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# The double-edged sword pattern of leadership behaviors in digital transformation: Identifying positive and negative outcomes for leaders and employees using a group Delphi study

*Nicole Lettner, Ellen Weber, Julia Lanzl, Katharina Gilli, Wolfgang Güttel*



**Keywords:** Digital transformation, leadership, group Delphi study, leadership outcomes, hybrid and remote work environments

**Abstract:** Leading employees in times of digital transformation is challenging as it requires leaders to enact different behaviors and roles. Further, the prevalence of hybrid and remote work environments has exacerbated the situation. Employing a group Delphi study with 42 leaders, we address the hitherto insufficiently researched question of which leadership behaviors might suit such contexts and which impact they have on different organizational members. We provide a structured overview of appropriate task-oriented and relation-oriented leadership behaviors and their influence on individuals. Hereby, we uncover a double-edged relationship between well-intended leadership behaviors and individual-related outcomes by revealing both desirable and undesirable consequences for employees and leaders. Consequently, we challenge the assumption that enacting these behaviors always leads to beneficial outcomes and highlight that combining different leadership behaviors is necessary to face the challenges.



**Das zweischneidige Schwert von Führungsverhaltensweisen in der digitalen Transformation: Identifizierung positiver und negativer Konsequenzen für Führungskräfte und Mitarbeiter\_innen auf Basis einer Gruppen-Delphi-Studie**



**Stichworte:** Digitale Transformation, Führung, Gruppen-Delphi-Studie, Führungskonsequenzen, hybride und remote Arbeit



**Zusammenfassung:** Das Führen von Mitarbeiter\_innen in der digitalen Transformation erfordert von Führungskräften ein verändertes Verhalten und angepasste Rollen. Zudem hat die Verbreitung von hybriden und remoten Arbeitsumgebungen die Situation noch weiter verschärft. Auf Basis einer Gruppen-Delphi-Studie mit 42 Führungskräften untersuchen wir die bislang unzureichend erforschte Frage, welche Führungsverhaltensweisen für solche Kontexte geeignet sind und welche Auswirkungen



sie auf verschiedene Organisationsmitglieder haben. Wir liefern einen strukturierten Überblick über geeignete aufgaben- und beziehungsorientierte Führungsverhaltensweisen und deren Einfluss auf einzelne Individuen. Dabei zeigen wir eine doppeldeutige Beziehung zwischen gut gemeinten Führungsverhaltensweisen und individualbezogenen Auswirkungen, indem wir sowohl erwünschte als auch unerwünschte Konsequenzen für Mitarbeiter\_innen und Führungskräfte erläutern. Folglich hinterfragen wir die Annahme, dass diese Verhaltensweisen immer zu vorteilhaften Ergebnissen führen, und betonen, dass es eine Kombination verschiedener Führungsverhaltensweisen zur Bewältigung der Herausforderungen braucht.

## 1. Introduction

Digital technologies fundamentally change the nature of work and workplace design, gaining momentum especially since the COVID-19 pandemic as an accelerator of remote and hybrid work environments, referred to as the “new normal” (Krehl & Büttgen, 2022). To exploit the opportunities for working and collaborating that are accompanied by these technologies, many companies invest in initiatives to drive digital transformation (Verhoef et al., 2021). Digital transformation is defined as an organization-centric change process triggered by combinations of information, computing, communication, and connectivity technologies (Vial, 2019), which incorporates various phases: (1) digitization (i.e., actions to convert analog information into digital information), (2) digitalization (i.e., use of digital technologies to alter existing organizational processes), and (3) digital transformation (Verhoef et al., 2021). Digital transformation as an organization-wide change process is the most pervasive phase (Hess et al., 2016; Verhoef et al., 2021), which affords a continuous and complex undertaking (Matt et al., 2015). Thus, digital transformation leads to highly dynamic, technology-driven environments in which employees are pressured to adapt continuously to new situations (Schwarzmüller et al., 2018). Hereby, recent studies (e.g., Kane et al., 2019) show that leaders are key for successfully managing digital transformation. However, the rapid changes, uncertainty, and complexity accompanied by digital transformation pose major challenges for leaders (Bartsch et al., 2021; Dirani et al., 2020). Leaders are confronted with different, sometimes competing, or even contradictory tasks and roles (Cortellazzo et al., 2019). For example, leaders are responsible for developing and executing digital strategies (Hess et al., 2016; Porfírio et al., 2021; Tabrizi et al., 2019) but simultaneously have to lead distributed employees in times of great uncertainty and change (Cascio & Montealegre, 2016).

To accomplish these multiple and sometimes paradoxical leadership challenges, leaders are required to enact different leadership behaviors (Lawrence et al., 2009; Weber et al., 2022b), which generally reflect leaders’ action patterns (Oreg & Berson, 2019). Against this background, recent research (e.g., Canterino et al., 2020; Cortellazzo et al., 2019; Tabrizi et al., 2019; Weber et al., 2022a) reveals that the successful management of digital transformation requires both task-oriented and relation-oriented leaders. Studies (e.g., Tabrizi et al., 2019; Weber et al., 2022a) demonstrate positive outcomes for employees when task-oriented and relation-oriented leadership behaviors are combined. However, only little research (e.g., Bartsch et al., 2021; Weber et al., 2022b) shows that negative consequences also could emerge for employees. For example, Schwarzmüller et al. (2018) describe a two-sided effect using the example of working remotely. On the one hand, employees benefit from an improved work-life balance through flexible work time and

workplace. On the other hand, the expected constant accessibility can lead to a lack of separation between work and private life.

Although these studies produce first valuable insights into how individual-related outcomes are impacted by leaders' behaviors in times of digital transformation, these studies (e.g., Horner-Long & Schoenberg, 2002) rather focus on selected leadership behaviors instead of holistically considering all relevant ones. Thus, the literature lacks a comprehensive understanding of how relevant leadership behaviors in digital transformation influence employees both desirably and undesirably. Similarly, leaders who are put in the spotlight during these challenging times (e.g., Canterino et al., 2020; Kane et al., 2019) might also perceive the consequences of their behaviors. However, existing research predominantly overlooked what positive and negative consequences could emerge for leaders. This tackles the call of Ford and Ford (2012) about the need to investigate the psychophysiological costs leaders might experience in such challenging times. Furthermore, leadership behaviors were mostly examined generally in the context of digital transformation, leaving out the specific, increasingly significant work setting of hybrid and remote work. Therefore, Bauwens et al. (2022) call for investigating whether leadership behaviors are changing in such contexts.

Thus, using a group Delphi study, we address the following research questions: *What leadership behaviors are relevant in the context of digital transformation? What desirable and undesirable consequences do those leadership behaviors have on employees as well as leaders?* In doing so, we aim to make a key contribution to the literature on leadership behaviors in the context of digital transformation. The results of the group Delphi study correspond to behaviors already mentioned in the literature and further provide insights into additional relevant behaviors, especially in the context of hybrid and remote working environments. Further, we show that leadership behaviors in digital transformation can have both desirable and undesirable consequences—deducting a double-edged (i.e., dual) nature of well-intended leadership behaviors—by providing a structured overview of appropriate leadership behaviors and their influence on both employees and leaders in digital transformation.

