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The Gordian Knot of Practicing Digital Transformation: Coping with Emergent Paradoxes in Ambidextrous Organizing Structures

by

Pernille Smith*

Aarhus School of Business and Social Science, Aarhus University, Denmark

Michela Beretta

Aarhus School of Business and Social Science, Aarhus University, Denmark

Abstract

Despite increasing scholarly attention on digital transformation, there is only limited micro-level insights into how incumbent firms organize and manage their digital transformation efforts on a daily basis. Through a longitudinal, exploratory qualitative case study of a large firm this article investigates how organizational members respond to an ambidextrous organizing model designed to accelerate digital innovations. The firm relied on a hybrid model of separation and integration to organize and manage its digital transformation efforts. This study unfolds the implications and consequences of such a model at the micro-level. By applying a paradox lens, it shows how the coping actions of organizational members affected the digital transformation. The article illustrates how the hybrid organizing model led to the emergence of three paradoxes at the organizational level (paradoxes of organizing, attention, and knowledge sharing) that organizational members had to cope with. It shows how organizational members, through their coping with these paradoxes, indirectly affected the organizing model by altering its original design; and how the management, influenced by these learnings, subsequently adapted the model to enable a better sustainability over time. Overall, the findings show and explain why organizing for digital transformation is a particularly complex and paradoxical endeavor. They also provide important insights to managers and organizational developers, helping them to become aware of possible tensions in their organizing efforts as well as of coping strategies and practices to tackle these tensions. Finally, the article suggests different paths for further research in digital transformation and digital innovation from a micro level perspective.

Corresponding author: Pernille Smith, Department of Management, School of Business and Social Science, Aarhus University, Fuglesangs Alle 4, 8210 Aarhus V, Denmark. Email: pernille.smith@mgmt.au.dk

Introduction

In the age of the fourth industrial revolution, the diffusion of new digital technologies has created various opportunities for product and process innovation, but it has also caused numerous problems in relation to how firms organize and manage their innovation processes (Nambisan et al., 2017; Porter and Heppelmann, 2014). Increasing competitive pressures from the big tech companies and smaller digitally-born companies represent a looming threat to many incumbent firms in different industries (Porter and Heppelmann, 2014). Making a successful transition into the digital age with the same abilities as the dominant market players and new entrants is imperative for incumbents to survive and grow (Nambisan et al., 2017; Svahn et al., 2017). However, managing digital transformation efforts is not a simple matter for incumbents, and the complexity of analyzing the contingencies of different factors of this transition can be overwhelming. To these firms, digital transformation entails deep organizational changes, as they are forced to consider new business models, create new digital solutions, deliver new value to customers, and develop the needed capabilities to innovate (Rindfleisch et al., 2017). To incumbents, digital transformation therefore constitutes a challenging journey as they need to transition from being traditional manufacturing product-focused organizations to being widely connected digital service providers operating in broader digital ecosystems (Iansiti and Lakhani, 2014; Porter and Heppelmann, 2014, 2015; Svahn et al., 2017).

While current research has started to shed light on the societal and strategic challenges entailed by digital transformation (Fitzgerald et al., 2014; Nambisan et al., 2017), there is still only limited empirical knowledge about how incumbents can manage these challenges at the operational levels of their organization. This article argues that a micro-level perspective of digital transformation will enrich the understanding of how it is actually operationalized, what practices are undertaken, what challenges it entails, and how organizational members cope with these

challenges. More detailed insights on these questions will reveal the subtler aspects of digital transformation, providing a better foundation for transforming incumbents into digital organizations.

Previous studies that have investigated incumbents embarking on a digital transformation have focused on how firms use structural reorganizing efforts to realize the transformation (Hansen and Sia, 2015; Porter and Heppelmann, 2015; Svahn et al., 2017). One approach that is undertaken by many firms is separation through a 'dual structure' (Gupta et al., 2006), involving the creation of a separate digital unit in charge of exploring digital opportunities and steering the transformation of the whole organization (Svahn et al., 2017; Westerman et al., 2014). Another example is represented by integration, in which digital activities are conducted within existing firm structures (Hess et al., 2016). Structural separation and integration are by no means new topics in innovation management. Incumbents have sought to organize for radical innovation for decades and, among other solutions, have combined separation and integration as a way to explore new opportunities and exploit existing ones (O'Connor and DeMartino, 2006). It is, however, not yet clear whether radical product innovation and digital innovation are entirely comparable cases and therefore whether existing innovation research is directly applicable to the context of digital transformation.

To better capture the complexities of digital transformation of incumbents relying on a separation and integration approach, this article investigates how a manufacturing firm organized its digital innovation activities. More specifically, through a longitudinal exploratory study it investigates how the firm attempted to balance separation and integration by designing a hybrid organizing model. Through a paradox lens, it displays the tensions that emerged as a consequence of this organizing model and how coping with this organizing model affected the transformation.

The study provides several contributions to the digital transformation literature. First, it provides substantial empirical insights into the nature of paradoxes related to organizing for digital

innovation and to how and why they emerge and develop over time (Barczak, 2014; Biemans and Langerak, 2015; Nambisan et al., 2017). Second, it examines digital transformation *across levels of analysis* opening up for new conceptual bridges (Nambisan et al, 2019), bringing empirical evidence that paradoxes inherent in these organizing efforts are highly interrelated (Smith and Lewis, 2011). Third, it empirically shows the complexities of digital transformation (Barczak, 2014; Biemans and Langerak, 2015; Nambisan et al., 2017), thereby responding to recent calls for a more refined understanding of the dynamic evolution of digital transformation at the organizational and strategic levels (Nambisan et al., 2019; Svahn et al., 2017; Vial, 2019; Yoo et al., 2012). Finally, this study contributes to the ambidexterity literature emphasizing a more dynamic and interdependent relationship between conflicting demands and contradictory elements inherent in these organizing efforts than what is depicted by this literature. From a practitioners' perspective, the findings are likely to be relevant for incumbents who have embarked on a similar journey to become digital. These findings can provide important insights to managers and organizational developers, helping them to become aware of possible tensions in their organizational design as well as of coping strategies and practices to tackle these tensions.

