How to Develop Organizational Forms for a Successful Digital Transformation? Findings from Two Case Studies

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Abstract

Previous research has increased our understanding of individual digital transformation (DT) activities, roles, responsibilities, and related dilemmas, yet a comprehensive insight is missing with respect to the organizational forms that are most appropriate for developing the capabilities needed for successful DT. The purpose of this paper is to identify the main organizational characteristics and organizational forms for a successful DT and to identify influential factors that impact decisions about suitable organizational forms. Drawing on two case studies, we look at how companies can develop digital capabilities through different configurations of organizational forms. Findings show that decisions on organizational forms have to be influenced by digital culture, IT department's role, and the goals of DT. Moreover, top management leadership is more important than a formal digital strategy, and DT projects must be executed by coordinated interdisciplinary teams. The presented research offers a comprehensive insight on how companies can develop digital capabilities that enable a successful DT by developing their organizational forms, i.e., by combining the different DT actions, actors, their roles and responsibilities, their interplay, implementing DT strategies, and combining the design of digital software solutions with the design of organizational routines and practices.

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Introduction

Although digital transformation (DT) has been around for a while, it is now a priority for practitioners and researchers in the management field (Hinings et al., 2018; Vial, 2019). However, incumbent companies cannot simply leverage their digital-enablement but first need to provide an environment in which DT can be successful. This can be achieved through different means such as developing a DT strategy (Matt et al., 2015) or incorporating one within the current business strategy (Yeow et al., 2018), introducing new Chief Digital Officer (CDO) position (Hess et al., 2016; Singh & Hess, 2017) while also actively involving other member of top management (Tumbas et al., 2017; Turel & Bart, 2014; Whitler et al., 2017), adopting pervasive ways of organizing IT (Peppard, 2018), and facilitating DT through organizational culture (Alos-Simo et al., 2017).

Therefore, more research is needed about the organizational forms that lead to a successful DT, i.e., the combination of various DT actions, actors, their roles, responsibilities (Matt et al., 2015) and interplay (Hinings et al., 2018), how companies develop and implement their DT strategies (Ismail et al., 2017), what is the role of information system practitioners within companies in preparing a company's business strategy in the context of DT (Whittington, 2014), and how to combine the design of digital software solutions with the design of organizational routines and practices (Kohli & Melville, 2019). This is also in line with previous research that suggests more focus on internal digital transformation stakeholders (Cetindamar Kozanoglu & Abedin, 2020). Moreover, the impact of other factors like the role of organizational culture in DT (Jahanmir & Cavadas, 2018), how to develop the capabilities needed for DT (Svahn et al., 2017; Vial, 2019), and how DT unfolds in practice (Vial, 2019) are also in need of further research.

Previous research (Indihar Štemberger et al., 2019) reveals six patterns of approaches to DT that are successful in different ways, among which the most successful is the "business-IT partnership" approach in which top management and the IT department are responsible for the DT and the CIO is an orchestrator and member of top management. Since contingency theory (Fiedler, 1964; Weill & Olson, 1989) shows there is no universal or single best way to manage, we expect that various implementations are possible also within this pattern. Therefore, further and more detailed research of these patterns is needed to identify the key organizational elements and how they shape organizational forms leading to a successful DT, which is also in line with previous call for further research for identifying the optimal forms of organizational structures that allow firms to succeed in executing their digital transformation strategies (Verhoef et al., 2021).

The aim of this paper is to identify the main organizational characteristics and the ways they should be developed into organizational forms and capacities which enable a successful DT. In order to analyze which different configurations of organizational characteristics may cause certain outcomes, those characteristics must first be identified (Fiss, 2007). The presented research investigates possible actors, structures, and their interplay suitable for the DT actions needed to

develop DT capabilities. We also explore factors that influence the making of particular decisions about organizational forms.

Based on existing literature, we firstly developed a conceptual framework for defining organizational forms for a successful DT. Given that a configurational approach assumes complex causality and nonlinear relationships where variables found to be causally related in one configuration may be unrelated or even inversely related in another (Meyer et al., 1993), we opted for the case study methodology. Using case study methodology, we analyzed two large companies from production and service sector as both sectors have been affected by DT (Caliskan et al., 2021). Both companies have been successful with their DT, both with a business-IT partnership pattern. In the third stage, we conceptualized the findings.

In the next section, we provide a literature review and develop a conceptual research model, which is followed by a description of the methodology. This is followed by a section where empirical evidence is presented, discussed, and compared with findings from previous research. Finally, we conclude by setting out the implications, limitations, and suggestions for future research.

Literature Review and Research Model Development

Based on an extensive literature review, Vial (2019) constructed a working definition of DT 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." Like other IT-enabled organizational transformations (vom Brocke et al., 2021), DT may require great changes in strategy, business models, processes, or organizational structures (Westerman et al., 2011), and require a reassessment of a company's norms and values (Liu et al., 2011), organizational culture, leadership, and employee roles and skills (Vial, 2019).

DT presents a challenge for most companies as changing business models, processes, people, or organizational culture is far more difficult than just selecting and implementing the right technology. This requires organizations to develop flexible organization forms that allow for resilience and nimbleness to coexist (Faro et al., 2021). To cope with these challenges, several steps are required during a DT, e.g., DT strategic planning (Matt et al., 2015; Yeow et al., 2018), coordination and leadership (Seijts & Gandz, 2018), culture transformation (Alos-Simo et al., 2017), and the development of digital platforms, the operational backbone, and other digital applications which must be integrated with legacy systems (Sebastian et al., 2017). Moreover, DT is typically not implemented solely by the IT department (Indihar Štemberger et al., 2019), with the coordinated actions of the entire top management team and other employees also being needed (Krotov, 2015).

Previous research (Nadeem et al., 2018) also shows that a certain set of organizational capabilities and unique dimensions of the digital business strategy, including the structural change elements, drive an organization towards a successful DT. The structural changes encompass changes in the organizational structure, organizational culture, and the roles and skills of both the leadership and employees (Vial, 2019).

This raises the question of which different DT steps organizations must take to develop the appropriate organizational capabilities (Nadeem et al., 2018), both ordinary and dynamic (Inan & Bititci, 2015). The resource-based view of the firm and the dynamic capabilities theory focus on two broad categories of organizational capabilities that are essential for firm performance (Qaiyum & Wang, 2018): the ordinary capabilities needed to exploit a firm's current strategic assets through its day-to-day operations and the higher-order dynamic capabilities required to alter a firm's resource base by integrating, building, and reconfiguring its competencies.