This paper is structured as follows: First, it describes the current state of research. Second, it highlights the methodology used and shows the study's findings. Finally, the paper describes implications for both research and practice and highlights the current study's limitations and the accompanying future research directions.

## 2. Theoretical Background

### 2.1. Leadership roles and concordant behaviors in the context of digital transformation

To tackle the leadership challenges digital transformation brings, recent research (e.g., Cortellazzo et al., 2019) stresses that new and adapted leadership behaviors gain importance. Additionally, several leadership behaviors that can be labeled as more traditional are still relevant, indicating that leaders need a broad behavioral complexity to master the leadership challenges in digital transformation (Weber et al., 2022b). Although digital transformation is understood as a process that leads to a dynamic, technology-driven environment (Schwarzmüller et al., 2018; Verhoef et al., 2021), leadership in the digital age is not solely digital-oriented. Relevant leadership behaviors in digital transformation comprise both task-oriented and relation-oriented leadership behaviors (Weber et al.,

2022a). Based on the literature on leadership in digital transformation (e.g., Bartsch et al., 2021; Cortellazzo et al., 2019; Kane et al., 2015; Schwarzmüller et al., 2018; Weber et al., 2022b), task-oriented leadership behaviors contain managing the digital transformation process (e.g., implementing appropriate digital technology, developing a digital strategy, or controlling work outcomes) while relation-oriented leadership behaviors (e.g., enabling collaborative work, developing employees' skills, or fostering interdisciplinary networks inside and outside the organization) concentrate primarily on enabling work in such contexts. Additionally, according to Weber et al.'s (2022b) *digital transformation leadership framework*, the various task-oriented and relation-oriented leadership behaviors can be clustered into different leadership roles (i.e., digital pioneer, innovator, manager, digital mentee, mentor, enabler, and networker) based on shared content-related similarities. Against this background, a leadership role is defined as a set of different leadership behaviors. Contrary to leadership styles which are situationally invariant (i.e., a more constant and structured behavioral pattern of a leader; Oreg & Berson, 2019), leadership behaviors are considered situational and observable (Yukl, 2012), enabling leaders to adapt their behavior to the situations they are facing in a dynamic, technology-driven environment (Weber et al., 2022b). Thus, leaders can take on leadership roles by enacting these different leadership behaviors to address the challenges of digital transformation.

In the following, according to existing literature (e.g., Eckardt et al., 2021; Judge et al., 2004; McClanahan, 2020), we draw on the well-known differentiation of task-oriented and relation-oriented leadership behaviors as well as on relevant leadership roles (Weber et al., 2022b) to structure our literature review on appropriate leadership behaviors that address all leadership challenges digital transformation brings holistically.

### 2.1.1. Task-oriented leadership

*Digital pioneer.* Emerging digital technologies have far-reaching effects on the competitive business landscape. To address these disruptions and, thus, remain competitive, leaders have to develop digital strategies (Hess et al., 2016; Porfírio et al., 2021; Tabrizi et al., 2019), visions for future change (Cortellazzo et al., 2019; Kane et al., 2019; McCarthy et al., 2021), as well as re-imagine the organizational structure (Cascio & Montealegre, 2016). This requires them to understand and anticipate early trends evolving through digital technologies (AlNuaimi et al., 2022; Hanelt et al., 2021; Kane et al., 2019), continually question the status quo to identify necessary changes, understand the drivers of digital transformation (Wrede et al., 2020), and identify both business opportunities and risks (Bolden & O'Regan, 2016). Furthermore, leaders need to be aware of the quantity and variety of data (Hanelt et al., 2021).

*Innovator.* To succeed in this competitive environment, leaders do not only need to be strategically oriented by developing a digital vision and strategy but also concentrate on the operative level. Thus, they are requested to encourage organization-wide innovations (Kane et al., 2015), take on innovative initiatives (Schwarzmüller et al., 2018), and implement digital technologies, new digital products, and processes (Hanelt et al., 2021; Kane et al., 2015; Verhoef et al., 2021). Furthermore, they have to utilize innovative working methods (Wrigley et al., 2020), show enthusiasm, and inspire their employees by inventing the new (Cortellazzo et al., 2019).

*Digital mentee.* In such a digitally demanding and fast-moving environment, leaders are requested to develop their digital skills. For this purpose, revised learning, considered

as learning from employees with broad digital skills or seeking advice on digital issues, provides suitable opportunities (Anderson et al., 2017).

*Manager.* Bartsch et al. (2021), as well as Krehl and Büttgen (2022), show that also traditional leadership behaviors remain important in dynamic environments. More precisely, leaders still have to focus on goal achievement, coordinate and prioritize tasks, as well as monitor work outcomes according to business criteria with a primary objective of getting the work done efficiently (Bartsch et al., 2021; Krehl & Büttgen, 2022).

### 2.1.2. Relation-oriented leadership

*Enabler.* The increasing prevalence of technology redesigns jobs and influences the way employees work, collaborate, and communicate (Colbert et al., 2016). Accordingly, leaders need to increase employees' creative and innovative behavior by enabling flexible and agile work structures (Kane et al., 2019; Sousa & Rocha, 2019), utilizing innovative working methods (Wrigley et al., 2020), creating an open error culture (Cusin & Goujon-Belghit, 2019), facilitating collaborative, non-hierarchical, interdisciplinary, and intercultural teamwork (Cortellazzo et al., 2019; Kane et al., 2019; Schwarzmüller et al., 2018) as well as fostering participative decision making (Krehl & Büttgen, 2022; Schwarzmüller et al., 2018).

*Mentor.* Working with new digital technologies in a redesigned workplace requires appropriate digital competencies of all organizational members (Sousa & Rocha, 2019). In this regard, leaders as mentors need to support employees' skill development (Kane et al., 2015; Kane et al., 2019; Schwarzmüller et al., 2018) by providing adequate training, for example, by "moving employees within the organization to learn other ways of doing things from coworkers and giving them time and space to adapt, so the necessary learning feels doable in the context of their other job responsibilities" (Kane et al., 2019, p. 35). Moreover, leaders offer feedback and mentoring (Cortellazzo et al., 2019; Schwarzmüller et al., 2018; Weber et al., 2022b). Additionally, employees can feel overwhelmed by organizational and technological disruptions and thus need individual support (Cascio & Montealegre, 2016). Moreover, to convince employees of the changes (Ford et al., 2021), leaders need to establish strong and trusting relationships with them (Schwarzmüller et al., 2018; Weber et al., 2022b) and recognize their good work (Krehl & Büttgen, 2022).

*Networker.* As network effects are considered among the most important competitive advantages, it is important to build networks not only with suppliers, partners, and customers but also with competitors by using various collaboration technologies (Bennett & Lemoine, 2014). Further, building collaboration partnerships inside and outside the organization demands appropriate networking behaviors of leaders (Schwarzmüller et al., 2018) to target the required complementarities and, hence, find the right partners to co-create value (AlNuaimi et al., 2022).

