1. How have you managed digitalization and digital transformation in the past and how do you manage it now? (For example, the implementation of Memba, bar coordination, digital requisitions, Power BI, and other digital solutions?)
	a. Has managing the transformation in this way resulted in leadership challenges?
	2. Many of you point out that organizational culture is one of the biggest challenges. There are many who pay homage to previous analog processes and romanticize old ways of working. It seems to challenge the digital initiatives you are implementing. How do you manage this challenge?
	3. Have you experienced that other executives use success stories to illustrate how to apply data-driven decision-making? (A success story can, for example, be the bar coordination, which is experienced as simplifying and streamlining tasks and processes.)
Strategy	**3. We have heard you talk about challenges in relation to effectively communicating about digital transformation.**
	1. It is mentioned as a challenge that there is no consensus on digitalization because there was no digital strategy previously. How are you talking about digital initiatives now?
	2. Several executives talk about the importance of knowing where to start and what the goals of digital initiatives are. Many of you find it challenging that you did not have clear goals. What do you think of this challenge?
	a. Is it something you have or have had a focus on managing?
Leadership attitudes	**4. You speak of challenges in relation to different opinions on which executives must actively participate in the digital transformation.**
	1. Several of you believe that it is important for executives to take the lead and act as role models, but you see a challenge in the fact that many have not done so. What challenges do you think emerge when executives are not at the forefront? (For example, some mention that when executives do not use new software, it signifies to the employees that it is okay to ignore it.)
	a. In your opinion, why do you think some executives are not at the forefront?
	2. Some of you mention that you have not always been loyal to each other. For example, you may bring up at meetings that executives do not follow up with agreements. Are you experiencing this challenge?
	a. In your opinion, is this something you're managing? If so, how?
Challenges	**5. You see a need to adapt digital transformation and data-driven management initiatives to Smukfest because it is not a one-size-fits-all solution.**
	1. Several of you talk about challenges in relation to knowledge sharing, especially between departments. For example, you have changed online storage solutions several times. What do you do to improve knowledge sharing?
	2. Some of you mention the challenge of knowing who has the decision-making power, which leads to people working in different directions. How do you manage this challenge? (Or how have you handled it in the past?)

	3. What consequences have you experienced when digital transformation initiatives have not been successful in the past? (For example, it took a long time before the employees adopted Memba. Does this influence the implementation of new digital transformation initiatives?)

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