Previous research in the area of IT business value attempted to connect IT with superior firm performance. Bharadwaj (2000) developed the concept of IT as an organizational capability and showed that IT capability positively affects organizational performance. Other studies, e.g. (Liu et al., 2013; Wang et al., 2012), included some mediators in models which connect IT capability and firm performance. However, all of these studies were concentrated on the resources and capabilities inside IT departments. Since DT is much broader and builds on pervasive IT organization (Peppard, 2018), the current understanding of IT capability is too narrow for DT and hence more research is needed.

Digital capabilities are the capabilities required for a successful DT (Kane et al., 2016). Since DT entails a process of fast and radical change, dynamic capabilities are particularly important for its success (Vial, 2019). The right digital capabilities enable a successful DT and are expected to lead to better organizational performance (Nadeem et al., 2018). Although some research has looked at digital capabilities, e.g. (Warner & Wäger, 2019), very little is known about suitable approaches to developing them (Svahn et al., 2017) and more research is called for (Vial, 2019).

The findings concerning a recently developed process model for dynamic capabilities for the DT of incumbent firms in traditional industries (Warner & Wäger, 2019) suggest that each dynamic capability (digital sensing, digital seizing, digital transforming) possesses what they call sub-capabilities which are either enhanced by internal enablers or inhibited by internal barriers. Identified internal enablers are cross-functional teams, fast decision-making, and executive support, while internal barriers are rigid strategic planning, resistance to change, and a considerable hierarchy. This raises the question of what organizations must do to nurture the internal enablers and counteract the inhibitors. Furthermore, some ordinary capabilities have also been found very important for DT, like a collection of high-level routines that give management a set of decision options for output production such as strategy development (Inan & Bititci, 2015).

We define DT actions as actions that an organization has to perform in order to develop DT capabilities. We performed a literature review to identify and better understand different actions and roles within an organization when dealing with DT. We searched for publications in Web of Science, using "digital transformation" or "digitalization" as the main keywords and selected pairing keywords. The search was performed for SSCI- and SCI-E indexed publications for the period from 2010 on. This resulted in identified DT actions which are presented in Table 1.

With this study, we explore organizational forms needed for DT actions, which support the development of digital capabilities. In a configurational approach, organizations are understood as clusters of interconnected structures and practices,

Table 1 Digital transformation actions

DT actions	Reference(s)
Strategic planning	(Vial, 2019)
Developing a DT strategy	(Schumacher et al., 2016)
Linking the business and DT strategies	(Nadeem et al., 2018)
Ensuring alignment with the organization's objectives	(Chanias et al., 2019)
Developing an action plan	(Sebastian et al., 2017)
	(Ismail et al., 2017)
	(Tekic & Koroteev, 2019)
	(Matt et al., 2015)
Developing technology-enabled assets	(Nadeem et al., 2018)
Developing the operational backbone	(Chanias et al., 2019)
Developing the digital solution and platform	(Sebastian et al., 2017)
Digital leadership	(Schumacher et al., 2016)
New leadership roles for rapid DT facilitation	(Nadeem et al., 2018)
Rethinking the role of corporate IT and the CIO	(Gerth & Peppard, 2016)
Developing change management capabilities	(Vial, 2019)
Ensuring the collaboration of the business and IT functions	(Singh & Hess, 2017)
Creating an environment for generating proposals and ideas	(Hansen & Sia, 2015)
Digital transformation project management	(Guinan et al., 2019)
Ensuring diverse and targeted team compositions	(Govindarajan & Immelt, 2019)
Developing digital skills and competencies	(Chanias et al., 2019)
Continuous learning	(Vial, 2019)
Talent management	(Schumacher et al., 2016)
Developing openness to new technology and autonomy	(Nadeem et al., 2018)
Promoting employee initiatives	(Urbach et al., 2019)
Digital culture development	(Alos-Simo et al., 2017)
Developing ability for culture transformation	(Westerman et al., 2019)
	(Schumacher et al., 2016)

rather than modular or loosely coupled entities whose components can be understood in isolation (Fiss, 2007). The organizational form can therefore be defined as the composition of elements of the organizational structure (Dischner, 2015). In general, "there is not only one optimal type of organizational form" (Hoogervorst, 2018) and we expect similar with DT. Therefore, we also focus on understanding the effect of influential factors on the formation of appropriate organizational form. The research conceptual framework can be seen in Fig. 1.

Methodology

After an initial literature review and building a conceptual research framework, we performed two case studies to further examine the literature findings, followed by conceptualization of the findings.

Case study methodology offers one of the best bridges between rich qualitative evidence and mainstream deductive research, making it an inductive prerequisite for subsequent deductive testing (Eisenhardt & Graebner, 2007). The methodology
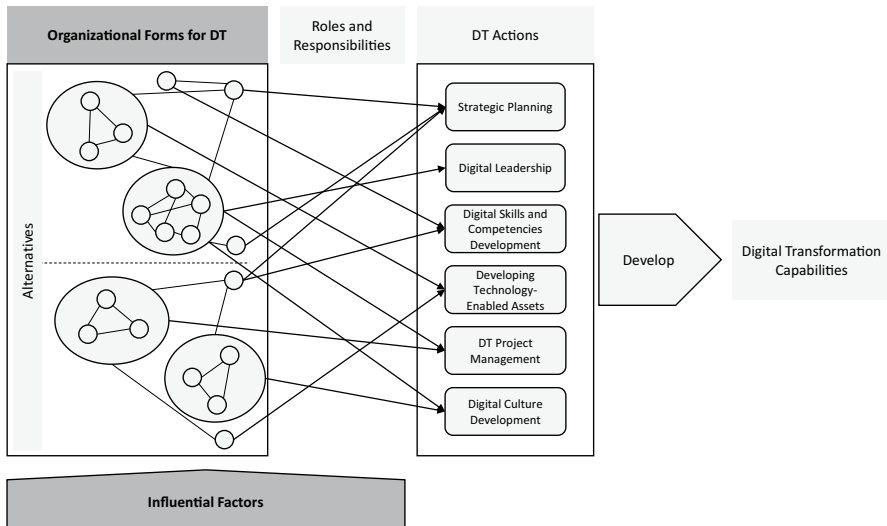
Fig. 1 Conceptual framework for defining organizational forms for a successful DT

is used in research areas still in the process of being understood, discovered, and described (Stuart et al., 2002), as is the case with questions concerning how DT is being dealt with in different organizational settings. As a research strategy, a case study is appropriate for events not influenced by the researcher and needing to be answered by asking questions like "how" and "why" (Yin, 2017). The methodology has often been successfully applied while researching various aspects of DT (Henriette et al., 2015). We applied a multiple-case design since that is considered more robust than a single-case study design, while it also offers the possibility of direct replication in different, independent cases (Yin, 2017). Furthermore, context differentiation among the cases can allow greater generalizability of the shared findings in multiple cases (Yin, 2017).