## 2.2. Leadership outcomes in the context of digital transformation

A plethora of studies has already gained insights into the impact of digital transformation on the macro-level by revealing how digital transformation changes key business operations, products, and processes as well as the workplace (e.g., Hanelt et al., 2021). Further, the influence of digital transformation has been studied on the micro-level by revealing how digital transformation affects the workforce and appropriate leadership behaviors

(e.g., Cortellazzo et al., 2019). However, only a limited number of empirical studies show particularly how such leadership behaviors, in turn, influence individual-related outcome variables in the context of digital transformation (see Table 1). For example, Pulley and Sessa (2001) found that employees feel greater autonomy when leaders deploy task-oriented leadership behavior, such as implementing digital technologies. However, this could also lead to greater employee isolation (Pulley & Sessa, 2001). Moreover, Weber et al. (2022a) revealed that task-oriented leadership behavior (e.g., conceptualizing a clear digital vision and strategy) increases employees' resistance to change. In contrast, relation-oriented leadership behavior (e.g., providing individual support, mentoring, and feedback) decreases it.

Authors	Study design	Leadership behavior	Target group	Outcomes influenced by leadership behavior	
				Desirable	Undesirable
Weber et al. (2022a)	Quantitative (experimental design)	Task-oriented (e.g., conceptualizing a clear digital vision and strategy)	Employees	Cognitive trust in the leader ↑ Affective trust in the leader ↓ Innovative job performance ↓	Resistance to change ↑ Affective trust in the leader ↓ Innovative job performance ↓
		Relation-oriented (e.g., providing individual support, mentoring, and feedback)		Cognitive trust in the leader ↑ Affective trust in the leader ↓ Resistance to change ↓ Innovative job performance ↑	–
Weber et al. (2022b)	Quantitative (survey)	Task-oriented (e.g., implementing digital technologies, talking innovative initiatives, seeking digital advice from employees)	Employees	Innovative job performance ↑ Knowledge sharing ↑	Knowledge sharing ↓
		Relation-oriented (e.g., enabling non-hierarchical teamwork, creating an information network)		Innovative job performance ↑ Knowledge sharing ↑	–
Bartsch et al. (2021)	Quantitative (survey)	Task-oriented (e.g., pre-structuring tasks)	Employees	Team cohesiveness ↑	Job autonomy ↓
		Relation-oriented (i.e., enabling non-hierarchical teamwork, fostering virtual teamwork)		Job autonomy ↑ Team cohesiveness ↑ Teamwork tension ↓	–

Authors	Study design	Leadership behavior	Target group	Outcomes influenced by leadership behavior	
				Desirable	Undesirable
Schwarzmüller et al. (2018)	Qualitative (expert interviews)	Task-oriented (e.g., steering innovative initiatives, implementing digital technologies)	Employees	Focus on employees' output ↑	Job demands ↓ Stress and pressure ↑ Work-life setup ↓
		Relation-oriented (e.g., being a role model, being supportive, fostering participative decision-making, enabling virtual teamwork)	Leaders	Informed decision-making ↑	Stress and pressure ↑
Hornier-Long and Schoenberg (2002)	Qualitative (expert interviews)	Task-oriented (e.g., staying abreast of technological developments)	Employees	Work-life setup ↑ Coping with job demands ↓ Autonomy ↑ (Digital) competencies ↑ Employees' influence ↑ Sense of work responsibility ↑	–
		–	Leaders	–	Work-life setup ↓ Barriers to building interpersonal relationships in virtual teamwork ↑
Pulley and Sessa (2001)	Qualitative (expert interviews)	Task-oriented (e.g., implementing digital technologies)	Leaders	(Digital) competencies ↑	–
		–	Employees	Autonomy ↑	Isolation ↑
		–	Leaders	Informed decision-making ↑	–

Table 1: Literature review on outcomes influenced by different leadership behaviors; ↑ increase, ↓ decrease

In sum, Table 1 reveals that existing research predominantly examined the influence of such leadership behaviors on employees (e.g., Bartsch et al., 2021; Weber et al., 2022a; Weber et al., 2022b) but oftentimes overlooked what consequences could emerge for leaders (Ford & Ford, 2012). Moreover, existing research mainly focuses on the desired influence of leadership behaviors rather than investigating possible negative consequences, referring to a “dark side” of well-intended leadership behaviors. Thus, the current study aims at providing a structured overview of appropriate leadership behaviors in times of digital transformation with a special focus on hybrid and remote environments, as well as their influence on both employees and leaders in digital transformation; thereby considering that such leadership behaviors in digital transformation might also lead to both desired and undesired consequences.

### 3. Methodology

In order to address our research purposes, we utilize the group Delphi method, an innovative and discursive method, which is a modification of the conventional Delphi method developed by Dalkey and Helmer (1963). The Delphi method consists of a series of surveys with selected experts from a given domain (Dalkey & Helmer, 1963; Linstone & Turoff, 1975). The chosen method is a suitable approach for our research purpose due to several reasons. First, it aims to reach consensus within a group of experts (Okoli & Pawlowski, 2004). This is particularly suitable for analyzing research subjects which are lacking a comprehensive understanding, as it is the case with digital transformation (Cortellazzo et al., 2019; Vial, 2019). Moreover, analyses of the relevance of new and existing leadership behaviors require discussion and consensus-building among experts in order to take into account the different experiences of the participants and the constantly changing conditions that the participants face. Second, the collaborative setting increases the participants’ sense of responsibility and seriousness, producing results that gain higher acceptance within the group (Landeta et al., 2011). Third, the group Delphi method is a common approach to address future scenarios (Webler et al., 1991), which in this sense is well-suited to examine the ongoing phenomenon of digital transformation (Vial, 2019).

We selected 42 leaders on the basis of personal contacts of the authors from the top and middle management of small, medium, and multinational enterprises located in Italy and Austria. The experts are primarily CEOs or human resource managers, who are responsible for digital transformation initiatives in a leading function. The selection of CEOs and human resource managers offers a valuable opportunity to capture a complementary perspective on leadership behaviors and their associated outcomes. More precisely, top managers have gained own leadership experiences on different hierarchy levels whereas human resource managers can provide comprehensive insights through observations and evaluations of leadership behaviors.

The industries of the companies vary across sectors and include different types of branches. Manufacturing and service sector companies predominate in our study. Example industries are wholesale and manufacture of fastening and assembly technology, the banking sector, the paper industry, production and supply of fruit.

We conducted four moderated online plenary sessions in December 2020 and January 2021. Each plenary session was scheduled for two hours and had the same structure. First, the authors gave a brief overview of the study, explaining the aim and the procedure of the session, followed by a definition of digital transformation to assure a common

understanding of the phenomenon in investigation. Then, the research questions were discussed. The discussions covered the following main topics: “What makes leaders successful in the digital age,” “The impact of digital transformation on individuals and the relationship between leaders and employees,” and “Measures taken by companies to meet the challenges.” One author moderated the discussion, and a second one noted the topics mentioned and clustered the results sharing the screen via Zoom. In a further online session taking place in April 2021, the results were presented to the participants to review the results and add or eliminate topics. In doing so, the results were finalized and can be regarded as a consensus.

All panel sessions were recorded and transcribed. To analyze the data, we applied a deductive-inductive procedure. First, we applied a deductive approach using categories from the literature to analyze the leadership behaviors already mentioned. Then, the data material that could not be categorized in one of the deductive categories was analyzed by means of inductive content analysis. In this respect, we followed Azungah (2018) and conducted an inductive analysis according to Gioia et al. (2013) to complement the deductive categories and ensure that all important aspects of the data are captured. This enabled us to identify further relevant leadership behaviors in the context of digital transformation with a special focus on remote and hybrid work environments and to analyze the consequences for both employees and leaders.