Theoretical Framework

Organizing for Digital Transformation

Digital transformation is defined as “the use of new digital technologies to enable major business improvements, such as enhancing customer experience, streamlining operations, or creating new business models” (Fitzgerald et al., 2014, p.2). Digital technologies have opened up opportunities for product innovation (Yoo et al., 2012), allowing firms to embed digital components and services in physical products (Porter and Heppelmann, 2014). Many incumbents have embarked on a journey to become providers of digital offerings to deliver new value to customers (Dremel et al., 2017). This transition is complex for incumbents (Iansiti and Lakhani, 2014) as it constitutes a major

deviation from traditional processes, work practices, and capabilities (Piccinini et al., 2015) and many firms still struggle to exploit digital technologies for innovation (Hess et al., 2016; Westerman et al., 2014). The majority of incumbents find themselves at the beginning of this journey, facing various challenges and tensions as they attempt to move away from their existing practices (Svahn et al., 2017).

Current research has so far discussed how firms need to develop digital capabilities to embed digital technologies in products and processes and successfully exploit them for innovation (Nambisan et al., 2017; Svahn et al., 2017). Firms, however, face the challenge of balancing the creation of new capabilities for *exploration* of digital opportunities and the *exploitation* of existing ones (Svahn et al., 2017; Westerman and Bonnet, 2015; Vial, 2019). This endeavor may create tensions between organizational members emphasizing a need for change and others resisting it, thereby increasing the risk of core capabilities becoming core rigidities (Lucas Jr. and Goh, 2009). In fact, many incumbents struggle with changing the *mindset* of their employees, something claimed to be necessary to sense and seize digital opportunities (Warner and Wager, 2019; Westerman and Bonnet, 2015).

As incumbents shift toward the development of digital offerings, the blending of physical and digital will affect the way firms organize for innovation (Nambisan et al., 2017; Yoo et al., 2012). One important implication is the shift toward more *open and distributed models of innovation* (Yoo et al., 2012), where the participation and collaboration of diverse and distributed actors becomes crucial for the successful development of digital offerings (Nambisan et al., 2017). This creates the challenge for employees of having to learn how to collaborate both internally across functions and with external partners in broader digital ecosystems to co-create innovations (Porter and Heppelmann, 2014; Svahn et al., 2017).

Furthermore, the complexity inherent in digital innovations entails substantial changes in the organizational structures of firms to generate the capabilities needed to reap the benefits of digital technologies (Porter and Heppelmann, 2015; Vial, 2019; Yoo et al., 2012). In fact, while organizational processes and structures in many incumbents typically reflect the physical products that are developed (Piccinini et al., 2015), these structures become unsuitable to execute digital transformation and develop and market digital offerings (Dremel et al., 2017). These offerings constitute complex systems composed of multiple interconnected layers, comprising physical, digital, and connectivity components as well as cloud platforms upon which multiple services and applications are provided to customers (Porter and Heppelmann, 2015; Yoo et al., 2012). The environment surrounding the development of digital offerings thus constitutes a complex scenery and requires firms to transform their traditional organizational structures substantially to enable greater coordination, collaboration and knowledge exchange across functions (Forman and Zeebroeck, 2019; Porter and Heppelmann, 2015).

So far, the structural changes needed to blend digital and physical together have been discussed along a number of design dimensions. Some scholars have investigated new *leadership roles* such as the chief digital officer to manage digital transformation efforts and ensure greater collaboration across functions (Singh and Hess, 2017). Other studies have investigated how firms reorganize themselves through the *redesign of internal working spaces* and the implementation of *online platforms to spur intra-organizational collaboration* and indirectly change the mindsets of employees (Dery et al., 2017; Fonstad and Mocker, 2016). The shift toward digital offerings also entails the redefinition of existing roles and functions as well as the emergence of completely *new functions*, such as data analytics (Dremel et al., 2017; Porter and Heppelmann, 2015). Moreover, digital transformation requires firms to implement *new ways of working* for effective exploration of digital technologies (Grossman and Siegel, 2014; Hess et al., 2016; Lee and Berente, 2012). This,

for instance, is discussed with respect to the integration of agile ways of working for the development of digital offerings (Paluch et al., 2020; Piccinini et al., 2015).

These reorganizing efforts are likely to represent an evolutionary process for incumbents, where old and new structures will need to operate in parallel due to the coexistence of digital offerings and traditional products for a sustained period (Porter and Heppelmann, 2015). Because of the scope and complexity of the organizational changes needed, it is common for incumbents to rely on transient or hybrid structures to steer their digital transformation efforts and develop needed digital capabilities (Porter and Heppelmann, 2015). More specifically, *structural separation and integration* are typical approaches to facilitate the transition for incumbents toward new ways of working and the development of digital offerings (Hess et al., 2016; Matt et al., 2015).

Separation is usually adopted when there is greater distance between the firm's core activities and new digital operations (Hess et al., 2016). Recent studies report various examples of incumbents reorganizing themselves by creating separate entities detached from the rest of the organization, such as independent digital units and completely new subsidiaries in charge of exploring and managing digital initiatives (Mocker and Fonstad, 2017; Porter and Heppelmann, 2015; Svahn et al., 2017; Weill and Woerner, 2018). Structural separation can facilitate the co-location of employees, thus creating an entrepreneurial environment that fosters collaboration across functions (Fonstad and Mocker, 2016). Integration, on the other hand, entails digital activities being integrated into firms' existing structures, thus remaining close to the traditional business. This entails, for instance, the creation of cross-functional teams that remain within the organization (Vial, 2019). Integration enables to leverage synergies between traditional business areas and the new digital activities and to ensure complementarity with firms' existing products (Dremel et al., 2017; Hess et al., 2016).

Overall, while current research has started to investigate how digital technologies will affect the way incumbents organize for innovation, the organizational level implications of such organizing efforts are still less understood. Limited attention is placed on investigating the structural changes entailed by digital transformation at a more micro-level of analysis, for example studying how incumbents transition toward the development of digital offerings (Vial, 2019). While examples of integration and separation approaches are mentioned in the literature, a key gap that remains unaddressed is how these reorganizing efforts are executed in practice and how they affect organizational members. Generating in-depth insights into the micro-level aspects of incumbents' reorganizing efforts is important to unveil the challenges and tensions employees and managers struggle with in these new organizational forms and how they cope with such changes (Vial, 2019; Warner and Wager, 2019). Knowledge is needed on these aspects in order to properly manage organizations going digital. This article argues that the organizing efforts needed to blend physical and digital together can fuel tensions for organizational members that are paradoxical in nature and that require further investigation (Piccinini et al., 2015; Svahn and Henfridsson, 2012; Svahn et al., 2017; Vial, 2019; Yoo et al., 2012).