Purposive sampling (Yin, 2017) was employed while selecting the case study units, where the companies selected were arranged so that business and IT form a partnership (Indihar Štemberger et al., 2019). We approached five organizations that passed the initial pre-screening process. Two of these organizations (case study unit A and case study unit B) agreed to participate.

In order to achieve data triangulation (Yin, 2017) in case studies, a researcher obtains information in various ways like through interviews, questionnaires, and observation (Eisenhardt, 1989). Therefore, primary data were collected via semi-structured, in-depth interviews of key employees responsible for DT and also by a questionnaire which was completed by middle management and higher-ranking employees. Secondary data about the two case-study companies included internal documentation, annual reports, publications in various media, and public presentations at conferences and other events.

While preparing the interview and conducting the interviews, we followed the guidelines of Myers and Newman (2007) and Schultze and Avital (2011). Each

interview was conducted by two researchers, one of whom acted as the principal interviewer. It started with a brief introduction to the research, followed by a set of general questions about the interviewee. The core part of the interview included questions about the interviewee's understanding of DT, the state of DT in the organization, and value co-creation with the DT. The interview questions were based on actions identified in Table 1. The interviews were concluded with general remarks and an opportunity was given for the interviewee to add anything else not covered in the discussion.

In both companies, we first interviewed the highest-ranking employee responsible for the DT and the highest-ranking employee responsible for information technology. Based on those interviews, we conducted more interviews according to the specifics of each company. A list of interviewees is shown in Table 2.

The second part of the primary data collection entailed online questionnaires being sent to middle management and higher-ranking employees to be completed anonymously. The questionnaire's chief aim was to assess the company's organizational digital culture and digital maturity. In addition, the questionnaire contained questions about the effects of the DT on the company, the company's goals with the DT, the relationship between the business strategy and the digitalization strategy, the company's internal capabilities for the DT, and barriers within the company with respect to the DT. The questionnaire was adapted from Kane et al. (2016).

All the interviews were recorded, transcribed, and coded. The coding was done in three stages. In the first stage, we used open coding, which refers to breaking down, examining, comparing, conceptualizing, and categorizing data (Corbin & Strauss, 2014), in order to identify first order concepts (Gioia et al., 2013). During our examination of the interview transcripts, we noticed certain codes that either signified repetitions or had similar meanings, which we merged accordingly. Additionally, we came across themes that were not directly related to our research question, and therefore, we disregarded them. In the second stage, we used axial coding to discern patterns, similarities, and distinctions within the remaining codes (Corbin & Strauss, 2014), enabling us to organize them into second order themes (Gioia et al., 2013). In the third stage, our aim was to condense these second order themes into aggregate dimensions (Gioia et al., 2013). The second order themes and aggregate dimensions are listed in the Table 3 in the Appendix.

Throughout all the three stages of the process, all three authors of the paper were interpreting the codes. We paid special attention if there was a lack of consensus on

Table 2 Basic information about the interviewees	Unit	Position in the organization	Label
	A	Chief Information Officer	A-CIO
	A	Head of IT Department	A-IT
	A	Head of Digital Solutions	A-DIG
	B	Head of IT Department	B-IT
	B	Head of Digital Product Development	B-DPD
	B	Head of Logistics	B-LOG

certain codes. In those cases, we revisited the data, engaged in collaborative discussions, and worked towards reaching a consensual interpretation (Gioia et al., 2013). We analyzed the survey data using different statistical methods.

Empirical Evidence

In this section, we first describe both case study units. Based on the coding of interviews in both companies, we have identified three aggregate dimensions that evolve around defining different organizational forms and the interplay between involved actors: (1) digital leadership, strategic planning, and strategy implementation; (2) pervasiveness of digital transformation; (3) digital transformation projects. Therefore, we focus on each of identified aggregate dimensions later in the section separately and emphasize how the findings within each identified aggregate dimension relate to DT actions presented in literature review.

Description of Case Study Unit A

The first case study (unit A) is an insurance company with around 1000 employees and some 1400 independent insurance agents with an annual revenue of EUR 310 million. The company has started on its DT with isolated projects and activities. The general attitude in top management's support for DT changed in 2011 when a new board member joined the company who was inclined to a DT. Since then, the isolated DT projects have evolved into activities coordinated by the company's CIO and supported by a specialized unit for coordinating the DT-related efforts.

According to the interview with the A-DIG, management largely understands DT as a business model and process change with a focus on changing employee mindsets, while employees on the operational level see DT more as simply technological changes. Management tries to "make employees aware that by the DT they can simplify processes for themselves and customers" and thus sees "leadership and change management as the biggest tools for DT." There was no significant difference in perception between those employees directly involved in the DT and those who are not, whether DT will disrupt their industry more than other industries. Only group that stood out were IT employees who are less inclined to believe the DT will disrupt their industry.

According to A-CIO, the key goals are digitalizing its own products and customer experience through digital value-added services, while also changing its business model. A-DIG noted that "improving customer engagement" is the main goal, while also expecting a "shift to digital solutions" as being key future goals. The survey results singled out increasing process efficiency and improving customer experience and engagement as two essential goals, while business process and model transformation scored the lowest.

Interviewees in the company identified the company culture and the employees as the key success factors for a successful DT. According to the survey the company

scored as bolder, more exploratory and having a more distributed leadership structure, while being less agile as the world average (Kane et al., 2016).

Description of Case Study Unit B

The second case study (unit B) is a manufacturing company operating in the automotive, construction, and power engineering industries, each with its own business division. The company has around 5500 employees and an annual revenue of EUR 800 million. The company has long maintained an innovation system to strengthen its digital innovation capabilities (55,000 ideas collected in the last few years). The company also sees DT as an opportunity to develop new markets and products. Therefore, it established a fourth business division 3 years ago that primarily focuses on new digital product development, drawing heavily on industrial process knowledge from the three other business divisions, and secondarily on digitally transforming those three business divisions. Development in the digital division occurs mainly in cooperation with start-up companies and is hence completely separated from the three other main business units.

In the interviews with B-IT and B-DPD, the DT was seen as a cycle that will lead to the development of new business models and products and therefore their separate digital business division is focusing on DT projects and product development due to the lack of resources in the other divisions. According to B-LOG, DT is a "change driver for business users and a platform for business model change." The management and the employees who are involved in the DT efforts think it will disrupt their industry more than other employees.

According to B-DPD, the primary goal is to achieve more efficient and optimized internal processes in the main three business divisions, while also offering buyers insights into its production process by using advanced analytics. This enables its digital division to focus more on digitalized product development able to generate new revenue. B-LOG sees a vital goal of the DT as "relieving the employees so they can do more important things" by increasing the efficiency of their business processes, "by process digitalization in order to provide relevant data on time to improve business decision-making." The survey results singled out increasing process efficiency and improving decision-making as two essential goals, while improving customer experience and engagement scored the lowest.