## 4. Results

### 4.1. Appropriate leadership roles and concordant behaviors in the context of digital transformation

Whereas most studies on leadership behavior deal with the context of digital transformation in general, our study additionally focuses on increased hybrid and remote work environments. In doing so, the results of the group Delphi study correspond to behaviors already mentioned in the literature but also provide insight into further relevant behaviors, especially in the context of hybrid and remote working environments.

#### 4.1.1. The need for task-oriented leadership behaviors

The leadership behaviors required of the *digital pioneer* as a visionary and strategist are congruent with the results of the group Delphi study, as it shows that one central leadership behavior is to stay abreast of change by anticipating new technological trends. Further, the enormous speed of change requires from leaders more than ever the strategic conceptual design of change processes. Regarding the awareness of the amount and variety of data, our study shows the additional need for leaders to deal with the increased complexity and uncertainties to make appropriate decisions. The COVID-19 pandemic led to increased decision-making under uncertainty, which one expert highlighted as follows: “*This is the topic of complexity management. [...] Incredibly difficult and incredibly challenging [...] In my opinion, dealing with uncertainty and all the side effects that arise from it is an important aspect.*”

The statements of our experts are in line with the need for leadership behaviors of the *innovator*. In this context, the results highlighted the need for acting rapidly in change processes and involving employees holistically to meet the extremely changing working conditions. Especially when working remotely, the enormous speed of change and the

comprehensive impact increase the need for leaders to provide work-related orientation, convey meaning, and inspire their employees. *“I have observed very strongly that even experienced employees who have been with the company for years are suddenly disoriented and no longer know what they should or must actually do. And then they need orientation.”*

In the context of the *digital mentee*, the study’s results correspond to the importance of reverse mentoring (i.e., learning from more digitally-skilled employees), on the one hand, as well as seeking lifelong learning opportunities in this fast-moving, ever-changing era of digital transformation, on the other hand. This is especially important for leaders since they must be on top of changes and opportunities. This is summarized by one expert: *“Lifelong learning, that sums it up quite well. So, new challenges, new necessities are constantly emerging.”* Moreover, the results indicate the importance of setting new priorities for executive training to comprehensively benefit from the potential of technologies in a strategy-driven manner. Leaders’ reflecting behavior on a meta-level becomes key for all issues, such as dealing with huge amounts of data or technological trends.

Our study shows that traditional leadership behaviors, such as those encompassing the role of the *manager*, become even more important. The experts point out that the context has changed significantly due to the increased transparency and amount of available data as well as novel ways of working. On the one hand, this facilitates monitoring employees’ work activities; on the other hand, it is more difficult due to fewer hours of physical presence in the company. Therefore, results evaluation instead of monitoring single activities and a common goal definition are occasionally more efficient so that employees have the freedom and flexibility demanded by new ways of working. This requires leaders to communicate goals and purposes regularly as well as to set clear rules. One of the experts states: *“I think it’s particularly important that communication is even clearer than before. Because the feelings, the smells, the perceptions that you have suffered a bit because of the digital media.”*

### 4.1.2. The need for relation-oriented leadership behaviors

Our study validates the leadership behaviors of the *enabler* by showing that leaders need to facilitate employees’ creative and innovative behaviors, as our results show that increased physical distance due to hybrid and remote work makes it more difficult for leaders to reach employees and trigger their innovative mindsets due to a lack of personal interaction. Therefore, it is crucial to deeply embody a culture appropriate for dealing with the demands of hybrid and remote work environments. Thereby, the experts highlight the need for consciously implementing presence elements to enable a common and suitable work culture: *“If we would totally lose the presence or lose it too much, then I think that would be damage for us in the medium and long term. [...] I do not need a presence culture in order to be able to control. Rather, I need a culture of presence in order to be able to form culture very consciously, also in personal interaction.”*

Leadership behaviors such as empowerment, skill development, and active relationship management, as embodied in the *mentor* role, are also indicated by the results of the group Delphi study. Trustful environments no longer arise automatically in hybrid and remote work environments. Thus, leaders need to establish trust and confidence to create a relationship at eye level. To build trustful relationships, proactive communication, primarily through in-person meetings, might be helpful. The relationships might then be

strengthened and deepened in virtual interaction. To do so, it is important that leaders take time for employees, their concerns, and their interests to compensate for spontaneous conversations that are limited in remote contexts. In other words, leadership in remote contexts may not only focus on business-related topics but also needs to be extended by a social dimension. This is strengthened by a statement of one expert: *“Because digitally, that often comes up short, as you don’t pick up the phone to just ask how you’re doing or how your weekend was. [...] And I believe that ultimately, a certain level of trust can only be achieved through this level of relationship.”*

In the context of the *networker*, our results are in line with the need that leaders have to overcome traditional structures and associated mindsets as well as shift their thinking toward new ways to collaborate. This is highlighted by one expert saying that *“We really have to think about connections across systems, networks, and departments. To find out and also to evaluate a bit where I fit in.”* Such networking behaviors are facilitated in the hybrid context, as the network partners are able to collaborate regardless of time and location.

#### 4.2. Outcomes of appropriate leadership roles and concordant behaviors in the context of digital transformation

With our group Delphi study, we show that leadership behaviors in digital transformation can lead to both desirable and undesirable consequences, literally emerging a double-edged sword of well-intended leadership behaviors. Table 2 provides a structured overview of appropriate leadership behaviors and their influence on both employees and leaders.

Leadership role	Consequences for employees		Consequences for leaders	
	Positive outcomes	Negative outcomes	Positive outcomes	Negative outcomes
<i>Task-oriented leadership behaviors</i>				
Digital Pioneer	<ul style="list-style-type: none"> <li>▪ Orientation ↑</li> <li>▪ Uncertainties ↓</li> <li>▪ Sense creation ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Uncertainty and stress due to constant change ↑</li> <li>▪ Resistance to change ↑</li> <li>▪ Fear of job loss ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Informed decision basis ↑</li> <li>▪ Uncertainties ↓</li> </ul>	<ul style="list-style-type: none"> <li>▪ Resource effort ↑</li> <li>▪ Complexity ↑</li> <li>▪ Uncertainty and stress ↑</li> <li>▪ Pressure to make optimal decisions ↑</li> </ul>
Innovator	<ul style="list-style-type: none"> <li>▪ Creativity/innovative behavior ↑</li> <li>▪ Curiosity ↑</li> <li>▪ Motivation ↑</li> <li>▪ Flexibility ↑</li> <li>▪ Room for maneuver/autonomy ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Technostress ↑</li> <li>▪ Lack of understanding ↑</li> <li>▪ Demand on self-management ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Motivated team ↑</li> <li>▪ Job performance ↑</li> <li>▪ Appreciation ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Resource effort ↑</li> <li>▪ Long-windedness ↑</li> <li>▪ Techno overload ↑</li> <li>▪ Tangled conditions ↑</li> </ul>
Digital Mentee	<ul style="list-style-type: none"> <li>▪ Feeling of being needed ↑</li> <li>▪ Confirmation ↑</li> <li>▪ Power of expertise ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time spent on teaching digital skills ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Digital skills ↑</li> <li>▪ Digital mindset ↑</li> <li>▪ Lifelong learning ↑</li> <li>▪ Confidence ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time requirement for learning digital competencies ↑</li> <li>▪ Power through expertise ↓</li> <li>▪ Feelings of self-esteem and respect ↓</li> </ul>