Separation vs. Integration

While research on digital transformation has paid limited attention to separation and integration, the wider literature on ambidexterity has investigated organizing efforts as a way for firms to become ambidextrous and achieve long-term competitive advantage. Ambidexterity refers to firms' ability to explore new opportunities for innovation and exploit current competences and activities (O'Reilly and Tushman, 2013). To incumbents on a digital transformation journey, this ability is perhaps even more relevant because physical products (exploitation) and digital offerings (exploration) are so closely intertwined. The ambidexterity literature has focused on how firms can differentiate and balance their exploration and exploitation efforts. This can be done through *temporal* separation, in

which firms alternate between exploratory and exploitative activities, or through *structural* separation, in which the two activities are spatially separated by creating distinct organizational units (Andriopoulos and Lewis, 2009; He and Wong, 2004; Jansen et al., 2009). These separate units are designed to have unique cultures, competences, structures, systems, and processes in place (Raisch et al., 2009). Other studies have focused on integration as a way for organizations to conduct exploratory and exploitative activities within the same unit. For instance, Gibson and Birkinshaw (2004) introduced the concept of *contextual ambidexterity* to discuss how individual employees can make their own judgements as to how to divide their time between these activities.

An important aspect highlighted by both ambidexterity and digital transformation research is that separation and integration should be seen as complementary solutions rather than “either-or”. For instance, focusing only on structural separation may be detrimental for a firm, as it leads to isolation and limited leveraging of synergies across activities (Andriopoulos and Lewis, 2009). Vice versa, integration without separation is also problematic because exploration and exploitation entail inherently competing logics that are difficult to combine and practice simultaneously (Raisch et al., 2009; Zimmermann et al., 2018).

However, separation and integration combined lead to the emergence of tensions and paradoxes (Raisch et al., 2009). This article argues that such tensions do not only happen at the strategic level but also unfold at the organizational level (micro-level). However, neither research on digital transformation nor on ambidexterity have investigated how such tensions and paradoxes unfold at the micro-level (Nambisan et al., 2017; O'Reilly and Tushman, 2013; Raisch et al., 2009; Vial, 2019). Most ambidexterity studies have taken a strategic perspective, thereby downplaying the complexities and tensions inherent in these organizing efforts as enacted on an everyday basis by organizational members (Schad et al., 2016). It is highly important to understand how organizational members cope with and impact these new and often paradoxical organizing forms.

Applying a paradox lens to understand these micro-level dynamics may thus provide significant insights to theorize on organizational aspects of digital transformation and ultimately improve the management of digital innovations.

The Paradoxical Nature of Separation and Integration

A paradox lens enables to unfold the complexity and ambiguity of organizing, where dynamic and conflicting forces often exist (Lewis, 2000). Paradoxes are defined as “contradictory yet interrelated elements that exist simultaneously and persist over time. Such elements seem logical when considered in isolation but irrational, inconsistent, and even absurd when juxtaposed” (Smith and Lewis, 2011, p. 386). Although paradoxes entail elements that are oppositional and contrasting, these elements are interdependent, mutually reinforcing, and complementary (Smith and Lewis, 2011). The notion of paradox is thus different from typical “either-or” approaches or dilemmas, which imply that tensions can be resolved by weighing the costs and benefits of each pole and choosing between the two (Lauritzen and Karafyllia, 2019). These approaches deny the holistic, dynamic, and complementary nature of paradoxes. In contrast, the notion of paradox points to persistent contradictions between interdependent elements (Schad et al., 2016; Smith and Lewis, 2011). Thus, managing paradoxes does not entail the elimination of emerging tensions, but requires organizations to embrace them finding ways to handle their contradictory elements simultaneously to leverage their synergies (Clegg et al., 2002; Lauritzen and Karafyllia, 2019).

The paradox between *integration* and *separation* is typically related to the creation of competing organizational designs and processes to conduct exploration and exploitation activities simultaneously (Lawrence and Lorsch, 1967). Research points to the complex and dynamic nature of this paradox. The combination of integration and separation entails inherent contradictions, resulting in an “ongoing process of equilibrating opposing forces” (Lewis, 2000, p. 769). Studies have hinted at the importance of investigating the effects of such combinations at a more micro and

operational level (Jarzabkowski et al., 2013). This is argued to be crucial to unveil how the contradictions inherent in this paradox may lead to the emergence of other paradoxes at different levels, how organizational members cope in practice with these paradoxes, and how certain practices undertaken to cope with one paradox may have unintended effects on other paradoxes (Jarzabkowski et al., 2013; Lauritzen, 2017; Lüscher and Lewis, 2008; Schad et al., 2016; Smith and Lewis, 2011). As paradoxes are often nested across levels, tensions at one level can create new challenges for another, pointing to their interrelatedness (Smith and Lewis, 2011).

The case selected for this investigation is relevant to shed more light on the tensions emerging from the combination of separation and integration. The firm resorted to separation to organize its digital transformation efforts by creating a distinct digital unit characterized by a start-up culture, unique processes, and a more agile work structure. At the same time, the firm utilized integration to prevent the digital unit from being completely detached from the rest of the organization. It did so by transferring employees from the core organization to the new digital unit. This article follows the structuralist notion of paradoxes that looks at tensions as inherent in contradictory elements of organizational structures and systems (Clegg et al., 2002; Smith and Lewis, 2011). Adopting this notion of paradox enables to explore how this hybrid structural design for digital innovation led to the emergence of other paradoxes at the organizational level, how organizational members coped with these emerging paradoxes (micro-level) and how certain coping responses had unintended effects on the balance between separation and integration. By shedding light on these aspects, the article generates more insights into the interrelationships and dynamics of paradoxes as advocated by recent research (Jarzabkowski et al., 2013; Lüscher and Lewis, 2008; Schad et al., 2016; Smith and Lewis, 2011), thus providing a better understanding of the paradoxical nature of digital transformation.