Interviewees in the company identified the company culture and the employees as the key success factors for a successful DT. This may be summarized by B-DPD when describing "DT as mainly a change in the organizational culture, an employee transformation and a readiness to change." According to the survey, the company scored as having a more collaborative work style, while being a less agile as the world average (Kane et al., 2016), with risk appetite and leadership structure not deviating from it.

Digital Leadership, Strategic Planning, and Strategy Implementation

Awareness of the importance of the DT among top management developed differently. According to A-DIG, company A had the greatest awareness of changes happening practically overnight "by introducing a new external member of the board

who was strongly inclined to the DT and responsible for the top-down push," followed by a single DT project that gradually evolved into the current situation. Company B saw the change happen gradually, by having the IT department give DT initiatives over past decade, increasing internal awareness of the strategic importance of the DT, and ultimately by having the head of IT becoming a board member. Therefore, the two companies have CIOs in the top management, with the head of IT directly responsible to them.

While a decision to appoint the CDO seems reasonable because it signals the DT's strategic nature for the entire organization (Vial, 2019), experience described from the two cases shows that other solutions also lead to a successful DT. Neither company has a dedicated CDO position. Company B has B-DPD who is mainly responsible for promoting internal innovativeness and developing new digital products and services, while the tasks that form part of the CDO role are performed by B-CIO.

Both analyzed cases demonstrate that a DT can be successfully led by CIO who possesses the appropriate personality traits, mindset, and skills, as required by the nature of the DT, along with an appropriate digital culture and understanding of top management. Such a role and operation of the CIO is often related to the fact the IT department plays the role of a strategic contributor (Gerth & Peppard, 2016), which is definitely a better starting point for DT. However, when the IT department merely plays a supporting role, i.e., a solution or service provider (Gerth & Peppard, 2016), it is important that it is not an inhibitor of DT projects but that it adapts the execution of its original tasks accordingly.

The next dilemma concerns a more or less centralized leadership structure, whereby different combinations are possible with a less centralized one, with more positions being taken over by some leadership roles. The cases suggest that more centralized leadership and the explicit appointment of a CDO makes sense when the digitalization is expected to be more disruptive for the industry, resulting in more radical changes and greater risks, or when the DT culture is not yet at the appropriate level and awareness of the strategic importance of the DT must still be developed.

With company A, a centralized approach for the purpose of a top-down push was used in early stages of the DT, when a new external board member was appointed. Later, the DT became "business as usual" and the whole company's organizational culture changed in the direction of digital culture and the leadership thus also became more decentralized. In company B, due to the diverse nature of the changes, a combination of approaches is in use where for more disruptive changes entailing new digitalized products and services and consequently also business models being developed, they established a new division whose head B-DPD is mainly responsible for promoting internal innovativeness while other DT leadership roles were taken over by the CIO.

Company A includes the DT in its 5-year business strategy and as one of its top two priorities. A-CIO states that DT was a serious consideration while building their business strategy, while A-IT does not see the lack of a separate DT strategy as a problem provided the strategic business goals encompass it. Two interviewees outside of the company's top management (A-DIG and A-IT) claimed they lack operationalization of the DT in the business strategy, as a more detailed version would help them prioritize projects.

According to B-DPD, a formal DT strategy is still being developed. Instead, the company relies on guidance and orchestration from the board management

member responsible for IT and DT (B-CIO), or as B-LOG and B-IT both color-fully described it: "The DT strategy is in the head of our B-CIO, with a view that everyone in the company follows."

It seems surprising that at first glance in each case, both the strategy and especially the action plan are not very formalized. Company B has a strong individual agent (B-CIO), skilfully manipulating potential strategy discourse (Whittington, 2014), such that most employees have internalized these strategic objectives. The explicitly formulated DT strategy primarily makes sense for pre-digital and less digitally mature organizations across traditional industries (Chanias et al., 2019), where the key purpose of its development is to check the fit of the DT's goals and new product development with the organization's resources and capabilities (Liu et al., 2011), to communicate goals at all organizational levels he encourage changes in the organizational culture in the digital direction.

DT as an innovation has a high level of heterogeneity within operant resources that need to be identified and mobilized and requires a wide body of discipline or domain-based knowledge (Lyytinen et al., 2016). It is therefore unsurprising that company A highlighted the inability to work across silos as a key barrier to the DT, indicating the need for some sort of strategic coordination among actors (Chanias et al., 2019; Schumacher et al., 2016), especially where there is a lower level of DT culture and a lack of a collaborative work style. Only genuine collaboration ensures the acceptance of the most complex organizational changes (Seijts & Gandz, 2018).

At one end of the continuum, we find examples of the creation of a separate unit that maintains a degree of independence from the rest of the organization (Vial, 2019), as happened in company B because the organizational digital culture with an average level of risk appetite in the other organizational units did not allow for experimenting with radical ideas and managing the riskiest initiatives. In a certain way, it is a spin-off strategy type (Ismail et al., 2017) where a separate organizational unit ensures appropriate resources to identify and realize potentially disruptive innovations.

Alternatively, in the case of a distributed DT organization, a federated innovation network (Lyytinen et al., 2016) must be assured, where at least a certain level of centralized coordination and control of an otherwise distributed structure is necessary, which can be realized through organizational units that connect individual areas, actors, and roles, like in company A where the purpose of a special organizational unit is to connect the process management (business side) and IT. This structure also requires the development of a digital culture with a propensity for risk throughout the company, where experimentation is acceptable and desirable.

Pervasiveness of Digital Transformation

As a result of realizing that DT should be understood as an organizational change holding the potential to improve organizational performance, it is clear that the entire organization must "live" the DT and pervasiveness must thus be ensured at least to some extent (Peppard, 2018). This should be achieved by the interplay of different actors in interdisciplinary fields, while ensuring integrity and stability at the same time (Westerman et al., 2019).

In both companies, the strategic goals of digitalization are adjusted to the nature of the organization (industry, culture, capabilities, resources), while for these reasons, the goals in company B are divided into the more disruptive ones pursued mainly by the digital division, and changes to the existing business processes pursued by all divisions.

In both companies, strategic DT initiatives come from the top management. Both companies are also trying to encourage DT initiatives from the employees. Company A does this very successfully by having most operational DT initiatives (i.e., those that result in increased efficiency and improved business decision-making) emerge from a wide range of employees, mainly product owners. Company B also receives some DT initiatives from employees, which then need to be orchestrated, yet B-IT states there are "hardly any" from the production department. Lately, ever more initiatives are also coming from the separate digital business division, as also acknowledged by their project managers (i.e., B-LOG).