## Themenbeiträge

Leadership role	Consequences for employees		Consequences for leaders	
	Positive outcomes	Negative outcomes	Positive outcomes	Negative outcomes
Manager	<ul style="list-style-type: none"> <li>▪ Orientation ↑</li> <li>▪ Feeling of security ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stress, pressure, and overload ↑</li> <li>▪ Intrinsic motivation ↓</li> <li>▪ Creativity ↓</li> <li>▪ Loyalty to the company ↓</li> <li>▪ Paternalism, influence ↑</li> <li>▪ Self-initiative/autonomy ↓</li> <li>▪ Trust ↓</li> <li>▪ Fear of surveillance due to the high amount of data and transparency ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Influence on employees ↑</li> <li>▪ Target achievement ↑</li> <li>▪ Feeling of being in control ↑</li> <li>▪ Employee recruiting based on data analysis ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time requirement ↑</li> <li>▪ Basis for decision: validity of the data for control ↓</li> </ul>
<i>Relation-oriented leadership behaviors</i>				
Enabler	<ul style="list-style-type: none"> <li>▪ Autonomy, flexibility ↑</li> <li>▪ Initiatives ↑</li> <li>▪ Curiosity ↑</li> <li>▪ Creativity ↑</li> <li>▪ Commitment ↑</li> <li>▪ Identification with and loyalty to the company ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stress and pressure ↑</li> <li>▪ Work-life interference ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time expenditure ↓</li> <li>▪ Relief ↑</li> <li>▪ Team cohesion ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Control ↓</li> <li>▪ Influence ↓</li> <li>▪ Speed of decision-making ↓</li> <li>▪ Legitimation power, possibility of power demonstration ↓</li> </ul>
Mentor	<ul style="list-style-type: none"> <li>▪ Fears and uncertainties ↓</li> <li>▪ Self-confidence ↑</li> <li>▪ Readiness for change ↑</li> <li>▪ Loyalty ↑</li> <li>▪ Fluctuation ↓</li> <li>▪ Work engagement ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Excessive demands ↑</li> <li>▪ Resource effort ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Confirmation ↑</li> <li>▪ Relief ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Time expenditure ↑</li> <li>▪ Personal and emotional involvement ↑</li> <li>▪ Power of expertise ↓</li> </ul>
Networker	<ul style="list-style-type: none"> <li>▪ Access to knowledge/information ↑</li> <li>▪ Timely feedback ↑</li> <li>▪ Problem-solving competence ↑</li> <li>▪ Sense of purpose by looking at the big picture ↑</li> <li>▪ Minimized free rider problem ↓</li> </ul>	<ul style="list-style-type: none"> <li>▪ Overload due to too much input ↑</li> <li>▪ Anonymity ↓</li> </ul>	<ul style="list-style-type: none"> <li>▪ Access to knowledge/information for decision-making ↑</li> <li>▪ Solution competence ↑</li> </ul>	<ul style="list-style-type: none"> <li>▪ Resource effort ↑</li> <li>▪ Information asymmetry ↓</li> </ul>

Table 2: Empirical results on outcomes of appropriate leadership roles; ↑ increase, ↓ decrease

#### 4.2.1. Desirable and undesirable outcomes of task-oriented leadership

*Digital pioneer.* Leadership behaviors adopted by the digital pioneer increase employees' orientation and sense creation through vision and strategy articulation. Likewise, employees' insecurities can be reduced. However, strategic and visionary leadership behaviors can also lead to uncertainty and stress among employees due to constant change. Further, this can trigger resistance to change and fears of job loss among employees. For leaders, these behaviors result in a better basis for decision-making and subsequently reduced uncertainties through early anticipations of new trends. However, this requires a high investment of resources in terms of time and attention. Furthermore, the increasing complexity can lead to excessive demands. In this context, the experts point out that the large variety of data and the increased transparency can put leaders under enormous pressure to make the right decisions: *“Leaders are also under enormous pressure due to the availability of a multitude of information. This increases the pressure on leaders to actively work with this information. And ideally to make an optimal decision.”*

*Innovator.* Leadership behaviors related to the innovator increase creativity, innovative performance, curiosity, and motivation among employees. In addition, the use of innovative working methods increases employees' flexibility and scope for action. At the same time, such innovative working methods, oftentimes accompanied by new technologies, can lead to technostress, lack of understanding, and increase the need for employees' self-management activities. One expert states: *“In fact, one of our issues is that we not only have to pick up our employees but also convince them of the innovations that digitization will bring in the next few years. It's happening so fast that they can't imagine the innovations.”* In contrast, leaders benefit from having a motivated team, which shows a higher innovative performance and appreciation. However, leaders need high levels of resource commitment and long-windedness to convince repelling employees. Following the experts' statements, leaders might also exhibit overload due to insufficient interest and/or knowledge about new technologies, constantly changing conditions, and increasing complexity.

*Digital mentee.* Leadership behaviors that encompass the role of the digital mentee raise the feeling of being needed, confirmation, and power of expertise among employees. Although transferring digital skills requires many resources from employees, especially their time, leaders benefit from lifelong learning of improved digital skills and mindsets, which builds self-confidence. However, our results show that it is often difficult for leaders to take on knowledge and skills from employees because this is associated with loss of power through expertise, feelings of respect, and self-esteem as one expert highlights: *“I perceive it in such a way that if you offer it to a leader, they are often a bit offended, in the sense of: 'I got this thing, I don't need this now.' Maybe the awareness is not there that it makes sense and that it contributes to further development.”* In addition, learning new skills also requires a high level of resources

*Manager.* Leadership behaviors exhibited by the manager can increase orientation and feeling of security among employees. Nevertheless, these behaviors can also lead to increased stress, pressure, and overload, and finally to a decline in intrinsic motivation, creativity, personal initiative, trust, and loyalty to the company. Furthermore, it can cause fear of surveillance due to the high amount of data and transparency: *“If you feel permanently controlled, you try not to make mistakes. That inhibits creativity, and frankly, it also inhibits loyalty if you always somehow feel the spotlight on you.”* The consequences

for leaders are two-fold. On the one hand, managerial behaviors enable data-driven recruitment of new employees and exert influence on existing employees, which reinforces goal achievement and a sense of being in control; on the other hand, this requires a large investment of time. Further, the validity of the data as a basis for decision-making must be questioned constantly, resulting in time-consuming behavior.