Methodology

We carried out a longitudinal single-case study of an organization that exemplifies the typical digital transformation journey many incumbents have embraced in recent years relying on transient or hybrid structures (Porter and Heppelmann, 2015). The objective was to understand the enablers and barriers of its specific organizational setup, which intended to bridge an autonomous digital unit with the rest of the organization. The aim was to study the micro-level processes of organizing to gain deep insights into the effects of macro-level strategic decisions on daily practices (Whittington, 2006) to capture the evolution of the firm's digital transformation journey. It was therefore chosen to conduct a longitudinal study.

Case Description

This article investigated a European manufacturing firm undergoing a transformation into a digital service provider. The firm employs approximately 20,000 employees globally and is a world leader in the water pump industry. It has a long and proud tradition of innovation and development of advanced engineering and technological hardware and employs more than 1,300 employees in its R&D functions. Three years ago, the firm embarked on an ambitious digital strategy in which it aims to embed digitally enabled services in its existing products. By utilizing intelligent pumps, cloud connectivity and digital services, the firm is developing applications that comprise real-time monitoring, remote control, fault prediction and system optimization. For example, in the management of large buildings, the firm is developing intelligent water pumps that can react and operate autonomously based on system demands in order to optimize the entire system performance. These pumps can be connected to either an iCloud platform hosted by the firm or to the clients' own building management systems.

While at the initial stages the focus was mainly on developing digital solutions that are embedded in its hardware, the firm is also exploring opportunities for developing stand-alone digital

solutions, such as analytics services that collect data from numerous pumps of different pump vendors. In order to achieve this, the firm is investing massively in digital transformation activities in all parts of its business. The objective is to have a significant share of its future turnover coming from digital offerings. However, the firm had limited experience with the development of digital services and products. In 2016, it decided to work closely with selected customers from the early stages of the product development process; the aim was to develop more relevant digital offerings and accelerate time to market. Thus far, the company has been successful in launching a number of embedded digital solutions. These can be characterized as mainly local solutions providing intelligent data related to one pump or a small number of pumps. Being a world leader in its industry, the firm has access to and can collect data from an enormous number of hardware devices, thereby having vast opportunities to exploit these data for various types of digital innovations and pave its way into a completely new business area: platform-based ecosystems. The projects followed in this study can be characterized as more complex digital solutions involving connectivity, data analytics, and artificial intelligence across pumps and sites, and across pump brands. These solutions are still in the making and at the point of writing this article, the firm is at the stage of testing the first systems with selected clients. This article is the account of what took place in these projects between May 2018 and March 2020.

To facilitate the digital transformation, the firm established a new digital unit focused exclusively on developing digital services and a digital platform solution. With this new digital unit, the firm seeks to create what they label a “hybrid model of digital transformation” in which the unit is both connected to and disconnected from the core organization. The authors followed the development of this organizational unit from its early stages (8 months after it was founded) to its more mature stage (31 months after the start). The organizational details regarding this hybrid setup will be described in the findings section.

The aim of this study was to select a firm that represents a *typical case* (Yin, 2017) of an incumbent undertaking a digital transformation journey to become a digital service provider. It is a typical case of reorganizing efforts to blend digital and physical together by relying on integration and separation approaches (Porter and Heppelmann, 2015). The approach studied is similar to the reorganizing efforts of other incumbents mentioned in the media and in the management literature (Audi, Volvo, Deutsche Telecom, Lufthansa, Novartis, and GE) which have also relied on separation and integration (and a combination of the two) to steer digital transformation (Fonstad and Mocker, 2016; Iansiti and Lakhani, 2014; Svahn et al., 2017). As such, the case selected is suitable and representative of other traditional incumbents transitioning toward the development of digital offerings. Because the case is typical, this longitudinal and qualitative approach enables to investigate the activities carried out in this separate digital unit and the observed organizing challenges that emerged as a consequence of this hybrid model. It thus constitutes a relevant setting to generate micro-level insights into how incumbents organize and manage digital transformation by combining separation and integration approaches and the paradoxical tensions inherent in these reorganizing efforts.

Data Collection

Data were collected between May 2018 and March 2020 from multiple sources. The first data source consists of 64 semi-structured interviews. Interviews were conducted with employees who were assigned to work in the digital unit, their line managers, and selected colleagues in the core organization. This was important to gather in-depth insights and perspectives from organizational members within the digital unit and in the core organization. A snowballing technique was used to recruit the interviewees; the initial informants in the digital unit (i.e., the managers in charge of managing the unit) constituted the starting point for the identification of relevant organizational members to interview. The interview guide was developed based on the broad initial theoretical

framework and basic information about the organizational setup in the unit. More general questions were asked about the digital unit, key digital projects, and related activities as well as how work was organized within the unit. Then more specific questions were asked about the tasks of seconded employees, perceived opportunities of working in a start-up-like environment, and challenges related to this organizing solution. Several rounds of interviews were carried out with key organizational members, and in the 2nd, 3rd, and 4th rounds the questions focused on understanding the evolution of events and tensions revealed in previous interviews, the coping responses, and detecting emergent tensions. The interviews were recorded and transcribed to ensure reliability (Miles and Huberman, 1994).

Furthermore, 270 hours of non-participant observation were carried out. These observations included daily interactions, meetings, training sessions, town hall meetings and other events in the digital unit and the core organization. Observations were useful to get a more in-depth understanding of the organization and how the focal organizational members coped with the organizational setup and the emerging paradoxes over time and in their daily practices. By observing daily interactions and meetings, it was possible to collect data about the dynamics of the digital developments, the effects of the hybrid organizational setup on employees within and across the digital unit, and their behaviors and social interactions. Being an inductive study, these observations also served to contextualize the setting, as inspiration for interview questions, and for triangulation of data.

A vast amount of document data concerning the unit's work procedures and way of organizing, strategy statements, corporate communications, project presentations, annual reports, and newspaper articles were also collected. These additional data sources augmented and complemented the findings emerging from the interviews and observations. In Table 1, more details on the collected data sources are provided.