Both cases show the close connection between pervasiveness and digital culture. If employees on all levels understand that DT is primarily an organizational change and needs to be in the business domain, they will then not only implement and adopt changes more effectively, but we can also expect more digitalization initiatives (Chanias et al., 2019) coming from a wide range of employees.

Accordingly, at lower levels of digital culture, the establishment of separate business units or divisions may be needed to generate ideas and implement DT projects, while such a unit can also serve as a promoter of the DT efforts.

The task of managers is to create an environment conducive to digital innovations and a learning culture that promotes DT opportunities (Kohli & Melville, 2019). If the CIO is business-savvy and the IT department is a strategic contributor, the latter can also be a promoter of DT awareness, as the example of company B shows where several DT activities came from the IT department in the previous decade. Still, decentralized DT coordination, like in the case of company A, is a more favorable environment for providing a broader consensus on the importance of the DT, even among those not directly involved in such projects, which again seems related to the baseline digital culture which is lower in the organizational units of company B, except for the digital division.

Interviewees at both companies agreed that they are trying to strengthen their employees' digital innovation capabilities. A-CIO vividly stated: "DT is about people, it is not a mathematical formula. This is the gist of it."

Company A does this with frequent employee trainings and by employing new employees with DT knowledge, while company B does this with a system of incremental innovations to encourage innovation and with its separate business division for DT. Furthermore, company A seeks to strengthen the acceptance of the DT among its employees by leading by example, while company B tries to identify early adopters and use them as promotors of new DT projects.

Change management capabilities were recognized as one of the top three barriers to the DT among the survey respondents in both companies. Survey respondents in company B also identified the lack of the talent/skills required as the leading barrier to the DT. This is in line with interviewee B-IT who emphasized the employees are sometimes "afraid of the DT" because they lack knowledge. One of the tools company B employs in the early stages of DT projects is introducing proof of the concept into the production environment for all to see.

The pervasiveness of the DT can also be reflected in situations where employees not from the IT department take on the role of managing DT projects (Vial, 2019), even if they are technology-intensive projects but essentially based on business change. This is typical for both companies under study, where projects are managed by the business side but the IT department plays an important role in these projects and the IT manager understands the business needs.

Yet, pervasiveness can also have side-effects. In each company, too many competing priorities were ranked among the first five barriers to the DT, with some differences in the rank, being at the very top in company A and in 4th place in company B, which also reflects differences in pervasiveness and centralized/decentralized coordination, and thus the number of initiatives. The coordination of initiatives and prioritization, as well as the formulation of action plans, become important coordination tasks (Chanias et al., 2019).

Digital Transformation Projects

Interviewees in both companies agree their companies handle DT efforts from a project perspective with a strong focus on the project groups' interdisciplinary composition and the IT department playing a supportive role. Survey respondents in each company identified the inability to work across silos as a key barrier to the DT. Both companies give great emphasis to including passionate employees in the DT project teams.

DT project groups in company A contain domain experts (business side), IT department employees, process experts, and occasionally external members. The main reason for including domain experts (business side) is because they are the initiators of the DT. According to A-IT, they are also project leaders if the projects are not strictly IT-oriented because they will be more driven by the project's success. A-DIG stated the IT department is often included solely for the business users to understand the complexity of the DT efforts when a need arises to connect a new solution to the existing operational backbone. Process experts are included to ensure the coherence and transparency of processes, which may prove very challenging in some areas. These DT project teams are formed ad-hoc and all projects are coordinated by the digital solutions business unit. The digital solutions business unit led by A-CIO and coordinated by A-DIG serves as integrational support between the different employee groups that form the DT project teams. According to A-CIO, this unit's main role is not to deal with the DT but to coordinate and support it.

Company B uses similar employee profiles as company A while forming its DT project groups. The projects are usually led by domain experts (business side) who "should have the last word, because they know what they need" (B-IT). Both B-IT and B-LOG agree the IT department's role in these project groups should be and actually is mostly supportive, supporting the technical aspects. One of the main differences, as emphasized by B-LOG, is the inclusion of future users in DT projects in order for them to be involved in the DT projects from the start. When in-house expertise for successful DT projects is lacking, they seek outsourcing partners. The coordination of DT activities at the highest level (B-CIO, B-IT, the board member responsible for production) happens every day or week, while the DT group made up of DT project leaders meets monthly.

One interesting observation is that the IT department in company B saw the insufficient technical skills of the technology staff as a major barrier, while the non-IT respondents did not. Another observation of interest is that in company A, non-management respondents pointed out the poor collaboration between IT and lines of business as one of the biggest barriers.

Due to the characteristics of DT as business change projects, it is very common that DT projects are led by domain experts (business side) (Peppard, 2018), which proved to be the case in both companies, However, when DT projects follow more disruptive goals and especially in circumstances where the digital culture is risk-averse, they need to be either led by top management or by a specialized business division. From the viewpoint of project management, company B thus also follows the model of the dual nature of DT projects being on one hand more radical and riskier, and on the other, the less radical digitalization of existing processes.

Appropriate digital culture, particularly a collaborative work style, is a prerequisite for the success of mixed DT project groups. In company A, the inability to work across silos identified as a barrier to the DT could also be reflected at the level of individual DT project management. Therefore, the need to coordinate interdisciplinary teams with an organizational unit that ensures the coordination of information technology deployment and business process changes was recognized. Although these groups can also be formed as ad-hoc coordination teams, permanent coordination units can be useful for maintaining know-how and coordination skills. In the case of distributed leadership, coordination groups must be properly empowered, otherwise coordination must be supported and directed by a project manager who is at a sufficiently high hierarchical level.

A well-developed operational backbone is the foundation of a successful DT (Sebastian et al., 2017). Maintaining the existing IT ecosystem and ensuring the possibility of integrating new solutions into it is the minimum role of the IT department, while it must understand the characteristics and requirements of the DT or otherwise it could become its inhibitor. At the same time, the IT department's task in this role is to be a kind of mediator between business users' expectations and the IT operational backbone capabilities. As noted in company A, the business side that initiates changes and manages projects is often unaware of which interventions are needed in the existing IT environment to seamlessly integrate the new solutions into it. If at the same time the IT department is able to fully support the DT activities and lead the development of digital solutions, it may be considered as a bi-modal IT where digital IT and traditional IT, sometimes referred to as "two-speed IT," coexist (Horlach et al., 2016). If the IT department is unable to provide a bimodal IT operation, there is the option that the digital solution development can be separated into a standalone business division in order to mitigate the risk or the development might be outsourced and led by the business side.