### 4.2.2. Desirable and undesirable outcomes of relation-oriented leadership

*Enabler.* Leadership behaviors that constitute an enabler increase employees' autonomy and flexibility by restructuring workplaces, introducing new working methods, and fostering cultures of innovation. This, in turn, increases employees' self-initiative, curiosity, creativity, and overall commitment, as well as identification with and loyalty to the company. In this context, however, the experts point out that the implementation of new working and collaboration methods also increases stress and pressure among employees to always think and act innovatively. Likewise, the boundary between work and private life is increasingly blurred, especially in the hybrid work context, which can, despite the increased flexibility and associated benefits, further increase employees' stress levels. Our results also reveal ambivalent consequences for leaders. While democratic, non-hierarchical, decentralized forms of work strengthen team cohesion and are a relief for leaders as employees work more independently, leaders lose power, influence, and opportunities for control and are confronted with a slower decision-making process. An expert uses an exemplary case to illustrate the increasing democratization associated with the loss of power: *"On the one hand, [...] there is a very strong push toward democratization. So, when I look at the pictures now: Each of us has a photo of the same size. I hardly have a chance to make mine bigger. So, I can't dominate the way I could in a normal room, for example. This puts certain behaviors at a disadvantage. In fact, the tendency to power-driven behaviors. Thus, there is a tendency to informal manners, virtual embrace, so to speak."*

*Mentor.* The leadership behaviors required of the mentor reduce employees' fears and uncertainties and simultaneously increase their self-confidence as they feel better prepared for change. Furthermore, this strengthens loyalty to the leader, reduces turnover, and increases work productivity. However, the experts highlight that these leadership behaviors can also lead to enormous resource efforts and demands for employees due to permanent training and further skill development. The positive effects on employees create task-related relief for leaders. Our results show that this is also perceived overall as confirmation for leaders in the sense of being needed by their employees. Achieving this requires leaders to invest a lot of time in terms of mentoring and supporting efforts. In this context, the results emphasize that this is particularly the case in a virtual context, in which a personal exchange is limited, creating difficulties in building a trustful relationship. Moreover, the experts explain that good relationships between leaders and their employees continue to work well in the digital context, whereas bad relationships continue to deteriorate: *"We see that some leaders who already had problems with their employees, where there may have been a trust problem, actually had it intensified by digitization. The leader wanted more control over the employee. The employee feels controlled. It really is a negative spiral that has then developed."* Furthermore, leaders are not only involved professionally in these matters but also personally and emotionally, which can be a great burden for

leaders beyond the boundaries of their work. In addition, our results show that leaders might fear a loss of power when employees gain expertise.

*Networker.* Leadership behaviors that are embodied in the role of the networker can ensure timely feedback as well as access to knowledge and information for employees, which enhances the employees' problem-solving competencies. Furthermore, networking and gaining insights enable employees to better understand the big picture and increase their sense of purpose. Knowledge sharing and collaboration within the network, however, can also lead to overload due to too much input and reduced anonymity for employees, which minimizes the free rider problem. Similarly, these behaviors can result in desirable and undesirable outcomes for leaders. Our results show that broader access to information and knowledge leads to a solid basis for decision-making and increased problem-solving competencies. These positive effects, however, are associated with high resource costs. Likewise, open knowledge sharing within the network reduces information asymmetry, which means a loss of power for leaders. As one expert says: *"Information is accessible to everyone. Then I don't have the power of information anymore."*

## 5. Discussion

### 5.1. Theoretical and managerial contributions

Our study contributes to the literature on leadership behaviors in digital transformation and enriches existing knowledge in many ways. First, by drawing on Bauwens et al.'s (2022) call for future research, we reveal that both task-oriented and relation-oriented leadership behaviors are more relevant than ever. Thus, we support prior research stressing the importance of both orientations in digital transformation (Canterino et al., 2020; Cortellazzo et al., 2019; Weber et al., 2022a).

Second, whereas rich literature on the role of leaders in remote work environments (e.g., Loyless, 2023; Spagnoli et al., 2020) as well as on leadership in digital transformation (e.g., Tabrizi et al., 2019; Weber et al., 2022a) exists, little is known about simultaneously considering digital transformation and hybrid and remote work environments from a leadership perspective. Although the use of technologies facilitates hybrid and remote work, digital transformation does not automatically lead to hybrid and remote work environments. The COVID-19 pandemic in particular encouraged these new forms of work (McCarthy et al., 2021). Thus, our study extends research on leadership behaviors that deal with the context of digital transformation in general (e.g., Cortellazzo et al., 2019; Schwarzmüller et al., 2018) by taking into account increased hybrid and remote work environments that developed through digital transformation.

We show that appropriate leadership behaviors in digital transformation are increasingly important in the context of such remote and hybrid work environments. Our study reveals that uncertainty and complexity, which have gained unprecedented importance due to the changing work environments, have amplified various leadership behaviors and enhanced the importance of other leadership behaviors. For example, the enormous speed of change requires leaders more than ever to provide a strategic conceptual design of change processes and work-related orientation for employees. Moreover, our study emphasizes the additional need for leaders to deal with the increased complexity and uncertainties to make appropriate decisions due to the high amount and variety of data. Furthermore,

relationship management gains importance with increasing physical distance, and leaders must figure out new ways of keeping in touch.

Third, we show that leadership behaviors in digital transformation can have both desirable and undesirable consequences. Even though there is some work on positive as well as negative outcomes of leadership behaviors (e.g., Pulley & Sessa, 2001; Schwarzmüller et al., 2018; Tabrizi et al., 2019; Weber et al., 2022a), the consequences of different leadership behaviors on individual-related outcome variables have mostly been overlooked (Ford & Ford, 2012). To this end, we provide a differentiated view on both employees' and leaders' outcomes and thereby reveal a double-edged sword effect of well-intended leadership behaviors. For example, facilitating innovative working methods, which are required in changing times, increases employees' innovative performance, but it could also put employees in the position to always act and think innovatively, which could raise their stress levels. Consequently, leaders are constantly confronted with such paradoxes and forced to balance positive and negative outcomes.

Our results also have implications for leaders. Leaders should be aware that their behaviors—even though well-meant—may not only lead to positive outcomes. With our overview of appropriate leadership behaviors and their positive and negative consequences, they can reflect on their behaviors and understand that their employees might be affected undesirably by their well-intended leadership behaviors. Therefore, it is essential for leaders to seek dialogues with their employees to show appreciation, formulate mutual expectations and foster clear communication. Furthermore, leaders should bear in mind the consequences for themselves. Valuable approaches to dealing with that are to exceed appropriate coping strategies to deal with the downsides of the different leadership behaviors. In doing so, new priorities must be set for training and continuing education regarding reflection on a meta-level.

Moreover, consistent with existing studies, we reveal that it is important to exhibit and combine situationally both task-oriented as well as relation-oriented leadership behaviors to successfully manage digital transformation in a hybrid and remote work environment. Table 3 provides an overview of challenges due to digital transformation and examples of appropriate leadership behaviors that we identified in the literature and our study data.