Table 1. Data Collection

Interviews	People interviewed: 64	Location
	Project manager of project 1 (4 interviews 6 months apart) Product owner project 1 (3 interviews 6 months apart) Project member project 1 (3 interviews 6 months apart) Project member project 1 (3 interviews 6 months apart) Project member project 1 (3 interviews 6 months apart) Project member project 1 (3 interviews 6 months apart) Project member project 1 Project member project 1 Project manager of project 2 (3 interviews 6 months apart) Product owner project 3 Project member project 2 (3 interviews 6 months apart) Project member project 2 (3 interviews 6 months apart) Project member project 2 (2 interviews 6 months apart) Project member project 2 Project member project 2 Line manager (2 interviews one year apart) Line manager (2 interviews one year apart) Line manager (2 interviews one year apart) Line manager Line manager HR Partner (2 interviews 6 months apart) Manager digital unit (3 interviews 6 months apart) Manager digital unit Manager digital unit Program owner digital unit Colleague to project member Colleague to project member Colleague to project member (2 interviews one year apart) Colleague to project member (2 interviews one year apart) Colleague to project member (2 interviews one year apart) Colleague to project member (2 interviews one year apart) Colleague to project member (2 interviews one year apart)	Digital unit Core organization Digital unit Digital unit Digital unit Digital unit Digital unit Digital unit Digital unit Core organization Digital unit Digital unit Digital unit Digital unit Digital unit Core organization Core organization Core organization Core organization Core organization Core organization Digital unit Digital unit Digital unit Digital unit Core organization Core organization Core organization Core organization Core organization Core organization
Observation	Object of observation	Hours: 270
	Office observation in digital unit (Project 1) Office observation in digital unit (Project 2) Meetings Project 1 (weekly meetings, scrum meetings) Meetings Project 2 (weekly meetings, scrum meetings) Meetings in the digital unit Workshops and meetings in the core organization Corporate meetings and presentations	105 72 23 16 24 25 5
Documents	Type	Units
	Onboarding presentations (digital projects) Organizational presentations (digital unit and core organization) Process model presentations (digital unit and core organization) Project and team presentations Presentations of organizational restructuring (core organization) Presentations project management procedure and ways of working (digital unit and core org) Scrum meeting material Project status updates Meeting material + meeting agendas (digital unit + projects) Organizational charts (digital unit and core organization) Sales and marketing material, including demo material (projects) Posters hung in the digital unit (digital unit) E-mails (Projects) Annual reports 2019, 2018, 2017, 2016, 2015 Corporate news regarding digital activities Newspaper articles about the digital activities of the firm Videos (promotional, instructional, informational or recruitment-related)	2 4 13 21 2 9 11 26 11 4 3 25 8 5 31 13 9

Data Analysis

The data analysis proceeded in an iterative manner. In the first step, we went through the interview transcripts, field notes, and documents to identify first-order codes (Miles and Huberman, 1994). Following the recommendations of Andriopoulos and Lewis (2009), the analysis paid attention to language indicators indicative of contradictory elements to identify tensions described by the interviewees. Focus was put on coding examples of responses implemented by organizational members in an attempt to cope with the identified tensions and related challenges. In the second stage, these first-order codes were aggregated into second-order themes based on identifying links and patterns among them (Miles and Huberman, 1994). The resulting aggregated dimensions constituted the basis for the theoretical framework presented in the following section. To better refine these dimensions, relevant literature on paradoxes was consulted (Smith and Lewis, 2011). Following the definition of paradox provided by Smith and Lewis (2011), the focus was on finding evidence of paradoxes and instances of coping with them. Here four main paradoxes were identified, using existing labels from paradox and innovation research to refine and describe them. During this coding process, evidence and examples of relationships were sought between paradoxes and responses to generate a better understanding of how paradoxes were linked through the coping actions of organizational members. Both authors were involved in the coding process to minimize individual biases and constantly debate emerging interpretations until an agreement was reached. Table A1 in the appendix reports the data analysis and coding process leading to the identification of paradoxes and their underlying tensions.

Findings

The following analysis outlines how senior management sought to manage the strategic paradox of separation and integration by designing a special organizing model (the hybrid model). It presents the model outlining its components, underlying ideas, and intended effects. It then shows how this

model led to the emergence of paradoxes at the organizational level that affected everyday work. Finally, it illustrates how these organizational-level paradoxes, through organizational members' coping actions, looped back and altered the organizing model, leading first to a hollowing out of the very premise on which the model was based, and then to an organizational coping with the hollowing out effect through new design features of the model.

Strategic Paradox of Ambidexterity: Separation and Integration

Digital transformation had been on the strategic agenda of the firm for a number of years. There was a clear sense that radical changes—both organizational, structural, and cultural—were necessary to succeed in the digital journey. The firm had previously experimented with various organizational setups for the development of digital innovation; from the creation of a fully integrated unit within the existing R&D department (integration) to a corporate venture outside of the firm (separation), but neither solution worked out optimally. It was important to the firm that new digital solutions were tightly connected to the existing product lines to leverage synergies and ensure complementarities between them. As a consequence, in 2017 the firm decided to establish a new digital unit focused exclusively on the development of digital services/products. A “Hybrid model of digital transformation” was created to ensure greater synergy between the digital unit and the rest of the firm by being both connected to and disconnected from the core organization. The idea was to create a startup-like environment in which members should not be constrained by the rigidities of the core organization but should not be completely detached from it either. In a newspaper interview the Head of digital transformation and of the digital unit, explained,

By driving the innovation from the inside, we have the best opportunities to get the entire organization on board. If digital talent comes from outside, or if our employees get their competencies outside the company there is a risk that a "them" versus "us" situation emerges. Our digital unit is managed like a startup, and we have the freedom to work in new ways and in dynamic teams. We will not develop something radically new that will substitute the existing (products). We will build some digital layers on top of the amazing products we already have. (Head of digital transformation in an interview to a European newspaper, January 26th, 2019)

The new digital unit was placed in an old factory building a few kilometers from the firm's R&D and IT departments. The unit was decorated with the intention to create a hip startup environment with mobile furniture, open spaces with no fixed seats, flexible meeting rooms, and several areas to experiment, collaborate, and present work. The people who worked in the new unit were formally employed in other departments in the core organization. This was intended to keep them anchored to the core business while working in the digital unit.

The relation they would have to the home organization and the ... self-consciousness of the home organization; that this is a temporary thing and that we are creating a new core, is the main driver behind this (setup). (Manager, and one of the architects behind the digital unit setup)

It was also intended to secure interdisciplinarity within the digital projects via representation of various departments inside the unit. Formally, unit employees' time had to be distributed between the digital unit (80%) and the core organization (20%). Furthermore, each employee was allocated to only *one* project at a time to create commitment to the project in question.