The key influencing factors of the IT department's characteristics and role in DT projects are whether (1) the IT department is merely a service provider or a strategic contributor (Gerth & Peppard, 2016); and (2) the IT department has the knowledge and skills needed for the continuous, fast, and flexible development of new digital solutions and flexible and scalable digital platforms, i.e., whether it is capable of ensuring increased flexibility of the IT infrastructure (Chanias et al., 2019; Nadeem et al., 2018; Sebastian et al., 2017). Namely, new digital technologies require different skills and mindsets than previous waves of transformative technologies. Given these starting points, the

IT department can then merely have a supportive role within DT projects when they maintain the existing operational backbone and support digital solutions' integration into the existing IT ecosystem, they can develop digital solutions, it can have more business-oriented roles such as the role of process management experts or *an integrator of products, processes, and IT*, but it can even be that projects are led by the IT department instead of domain experts (business side) when the IT department is a strategic contributor.

Summary of Findings

An important starting point for decisions on the definition of the roles, tasks, and organization of the DT are the goals which the organization is pursuing with the DT. Although previous research (Denner et al., 2018; Martinez, 2019; Tekic & Koroteev, 2019) suggests that some organizations see DT as an opportunity to improve existing processes and reduce costs, while others see it as an opportunity to create new business models, products, and services, the two cases point to the pursuit of both goals — continuous improvement and disruptive innovations — within the same organization. Both paradigms require a different culture, approaches, knowledge, roles, and hence different approaches to the formation of organizational forms for DT. This can make it challenging for organizations to combine these approaches while avoiding a paradigm clash. A typical example of this is company B where a dedicated organizational unit has been introduced to design new products and business models and the DT is therefore more centralized for these needs, while the DT of existing processes is much more pervasive and organizationally centralized.

The results show that not only do variations between the two companies exist in coping with organizational forms for the DT, but those different approaches can also be combined within each company. However, when analyzing the goals organizations must pursue while designing organizational forms in order to achieve success in their DT, the main messages from each company were similar.

This analysis led to confirmation of the basic hypothesis that several different organizational forms may be used for a successful DT, but some key foundations must be in place:

- More important than the formal strategic planning of the DT is the leadership of top management (C-level), whereby it must internalize the DT as a business initiative that is integrated into all company processes.
- The pervasiveness of the DT must be ensured at least to some extent, taking account of the level of disruptive nature of the DT, the level of risk appetite, the absorption capacity, and others. On the other hand, DT initiatives need to be screened, selected, and coordinated. Organizational forms must enable the breaking down of organizational silos and the interconnection of business areas.
- DT projects must be executed by interdisciplinary teams, where the IT department's role may vary in different circumstances, but in all cases, it must provide appropriate operational backbone capabilities.

Moreover, the results of case studies allowed us to extract the influences of individual influential factors, namely digital culture, the IT department's role, and the goals of the DT, on the adequacy of various organizational forms. The main findings of the analysis on the factors and their impact on the appropriate organizational forms for DT, the related roles, and their relationships are summarized in Table 3 in the Appendix.

Conclusion

The presented research sheds light on how companies provide an environment for a successful DT by developing their organizational forms, i.e., by combining the different DT actions, actors, their roles and responsibilities, their interplay, implementing DT strategies, and combining the design of digital software solutions with the design of organizational routines and practices.

The main theoretical implication of our study is showing how companies can develop digital capabilities that enable a successful DT by leveraging their dynamic capabilities through different configurational approaches of organizational forms. Through this approach, we combine theoretical foundations from dynamic capabilities theory, organizational forms, and the concept of DT. Moreover, key DT actions and influential factors that can lead to successful DT have been identified.

Our research results also offer some managerial guidelines as managers should be aware of interconnectedness between different aspects of dynamic capabilities development and organizational adaptation (Wójcik, 2020). First, if companies do not have a formal CDO appointed, it is useful to adopt an informal one, even if it not consolidated in a single person. Second, the IT department as a solution provider can be a potential inhibitor of the DT if the DT is perceived as an organizational change. Yet, if the DT is seen as a technological change, even a strategic role of IT will be unable to successfully accelerate the DT. Third, if a company has a clearly technology-led DT, it can work towards a disruptive DT by detaching a DT unit to form an internal start-up environment not directly linked with the main operations. Lastly, DT pervasiveness can have a tipping point after which it needs to be actively managed in order not to negatively affect DT projects. Several managerial implications proposed by previous research were also confirmed by our research, such as the seamless integration of the digitalization strategy into the business strategy is crucial, digital transformation being about employee transformation and not simply introducing and managing new technologies, and the change-management capabilities of leadership are the key to success as is the need to promote digitalization across the entire organization.

The main limitation of our approach arises from using a case study methodology with only two purposively sampled units. Therefore, generalization of our findings is only partly possible. Further research is needed to identify other possible organizational characteristics that are key to a successful DT and how they should be developed into organizational forms and capacities which enable a successful DT. It is also necessary to validate organizational characteristics and organizational forms currently identified through surveys of a broader sample of organizations.

Appendix

Table 3 Findings on influencing factors

Aggregate dimensions	Second order themes	Digital culture	Role of IT department	Goals of the DT
Strategic planning and implementation	Strategic leadership	High levels of employee trust in management can be achieved by a distributed leadership structure. When the DT culture is not yet at the adequate level a more centralized leadership is appropriate	If the IT department is a strategic contributor, the CIO can also act in the role of the CDO	Goals of the DT of a disruptive nature (e.g., increasing innovation, transforming business models) with more radical changes and greater risks require greater leadership engagement and more centralized leadership
	DT strategy	The explicitly formulated DT strategy primarily makes sense for organizations with lower level of the DT culture	*	*
	Strategic DT coordination	A distributed leadership structure requires higher levels of operationalization through coordination and development of an action plan	*	*
Pervasiveness of DT	Initiatives for DT	Culture leaning towards DT will result in more initiatives from all levels of employees. At lower levels of digital culture the establishment of separate business units or divisions may be needed to generate ideas and implement DT projects	Due to the nature of the DT most initiatives will not come from the IT department, regardless of its role	The goals that focus more on increasing efficiency and improving business decision-making result in more initiatives coming from employees who execute business processes. Initiatives will more likely come from top management and experts only if the goals of the DT are disruptive in nature (e.g.: increasing innovation, transforming business models)
	How is DT perceived by employees	How employees understand DT affects the organizational digital culture and vice versa	*	*

Table 3 (continued)