Challenges due to digital transformation	Appropriate leadership roles and behaviors to tackle the challenges
<p><b>Disruption of numerous markets</b> leads to new digital strategies and offerings, new competitors, and networks</p>	<p><b>Digital pioneer (task-oriented)</b></p> <ul style="list-style-type: none"> <li>Understand and anticipate early digital trends evolving through digital technologies (AlNuaimi et al., 2022; Hanelt et al., 2021; Kane et al., 2019)</li> <li>Continually question the status quo to identify and implement necessary changes and, at the same time, identify future business opportunities and risks (Bolden &amp; O'Regan, 2016)</li> </ul> <p><b>Innovator (task-oriented)</b></p> <ul style="list-style-type: none"> <li>Utilize innovative working methods (Wrigley et al., 2020) to trigger employees' sense of innovation</li> <li>Show enthusiasm and inspire employees by continuously inventing the new (Cortellazzo et al., 2019)</li> </ul> <p><b>Manager (task-oriented)</b></p> <ul style="list-style-type: none"> <li>Monitor work outcomes according to business criteria with a primary objective of getting the work done efficiently (Krehl &amp; Büttgen, 2022)</li> <li>Focus on goal achievement (Weber et al., 2022b) and, therefore, frequently and clearly communicate the goals and the purpose of work to decrease uncertainty</li> </ul> <p><b>Networker (relation-oriented)</b></p> <ul style="list-style-type: none"> <li>Build networks not only with suppliers, partners, and customers but also with competitors by using various collaboration technologies (Bennett &amp; Lemoine, 2014)</li> <li>Build collaboration partnerships inside and outside the organization (Schwarzmüller et al., 2018) to target the required complementarities and, hence, find the right partners to co-create value (AlNuaimi et al., 2022)</li> </ul>
<p><b>Changes in working methods and workplace design</b> lead to redesigned workplaces, new work practices (esp. remote and hybrid work), and the need for digital competencies</p>	<p><b>Digital Mentee (task-oriented)</b></p> <ul style="list-style-type: none"> <li>Foster reverse mentoring (Anderson et al., 2017), for example, by promoting inter-organizational exchange on effective work practices when working remotely</li> <li>Seek advice on digital issues (Anderson et al., 2017), such as how to keep in touch with remote or hybrid working employees</li> </ul> <p><b>Enabler (relation-oriented)</b></p> <ul style="list-style-type: none"> <li>Enable agile, flexible, and empowering work structures (Kane et al., 2019; Sousa &amp; Rocha, 2019)</li> <li>Foster participative decision-making (Krehl &amp; Büttgen, 2022; Schwarzmüller et al., 2018) to increase decision quality and to create employees' sense of belonging</li> </ul> <p><b>Mentor (relation-oriented)</b></p> <ul style="list-style-type: none"> <li>Provide adequate training for employees' skill development (Kane et al., 2015; Kane et al., 2019; Schwarzmüller et al., 2018), for example, on how to manage work-life boundaries in remote work</li> <li>Establish strong and trusting relationships with employees (Schwarzmüller et al., 2018; Weber et al., 2022b) and recognize their work (Krehl &amp; Büttgen, 2022) as the control of employees' work (instead of trust) is less possible in hybrid and remote work settings</li> </ul>

Table 3: Overview of challenges due to digital transformation and examples of appropriate leadership behaviors

## 5.2. Limitations and future research

This study is not without limitations leading to interesting future research directions. First, our study focuses on individual-level outcomes of relevant leadership behaviors in times of digital transformation. Recent research has identified that such leadership behaviors could also influence organization-related outcome variables, such as organizational agility (AlNuaimi et al., 2022), stages of an organization's digital transformation (AlNuaimi et al., 2022; Porfírio et al., 2021), and digital maturity (Weber et al., 2022b). Thus, it would be valuable to gain insights into how different leadership behaviors strengthen or mitigate organization-related outcomes relevant to digital transformation.

Second, leaders who participated in the group Delphi study offered knowledge on how leadership behaviors influence individual-level outcomes. Yet, it would be interesting to better understand why such leadership behaviors lead to desirable and undesirable outcomes. Drawing on Weber et al.'s (2022a) call for future research, it would be highly beneficial to produce fine-grained knowledge about the (psychological) processes behind the identified relationships. Thus, future research could provide a deeper understanding of the mechanisms underlying these effects and thereby focusing on boundary conditions (e.g., leaders' and employees' individual differences such as digital competencies (Sousa & Rocha, 2019) or organizations' digital maturity (Bartsch et al., 2021), and possible mediating variables on the organizational, team, and individual level (e.g., organization agility (AlNuaimi et al., 2022), teamwork tension, or job autonomy (Bartsch et al., 2021)). Moreover, future studies could complement our research findings by identifying contingency factors triggering the different leadership roles (e.g., external threats; Garretsen et al., 2022). Additionally, it would be interesting to study whether leaders' desirable and undesirable outcomes have an impact on their subsequent leadership behaviors (Ford & Ford, 2012).

Third, we focus on leaders' responses to gain insights into appropriate leadership behaviors and leadership outcomes in digital transformation, as we believe that they are best suited to answer our research questions. However, this might implicate a one-sided perspective. Thus, future research should conduct empirical studies using multi-source data, including employee ratings, and ideally complement these with experiments to identify and differentiate the causal effects of such leadership behaviors on relevant outcomes in digital transformation.

Fourth, our sample includes a broad range of companies from different industries and sizes to represent a comprehensive sample. The nature of the Delphi approach is to reach a consensus across the experts. However, it would also be interesting for further studies to pick up on possible specifics of different companies and analyze leadership challenges, relevant leadership behaviors, and outcomes accordingly.

## 6. References

AlNuaimi, B. K., Singh, S. K., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, 145, 636–648.

Anderson, H. J., Baur, J. E., Griffith, J. A., & Buckley, M. R. (2017). What works for you may not work for (gen)me: Limitations of present leadership theories for the new generation. *The Leadership Quarterly*, 28(1), 245–260.

Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative Research Journal*, 18(4), 383–400.

Bartsch, S., Weber, E., Büttgen, M., & Huber, A. (2021). Leadership matters in crisis-induced digital transformation: how to lead service employees effectively during the COVID-19 pandemic. *Journal of Service Management*, 32(1), 71–85.

Bauwens, R., Batistič, S., Kilroy, S., & Nijs, S. (2022). New Kids on the Block? A Bibliometric Analysis of Emerging COVID-19—Trends in Leadership Research. *Journal of Leadership & Organizational Studies*, 29(2), 224–232.

Bennett, N., & Lemoine, G. J. (2014). What a difference a word makes: Understanding threats to performance in a VUCA world. *Business Horizons*, 57(3), 311–317.

Bolden, R., & O'Regan, N. (2016). Digital disruption and the future of leadership: An interview with Rick Haythornthwaite, Chairman of Centrica and MasterCard. *Journal of Management Inquiry*, 25(4), 438–446.

Canterino, F., Cirella, S., Piccoli, B., & Shani, A. B. (2020). Leadership and change mobilization: The mediating role of distributed leadership. *Journal of Business Research*, 108, 42–51.

Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, 3(1), 349–375.

Colbert, A., Yee, N., & George, G. (2016). The digital workforce and the workplace of the future. *Academy of Management Journal*, 59(3), 731–739.

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. *Frontiers in Psychology*, 10, 1938.

Cusin, J., & Goujon-Belghit, A. (2019). Error reframing: Studying the promotion of an error management culture. *European Journal of Work and Organizational Psychology*, 28(4), 510–524.

Dalkey, N., & Helmer, O. (1963). An experimental application of the DELPHI method to the use of experts. *Management Science*, 9(3), 458–467.

Dirani, K. M., Abadi, M., Alizadeh, A., Barhate, B., Garza, R. C., Gunasekara, N., Ibrahim, G., & Majzun, Z. (2020). Leadership competencies and the essential role of human resource development in times of crisis: A response to Covid-19 pandemic. *Human Resource Development International*, 23(4), 380–394.

Eckardt, R., Crocker, A., & Tsai, C.-Y. (2021). Clarifying and empirically assessing the concept of human capital resource emergence. *The International Journal of Human Resource Management*, 32(2), 279–306.