With this setup, the firm expected the seconded employees to become ambassadors (in the core organization) of a new digital mindset through their tales from the digital unit. Moreover, the idea of the 80/20-time distribution was that approximately one day a week, the employees would interact and share knowledge with colleagues in the core organization, primarily their home department. This was considered important to facilitate alignment across digital projects and functions, both in the digital unit and in the core organization. It was also the intention that the seconded employees would be representatives of the vision of the core organization in the digital unit.

The way of knowledge sharing was exactly this about having people seconded into [the digital unit]. This would mean that they would have their daily life at the digital unit, would create learnings there. But then they had an obligation to bring that back to the department and the organization...due to the need for aligning what we do across projects and across the solutions. So that we don't sit and do new concepts and new components in silos. That

what we do, we do on these common platforms and we share that across the solutions. That is the major prime of this. (Line manager, core organization)

Hence, this hybrid organizing model was an attempt by the firm to foster ambidexterity by combining separation and integration. In the literature, it is suggested that “such separation tactics help manage bounded rationality by ensuring focus” (Andriopoulos and Lewis, 2009, p. 697), as they enable the separation of conflicting efforts and tasks related to exploration of new opportunities and exploitation of core competencies. On the other hand, separation may also lead to isolation from the rest of the organization, limit potential synergies, and impede coordination and knowledge integration between otherwise related innovation activities (Gibson and Birkinshaw, 2004). Therefore, the firm had to determine the processes through which the hybrid unit could be integrated in a value-enhancing way.

The unit started out on a very small scale in 2017, with 3 projects and about 15 employees. Two and a half years later, the unit hosted about 160 employees working on projects in areas such as platforms, IoT (Internet of Things), UI/UX (user interface/user experience), data analytics, artificial intelligence, ecosystems, integrated service applications, and connectivity. However, as the unit got started, it became clear that the “Hybrid model of digital transformation” was a complex and ambiguous construct, leading to differing coping strategies among organizational members.

The following sections unwrap the hybrid model in more detail, showing how organizational members inside the digital unit and in the core organization responded to it. More specifically, the analysis illustrates how the model led to the emergence of three organizational-level paradoxes (organizing, attention, and knowledge management), reflecting specific elements of this organizing model, and how members coped and responded to them. Some responses led to a destabilization (a hollowing out) of the hybrid model, while other responses enabled the maintenance of the model. Finally, the analysis shows how the firm detected these organizational-level (sometimes individual

level) responses and managed them by adapting the hybrid model to incorporate the emergent opportunities and address the challenges.

Organizing Paradox: Autonomy and Control

The hybrid organizing model granted people in the digital unit high levels of autonomy regarding their projects. This was possible because the digital unit was established with a certain degree of separation from the core organization. *Project-level autonomy* is defined as the “decentralization of decision-making power to those who will actually carry through the work, and it also represents the ability to deviate from a detailed plan” (Tatikonda and Rosenthal, 2000, p. 406). Project-level autonomy includes the freedom to choose how work is organized and executed within a project, what resources to use (i.e., selection of team members), and how such resources should be deployed (Tatikonda and Rosenthal, 2000).

The head of the digital unit explained the operating model in a blog article,

When it comes to digital offerings and our software development, the way we run our budget is different. We don't ask teams to fill in long templates, but we do ask them to think about the money-making logic and what type of challenges and pain points they are solving, and if customers are willing to pay for the solution. (...) The team has limited time. Typically, software development runs in sprints and the longest sprint we have is 90 days. (...) It is entirely up to the team to decide what scope they want to deliver (...) We don't ask the team to generate a return of money. (...) We encourage teams to go out and bring back as many new users of this offering or service as they can. With this approach we can talk about money and return of investment at a later stage. (Published on April 28th, 2018)

The decision to create a digital unit with greater autonomy than the rest of the organization was an attempt to balance the tension between autonomy and control. Current research highlights that digital innovation is not a well-bounded phenomenon, as the scope and features of digital offerings are not fixed and can continue to evolve and be expanded over time (Nambisan et al., 2017; Yoo et al., 2012). This hints to the combinatorial characteristics of digital innovations (Yoo et al., 2012). However, an implication of this is also the increased complexity of innovation processes (ibid.). Providing autonomy to experiment with various solutions can create problems of integration and

compatibility across digital products and platforms (ibid.), highlighting the need for control to facilitate alignment and synergies (Porter and Heppelmann, 2014).

In this case, providing an autonomous environment where employees could innovate and experiment with digital solutions was seen as essential by the firm for two reasons. First, the complex nature of the digital solutions to be developed required experimentation and testing with customers to continuously adapt and refine them. Second, experimenting with different digital solutions would enable the firm to gather learnings on how to expand their scale and scope across products and platforms over time. Nevertheless, such autonomy also created issues of integration and alignment. Balancing autonomy and control was thus seen as an ongoing concern. At the organizational level many examples of this balancing act and coping attempts were observed, and some of these will be described in the following.

Choice of platform. Being given full autonomy to experiment and develop new digital applications, one project, Project 0, chose to collaborate with an external provider of cloud platforms. At the same time, the firm was developing its own in-house IoT platform, but that project had encountered numerous challenges and was not fully finished at the time. Therefore, in order to avoid delays, Project 0 decided to move forward with the external provider's platform. This choice raised concerns in the senior management. They worried that, if other projects made similar choices, this would lead to different digital applications running on different and perhaps incompatible platforms. This would, in the long-term, make integration of applications difficult, if not impossible.