Aggregate dimensions	Second order themes	Digital culture	Role of IT department	Goals of the DT
DT projects	Interdisciplinary teams	An appropriate digital culture, particularly a collaborative work style, is a prerequisite for the success of heterogeneous DT project groups Employees who are passionate about work related to the DT (e.g., innovative, passion for technology) must be included in DT project teams, regardless of their current work position	Regardless of the IT department's role, the IT personnel serves a supportive role with DT projects when they overlap the IT operational backbone and as a mediator between business user expectations and IT operational backbone capabilities However, if the IT department is a strategic contributor, it also undertakes more business-oriented roles like the role of process management experts	When the goals of the DT are disruptive in nature (e.g., increasing innovation, transforming business models/processes), heterogeneous project teams are essential
	DT projects management	With a distributed leadership structure, a permanent coordination unit is more likely to succeed	Projects can be led by the IT department instead of domain experts (business side) if the IT department is a strategic contributor	When the DT projects follow more disruptive goals, they must be led by either top management or a specialized business division
	Digital solution development	If the digital culture is risk-averse, DT projects should be led by a separate business unit/division	The more the IT department is in the DT role, the more involved it will be in developing digital solutions In the case of a more traditional IT department, it will be unable to cope with requirements for a fast and agile digital solution development. In this case development might be outsourced or performed by other organizational units	*

* … no findings emerged from the cases

References

Alos-Simo, L., Verdu-Jover, A. J., & Gomez-Gras, J. M. (2017). How transformational leadership facilitates e-business adoption. *Industrial Management and Data Systems, 117*(2), 382–397. https://doi.org/10.1108/IMDS-01-2016-0038

Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly, 24*(1), 169–196. https://doi.org/10.2307/3250983

Caliskan, A., Özkan Özen, Y. D., & Ozturkoglu, Y. (2021). Digital transformation of traditional marketing business model in new industry era. *Journal of Enterprise Information Management, 34*(4), 1252–1273. https://doi.org/10.1108/JEIM-02-2020-0084

Cetindamar Kozanoglu, D., & Abedin, B. (2020). Understanding the role of employees in digital transformation: Conceptualization of digital literacy of employees as a multi-dimensional organizational affordance. *Journal of Enterprise Information Management*. https://doi.org/10.1108/JEIM-01-2020-0010

Chanias, S., Myers, M. D., & Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *Journal of Strategic Information Systems, 28*(1), 17–33. https://doi.org/10.1016/j.jsis.2018.11.003

Corbin, J. M., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). SAGE Publications.

Denner, M. S., Püschel, L. C., & Röglinger, M. (2018). How to exploit the digitalization potential of business processes. *Business and Information Systems Engineering, 60*(4), 331–349. https://doi.org/10.1007/s12599-017-0509-x

Dischner, S. (2015). Organizational structure, organizational form, and counterproductive work behavior: A competitive test of the bureaucratic and post-bureaucratic views. *Scandinavian Journal of Management, 31*(4), 501–514. https://doi.org/10.1016/j.scaman.2015.10.002

Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review, 14*(4), 532–550. https://doi.org/10.2307/258557

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25–32. https://doi.org/10.5465/amj.2007.24160888

Faro, B., Abedin, B., & Cetindamar, D. (2021). Hybrid organizational forms in public sector's digital transformation: A technology enactment approach. *Journal of Enterprise Information Management* (ahead-of-print). https://doi.org/10.1108/jeim-03-2021-0126

Fiedler, F. E. (1964). A contingency model of leadership effectiveness. In L. B. T.-A. in E. S. P. Berkowitz (Ed.), *Advances in Experimental Social Psychology* (Vol. 1, pp. 149–190). Academic Press. https://doi.org/10.1016/S0065-2601(08)60051-9

Fiss, P. C. (2007). A set-theoretic approach to organizational configurations. *Academy of Management Review, 32*(4), 1190–1198. https://doi.org/10.5465/amr.2007.26586092

Gerth, A. B., & Peppard, J. (2016). The dynamics of CIO derailment: How CIOs come undone and how to avoid it. *Business Horizons, 59*(1), 61–70. https://doi.org/10.1016/j.bushor.2015.09.001

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods, 16*(1), 15–31. https://doi.org/10.1177/1094428112452151

Govindarajan, V., & Immelt, J. R. (2019). The only way manufacturers can survive. *MIT Sloan Management Review, 60*(3), 24–33.

Guinan, P. J., Parise, S., & Langowitz, N. (2019). Creating an innovative digital project team: Levers to enable digital transformation. *Business Horizons, 62*(6), 717–727. https://doi.org/10.1016/j.bushor.2019.07.005

Hansen, R., & Sia, S. K. (2015). Hummel's digital transformation toward omnichannel retailing: Key lessons learned. *MIS Quarterly Executive, 14*(2), 51–66.

Henriette, E., Feki, M., & Boughzala, I. (2015). The shape of digital transformation: A systematic literature review. *MCIS 2015 Proceedings*, 431–443.

Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for formulating a digital transformation strategy. *MIS Quarterly Executive, 15*(2), 123–139. https://doi.org/10.7892/boris.105447

Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization, 28*(1), 52–61. https://doi.org/10.1016/j.infoandorg.2018.02.004

Hoogervorst, J. A. (2018). *Practicing enterprise governance and enterprise engineering: Applying the employee-centric theory of organization*. Springer.

Horlach, B., Drews, P., & Schirmer, I. (2016). Bimodal IT: Business-IT alignment in the age of digital transformation. *Multikonferenz Wirtschaftsinformatik (MKWI)*, 1417–1428.

Inan, G. G., & Bititci, U. S. (2015). Understanding organizational capabilities and dynamic capabilities in the context of micro enterprises: A research agenda. *Procedia - Social and Behavioral Sciences, 210*, 310–319. https://doi.org/10.1016/j.sbspro.2015.11.371

Indihar Štemberger, M., Erjavec, J., Manfreda, A., & Jaklič, J. (2019). Patterns of approaches to digital transformation: An institutional arrangements perspective. In *Economic and Business Review*. FELU - Faculty of Economics University of Ljubljana. https://doi.org/10.15458/EBR.93

Ismail, M. H., Khater, M., & Zaki, M. (2017). Digital business transformation and strategy: What do we know so far? *Manufacturer Article*, *November 2017*, 36. https://doi.org/10.13140/RG.2.2.36492.62086

Jahanmir, S. F., & Cavadas, J. (2018). Factors affecting late adoption of digital innovations. *Journal of Business Research*, *88*(June 2017), 337–343. https://doi.org/10.1016/j.jbusres.2018.01.058

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2016). Aligning the organization for its digital future. *MIT Sloan Management Review*, *58*(1).