Ford, J. D., & Ford, L. W. (Eds.). (2012). *Research in Organizational Change and Development. The leadership of organization change: A view from recent empirical evidence*. Emerald Group Publishing Limited.

Ford, J. D., Ford, L. W., & Polin, B. (2021). Leadership in the implementation of change: Functions, sources, and requisite variety. *Journal of Change Management*, 21(1), 87–119.

Garretsen, H., Stoker, J. I., Soudis, D., & Wendt, H. (2022). The pandemic that shocked managers across the world: The impact of the COVID-19 crisis on leadership behavior. *The Leadership Quarterly*. Advance online publication.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research. *Organizational Research Methods*, 16(1), 15–31.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159–1197.

Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *Management Information Systems Quarterly Executive*, 15(2), 123–139.

Horner-Long, P., & Schoenberg, R. (2002). Does e-business require different leadership characteristics? An empirical investigation. *European Management Journal*, 20(6), 611–619.

Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *The Journal of Applied Psychology*, 89(1), 36–51.

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation: Becoming a digitally mature enterprise. *MIT Sloan Management Review*.

Kane, G. C., Phillips, A. N., Copulsky, J., & Andrus, G. (2019). How digital leadership is(n't) different. *MIT Sloan Management Review*, 60(3), 34–39.

Krehl, E.-H., & Büttgen, M. (2022). Uncovering the complexities of remote leadership and the usage of digital tools during the COVID-19 pandemic: A qualitative diary study. *German Journal of Human Resource Management*, 36(3), 325–352.

Landeta, J., Barrutia, J., & Lertxundi, A. (2011). Hybrid Delphi: A methodology to facilitate contribution from experts in professional contexts. *Technological Forecasting and Social Change*, 78(9), 1629–1641.

Lawrence, K. A., Lenk, P., & Quinn, R. E. (2009). Behavioral complexity in leadership: The psychometric properties of a new instrument to measure behavioral repertoire. *The Leadership Quarterly*, 20(2), 87–102.

Linstone, H. A., & Turoff, M. (1975). *The Delphi method: Techniques and applications*. Addison-Wesley.

Loyless, L. H. (2023). Competence in virtual communication: Remote transformational leadership. *Public Administration Review*, 83(3), 702–709.

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering*, 57(5), 339–343.

McCarthy, P., Sammon, D., & Alhassan, I. (2021). Digital transformation leadership characteristics: A literature analysis. *Journal of Decision Systems*. Advance online publication.

McClanahan, K. J. (2020). Viva la evolution: Using dual-strategies theory to explain leadership in modern organizations. *The Leadership Quarterly*, 31(1), 101315.

Okoli, C., & Pawlowski, S. D. (2004). The Delphi method as a research tool: An example, design considerations and applications. *Information & Management*, 42(1), 15–29.

Oreg, S., & Berson, Y. (2019). Leaders' impact on organizational change: Bridging theoretical and methodological chasms. *Academy of Management Annals*, 13(1), 272–307.

Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. *Journal of Business Research*, 124, 610–619.

Pulley, M. L., & Sessa, V. I. (2001). E-leadership: Tackling complex challenges. *Industrial and Commercial Training*, 33(6), 225–230.

Schwarzmüller, T., Brosi, P., Duman, D., & Welpe, I. M. (2018). How does the digital transformation affect organizations? Key themes of change in work design and leadership. *Management Revue*, 29(2), 114–138.

Sousa, M. J., & Rocha, Á. (2019). Skills for disruptive digital business. *Journal of Business Research*, 94, 257–263.

Spagnoli, P., Molino, M., Molinaro, D., Giancaspro, M. L., Manuti, A., & Ghislieri, C. (2020). Workaholism and technostress during the COVID-19 emergency: The crucial role of the leaders on remote working. *Frontiers in Psychology*, 11, 620310.

Tabrizi, B., Lam, E., Girard, K., & Irvin, V. (2019). Digital transformation is not about technology. *Harvard Business Review*, 13, 1–6.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118–144.

Weber, E., Büttgen, M., & Bartsch, S. (2022a). How to take employees on the digital transformation journey: An experimental study on complementary leadership behaviors in managing organizational change. *Journal of Business Research*, 143, 225–238.

Weber, E., Krehl, E.-H., & Büttgen, M. (2022b). The digital transformation leadership framework: Conceptual and empirical insights into leadership roles in technology-driven business environments. *Journal of Leadership Studies*, 16(1), 6–22.

Webler, T., Levine, D., Rakel, H., & Renn, O. (1991). A novel approach to reducing uncertainty: The Group Delphi. *Technological Forecasting and Social Change*, 39(3), 253–263.

Wrede, M., Velamuri, V. K., & Dauth, T. (2020). Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. *Managerial and Decision Economics*, 41(8), 1549–1567.

Wrigley, C., Nusem, E., & Straker, K. (2020). Implementing design thinking: Understanding organizational conditions. *California Management Review*, 62(2), 125–143.

Yukl, G. (2012). Effective leadership behavior: What we know and what questions need more attention. *Academy of Management Perspectives*, 26(4), 66–85.

**Nicole Lettner**, Mag., is a PhD student and research assistant at the Institute of Management Science, Research Group of Leadership & Strategy, at TU Wien (Vienna University of Technology) and a lecturer at the University of Applied Science St. Pölten, Austria.

**Address:** TU Wien (Vienna University of Technology), Institute of Management Science, Research Group of Leadership & Strategy, Getreidemarkt 9 (E330–05), 1060 Vienna, Austria, Tel.: +43(0)680/3153686, Email: nici.lettner@aon.at

**Ellen Weber**, Dr., is a postdoctoral researcher at the Chair of Corporate Management at the University of Hohenheim, Stuttgart, Germany.

**Address:** University of Hohenheim, Institute of Marketing & Management, Chair of Corporate Management, Schloss Osthof-Ost, 70599 Stuttgart, Germany, Tel.: +49 (0)711/459–24336, E-mail: e.weber@uni-hohenheim.de

**Julia Lanzl**, Dr., is a Postdoctoral Researcher at the Chair of Digital Management at the University of Hohenheim, the Branch Business & Information Systems Engineering of the Fraunhofer FIT, and the FIM Research Center for Information Management.

**Address:** University of Hohenheim, Chair of Digital Management, Schloss Osthof-Ost, 70599 Stuttgart, Germany, Tel.: +49 (0)821/480400–43, Email: julia.lanzl@fim-rc.de

**Katharina Gilli**, Dr., was a PhD student at the Faculty of Management & Economics at the Free University of Bolzano and works as a management consultant.

**Address:** Free University of Bozen, Universitätsplatz 1, 39100 Bolzano, Italy, Tel.: +39 (0)333/8794048, Email: katharina.gilli@yahoo.de

**Wolfgang Güttel**, Univ.Prof., is full professor for Leadership & Strategy at the Institute of Management Science at TU Wien (Vienna University of Technology) and Dean of the TU Vienna Academy for Continuing Education.

**Address:** TU Wien (Vienna University of Technology), Institute of Management Science, Research Group of Leadership & Strategy, Getreidemarkt 9 (E330–05), 1060 Vienna, Austria, Tel.: +43(0)664/605887700, Email: wolfgang.guettel@tuwien.ac.at