We did leave it autonomously to the project to actually make those design decisions that I mentioned before; this about which platforms to build on... which technology choices to take. [...]. But I also realized, since the objective of this project is not just learning, but it is actually to make something which is commercially viable and can also scale-up as a business. Then we need to build it on the existing or upcoming platforms and solutions. I would say we should have been more focused on supporting them better from the beginning and which decisions to take and which directions to use, which platform to use. (Line manager, core organization)

The digital transformation literature highlights that when firms rely on different digital platforms, this can create issues such as redundancies of efforts, integration, and interoperability of the platforms and developed applications (Sia et al., 2016). In this case, it was found that, to avoid this scenario, the management decided that all digital projects had to be run on the firm's own IoT platform. This directly impeded the work of Project 0 that could no longer proceed, and the project was paused for more than 6 months. More broadly, with this decision, the autonomy of the digital projects was reduced. Unfortunately, the in-house IoT solution continued to encounter a number of difficulties and delays, thereby creating a bottleneck for all the digital projects who depended on a well-functioning platform to test and launch their work. The IT department was responsible for developing the IoT platform. To make the proper connection between the applications developed in the digital projects and the platform, developers from the IT department were allocated to work in the digital projects. That way they would work as the link between the platform (the back-end) and the digital projects (the front-end), making sure that the project's work was going to be compatible with the platform features. However, because the development of the platform continued to experience technical problems, many IT developers were called back to the IT department and allocated to work solely on the platform. This further halted the development in the digital projects. To one of the projects, Project 1, this meant a complete halt in its work, because they could not move any further before they had a functioning platform to connect to and there was no one from the IT department in the project to tell them how to proceed,

The problem is that we can't get something—we can't get further if we don't have the platform. And the guys that should work on our platform part have been taken off and are used for something else... And nobody really told us, but then we found out because nothing was delivered. (Employee on one digital project)

The project manager of Project 1 spent many months negotiating for a permission to exceptionally use an external platform to test their system, and finally they were granted permission. This decision to collaborate with an external platform vendor affected the Attention Paradox (see p. 26), as it led

the project to develop a narrower project focus rather than a holistic one. Once the team was able to work with the external platform developer, there was little need to coordinate and collaborate with internal partners. From there on, the project quickly managed to have a functioning prototype that could be tested with a real client, and the test was a success. The news spread in the organization and the “rebellious” Project 1 became a symbol of success. They had actually delivered. This approach led the management to reconsider and loosen up their strict policy of one in-house platform. They were however very adamant that the ultimate goal was still to be able to run all digital applications on one in-house IoT platform, but in the development process projects were now allowed to use external providers. Once successful, these applications should then migrate back to the firm's own platform, but it required the projects to consider this platform migration in the development process.

Managing human resources. Managerial actions affected the level of autonomy of the digital projects in such a way that project members were beginning to question the analogy of the digital unit as a “start-up” environment. Some people in the unit saw managerial interference as an attempt of the firm to take control of how the projects in the unit should work and be organized, thereby taking away their autonomy. For instance,

Now you're going to act like a start-up and just go and do as a start-up would do. Build something, you're going to build a management system, just go do it! Get some customers on board, just like a start-up does!” I think that was the onboarding and then you find out we're not actually a start-up because one thing is the organizational constraints, and we are [company name] nonetheless and not a start-up. (Employee in the digital unit)

One example that the projects were not quite autonomous related to recruitment or selection of staff to the digital unit. The project managers were not in charge of recruitment for their digital projects. Instead, they had to list what competences they needed and then had to ask the line managers in the core organization to deliver staff with the specified competences. Although the project managers

explicitly requested employees with special mindsets and social skills, these requests were often not met by the line managers. As one project manager expressed,

For the two front-enders, I had to do quite some fighting to make sure these guys were hired in. I didn't want to just have people put into my team...Some of the others I don't know at all. And I haven't had any say in whether they were part [of the team] or not.

A similar pattern could be observed in the way the performance of the project members was evaluated. Rather than being the task of the project manager (who was the employees' supervisor 80% of their work time) performance evaluations remained the responsibility of line managers in the core organization. This was problematic for the project managers because they were not in control of assessing their staff. Because the way of working and the nature of the projects in the digital unit were so different from the core organization, the assessment criteria between the two organizations were in fact incompatible.

What I've said to the line managers that have asked me, in terms of getting feedback on their guys, I've said: I don't want to put up solid targets. I will help you evaluate whether or not they have participated in the project; whether or not they've done their best; whether or not their skillset has been what is needed. But I don't want to have your solid targets that would move, because we basically don't know where we're going. (Project manager)

Out of courtesy, some line managers did consult with the project managers in the digital unit when assessing their seconded employees, but this was not mandatory, so others did not. As a result, some employees in the digital unit had KPIs that were not directly relatable to their work tasks in the digital unit. When conflicted between different requests, the employees were therefore more inclined to meet their formal KPIs set by their line manager than on performing well in the digital unit,

From the point of the line manager we are measured on something different. We should deliver technology. For, if you don't deliver technology that he can present, then the department may not have any relevance! So, whenever the digital project would like to involve me in something; for example, go to customers – then that's not my core task and I'm not measured on that. So, whenever I go spend time on visiting customers, I take time from what I'm actually measured on from my department. So that's a conflict! So, if part of my salary is based on these KPIs... then they tell me: 'This is a priority, we would like you to do this.' So, I tell them (eds. in the digital unit): "I will decline these meetings, but

if I have time, and have a personal interest, then I would really like to join this, but I have a main task here, so I prioritize this.” Of course I do! (Engineer, employee seconded to the digital unit)

This type of prioritizing led to lack of commitment and continuity in the projects in the digital unit, decreasing employees' project focus. After receiving complaints from project managers in the digital unit and from conflicted employees, senior management decided to formally include KPIs related to the work in the digital unit. In doing so, the project managers became less dependent on the line managers in the core organization. These initiatives therefore reduced the control of the line managers.

Agile ways of working. The digital unit was intended as a temporary organizational setup to enable rapid learning and experimentation about the development of digital solutions. Over time, the ways of working in the digital unit were meant to be transferred to the core organization, thereby decreasing the cultural gap between the two parts of the organization. To manage and accelerate this process, the firm decided early on to mandate *agile* ways of working both in the digital unit and in certain business development teams in the core organization. Research highlights that agile methodology is important to enable employees to experiment with digital solutions on a small scale before scaling the solutions to the rest of the organization (Dremel et al., 2017; Paluch et al., 2020). In this case, a centralized project management office made presentations of a particular agile approach (SAFe) to all involved parties. However, the actual implementation of agile work methods was not carried out in a centralized way. For example, in the digital unit it was up to each project to autonomously determine how to use agile methods in their work. As a consequence, the ways of working agile differed greatly between the digital unit and the core organization, and even between projects within the digital unit,

When we implemented the SAFe model here in the digital unit, we didn't really... we decided that we should only do it on two levels and that means we don't have the highest level, the governance level properly implemented. And it's actually there we find now the issues (...) we chose not to do it because it complicates things a lot. (Project manager)

Some projects decided only to apply part of the agile model (the part that made most sense to them) and not the parts that were more cumbersome. The fact that the digital projects chose different approaches to working agile, meant that when projects in the unit and the core organization interacted their ways of working did not correspond. When realizing that this created dis-alignment, the management took more active control of the implementation of agile work methods and began to formalize its use, mandating extensive training to all the members of the digital unit and also to selected units in the core organization. Some project members in the digital unit complained it was another move away from autonomy. This decision to mandate a standardized agile approach also affected the Knowledge Management Paradox (see p. 29) by creating a better balance between formal and informal knowledge sharing. The agile framework facilitated alignment and communication across projects.