Kohli, R., & Melville, N. P. (2019). Digital innovation: A review and synthesis. *Information Systems Journal, 29*(1), 200–223. https://doi.org/10.1111/isj.12193

Krotov, V. (2015). Bridging the CIO-CEO gap: It takes two to tango. *Business Horizons, 58*(3), 275–283. https://doi.org/10.1016/j.bushor.2015.01.001

Liu, D. Y., Chen, S. W., & Chou, T. C. (2011). Resource fit in digital transformation: Lessons learned from the CBC Bank global e-banking project. *Management Decision, 49*(10), 1728–1742. https://doi.org/10.1108/00251741111183852

Liu, H., Ke, W., Wei, K. K., & Hua, Z. (2013). The impact of IT capabilities on firm performance: The mediating roles of absorptive capacity and supply chain agility. *Decision Support Systems, 54*(3), 1452–1462. https://doi.org/10.1016/j.dss.2012.12.016

Lyytinen, K., Yoo, Y., & Boland, R. J. (2016). Digital product innovation within four classes of innovation networks. *Information Systems Journal, 26*(1), 47–75. https://doi.org/10.1111/isj.12093

Martinez, F. (2019). Process excellence the key for digitalisation. *Business Process Management Journal, 25*(7), 1716–1733. https://doi.org/10.1108/BPMJ-08-2018-0237

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & Information Systems Engineering, 57*(5), 339–343. https://doi.org/10.1007/s12599-015-0401-5

Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal, 36*(6), 1175–1195. https://doi.org/10.2307/256809

Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization, 17*(1), 2–26. https://doi.org/10.1016/j.infoandorg.2006.11.001

Nadeem, A., Abedin, B., Cerpa, N., & Chew, E. (2018). Editorial: Digital transformation & digital business strategy in electronic commerce - The role of organizational capabilities. *Journal of Theoretical and Applied Electronic Commerce Research, 13*(2), i–viii. https://doi.org/10.4067/S0718-18762018000200101

Peppard, J. (2018). Rethinking the concept of the IS organization. *Information Systems Journal, 28*(1), 76–103. https://doi.org/10.1111/isj.12122

Qaiyum, S., & Wang, C. (2018). Understanding internal conditions driving ordinary and dynamic capabilities in Indian high-tech firms. *Journal of Business Research*, *90*. https://doi.org/10.1016/j.jbusres.2018.05.014

Schultze, U., & Avital, M. (2011). Designing interviews to generate rich data for information systems research. *Information and Organization, 21*(1), 1–16. https://doi.org/10.1016/j.infoandorg.2010.11.001

Schumacher, A., Erol, S., & Sihn, W. (2016). A maturity model for assessing Industry 4. 0 readiness and maturity of manufacturing enterprises. *Procedia CIRP, 52*, 161–166. https://doi.org/10.1016/j.procir.2016.07.040

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2017). How big old companies navigate digital transformation. *MIS Quarterly Executive, 16*(3), 197–213.

Seijts, G. H., & Gandz, J. (2018). Transformational change and leader character. *Business Horizons, 61*(2), 239–249. https://doi.org/10.1016/j.bushor.2017.11.005

Singh, A., & Hess, T. (2017). How chief digital officers promote the digital transformation of their companies. *MIS Quarterly Executive, 16*(1), 1–17.

Stuart, I., McCutcheon, D., Handfield, R., McLachlin, R., & Samson, D. (2002). Effective case research in operations management: A process perspective. *Journal of Operations Management, 20*(5), 419–433. https://doi.org/10.1016/S0272-6963(02)00022-0

Svahn, F., Mathiassen, L., & Lindgren, R. (2017). Embracing digital innovation in incumbent firms: How volvo cars managed competing concerns. *MIS Quarterly*, *41*(1), 239–253. https://doi.org/10.25300/MISQ/2017/41.1.12

Tekic, Z., & Koroteev, D. (2019). From disruptively digital to proudly analog: A holistic typology of digital transformation strategies. *Business Horizons, 62*(6), 683–693. https://doi.org/10.1016/j.bushor.2019.07.002

Tumbas, S., Berente, N., & vom Brocke, J. (2017). Three types of chief digital officers and the reasons organizations adopt the role. *MIS Quarterly Executive, 16*(2), 121–134. https://doi.org/10.4324/9780429286797-14

Turel, O., & Bart, C. (2014). Board-level IT governance and organizational performance. *European Journal of Information Systems, 23*(2), 223–239. https://doi.org/10.1057/ejis.2012.61

Urbach, N., Ahlemann, F., Böhmann, T., Drews, P., Brenner, W., Schaudel, F., & Schütte, R. (2019). The impact of digitalization on the IT department. *Business and Information Systems Engineering, 61*(1), 123–131. https://doi.org/10.1007/s12599-018-0570-0

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*(November 2019), 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems, 28*(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003

vom Brocke, J., Schmid, A. M., Simons, A., & Safrudin, N. (2021). IT-enabled organizational transformation: A structured literature review. *Business Process Management Journal, 27*(1), 204–229. https://doi.org/10.1108/BPMJ-10-2019-0423

Wang, N., Liang, H., Zhong, W., Xue, Y., & Xiao, J. (2012). Resource structuring or capability building? An empirical study of the business value of information technology. *Journal of Management Information Systems, 29*(2), 325–367. https://doi.org/10.2753/MIS0742-1222290211

Warner, K. S. R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326–349. https://doi.org/10.1016/j.lrp.2018.12.001

Weill, P., & Olson, M. H. (1989). An assessment of the contingency theory of management information systems. *Journal of Management Information Systems, 6*(1), 59–86. https://doi.org/10.1080/07421222.1989.11517849

Westerman, G., Calméjane, C., Bonnet, D., Ferraris, P., & McAfee, A. (2011). *Digital transformation: A road-map for billion-dollar organizations*.

Westerman, G., Soule, D. L., & Eswaran, A. (2019). Building digital-ready culture in traditional organizations. *MIT Sloan Management Review, 60*(4), 59–68.

Whitler, K. A., Boyd, D. E., & Morgan, N. A. (2017). The criticality of CMO-CIO alignment. *Business Horizons, 60*(3), 313–324. https://doi.org/10.1016/j.bushor.2017.01.005

Whittington, R. (2014). Information systems strategy and strategy-as-practice: A joint agenda. *Journal of Strategic Information Systems, 23*(1), 87–91. https://doi.org/10.1016/j.jsis.2014.01.003

Wójcik, P. (2020). Paradoxical nature of dynamic capabilities research: A content analysis of literature. *Baltic Journal of Management, 15*(5), 727–755. https://doi.org/10.1108/BJM-08-2019-0289

Yeow, A., Soh, C., & Hansen, R. (2018). Aligning with new digital strategy: A dynamic capabilities approach. *The Journal of Strategic Information Systems, 27*(1), 43–58. https://doi.org/10.1016/j.jsis.2017.09.001

Yin, R. K. (2017). *Case study research and applications: Design and methods*. Sage publications.