These examples show how the firm initially let the projects work autonomously and how such autonomy proved to jeopardize the long-term strategic goals of the digital transformation. As the management realized the projects were moving in many different directions, making coordination and reintegration difficult, they decided to increase control of the projects, taking a number of actions to align and formalize ways of working in the unit. These actions affected the higher-level paradox of separation and integration, by bringing the balance more towards integration, getting the digital unit closer to the core organization.

Attention Paradox: Narrow and Holistic Focus

In the digital unit, employees had to balance two seemingly opposing approaches: Focus intensely on their project and take in diverse information from multiple sources to develop more holistic thinking. One objective with the hybrid setup in the digital unit was to shelter members working on the projects from distractions and rigidities of the core organization. This is argued to be important by research to achieve focus, speed, and commitment of the project members (Paluch et al., 2020).

At the same time, the digital projects in the firm were also interdisciplinary bringing in many sources of knowledge through the seconded employees to ensure a broader, more holistic approach. This is in line with the tenant that the complexity inherent in digital innovations increases the need for heterogeneous knowledge resources to be accessed and integrated (Nambisan et al., 2017; Yoo et al., 2012). The management highlighted that holistic thinking was important because the digital solutions had to be integrated with other solutions in both the core organization and the digital unit. This is in line with the digital transformation literature which emphasizes the need for a holistic and systemic view to make different digital elements work as a cohesive whole (Fonstad et al., 2016; Henfridsson et al., 2014; Porter and Heppelmann, 2014). In this sense, the digital projects had to constantly balance a narrow project focus and a holistic outward looking focus. This was a difficult balancing act and in many cases the projects coped with this paradox by leaning more towards a narrow rather than a holistic focus. In the following some examples are reported.

Incentives to align. One issue leading to an excessively narrow project focus was related to incentives. In the digital unit, there were no formal incentives to favor alignment across projects. In fact, people appeared to be more focused on succeeding with single projects rather than learning from each other and leveraging synergies. Even when the seconded employees were visiting their home departments once a week, they were not inclined to discuss their work with their colleagues. As a line manager in the core organization said,

I have been a little amazed by our own people sitting very close, table to table, not knowing very much about what they're doing in the same department because they are so focused on their digital project and their specific tasks. They don't have the resources to be interested in what's going on.

As a consequence, there were instances in which projects in the digital unit and projects in the core organization did not coordinate with each other, although they had many adjacent touch points. For example, at one point, a project member in the digital unit was developing algorithms for controlling

part of an application when, by coincidence, he discovered that a colleague in the core organization had been working on a similar task for some time. As the colleague stated,

They (a project in the digital unit) have also started to work on that (ed. an application) and they have even started to implement algorithms and technical things and then we said to them, “Why the heck are you doing that? You could just ask.” We do some of those things! Maybe there are some areas where we cannot sell the physical hardware, but at least we can reuse stuff, such as the software, the intelligent part; there is no need to start all over again. And that’s where I think there is a lack of overview, a lack of understanding, and a lack of also being able to reach out to see what others have done. (Employee in the core organization)

The literature argues that a too-narrow project focus is problematic as it could prevent the building of a portfolio of digital resources to be used for current and future projects across the organization (Svahn et al., 2017). In this case, some line managers in the core organization tried to manage the lack of interaction across projects. For example, a line manager, who had several employees seconded to different projects in the digital unit, realized that he had to proactively create interaction and conversation beyond the single projects,

I need to be more focused on [the fact] that he is actually sharing and meeting colleagues outside the project (laughing), in order to be exposed to the other parts of the company. Again, what tools could be used, what mindsets and things like that. So, what I have done with this employee and others when they start—the first thing I actually do when they start is that I arrange a series of introduction meetings with what I consider key persons.

Such initiatives also affected the paradoxes of Knowledge Management (see p. 29) and Organizing (see p. 20), pulling the balance more towards formal knowledge sharing and control. As time passed by, some line managers decided to reduce their seconded employees’ time in the digital projects. Some employees who were previously seconded to only *one* project in the digital unit were now allocated to work in 2-3 projects at the same time (some of which in the core organization). This decreased the employees’ dedication to their project in the digital unit.

Project boundaries. Another issue related to a narrow and holistic focus concerned the boundaries of the project. Current research highlights that, as digital innovation increases the heterogeneity of knowledge resources needed, this also leads to more uncertain and unclear

boundaries with respect to which actors should be involved in the development of digital solutions (Nambisan et al., 2017). In the case firm, the digital projects were designed to be interdisciplinary and involve employees from various departments due to the complexity of the digital solutions. However, it was not always clear to the projects which departments should be involved. As a consequence, the sales department had only been included to a limited extent in the digital unit projects, and in those cases the department was only invited at a late stage in the development process. This meant that the business models for the new digital applications had been designed with little to no input from the sales department, the unit with the greatest knowledge about the customers' needs. This turned out to have significant consequences. For example, the business models of some digital applications were designed to be based on a subscription-based model. When the sales staff heard about this, they were upset because, according to them, this choice was out of touch with what customers wanted and reflected a lack of knowledge about who the customers are,

We have no indications that say that we should go with the subscriptions (...) we talk to customers—they hate subscriptions! They don't want subscriptions and there is also [a] value chain problem, because when you sell something as we are—we are very much a box product, so we sell something that is in stock at a wholesaler. (...) But it is then sold to a third party. So, there is a full value chain...so maybe you have something to bring to the guy in the end but you don't really – you are not engaged with that customer. (Employee in the core organization)

This example illustrates the issue of determining the boundaries of a project and how to balance narrow and holistic focus. Not including enough stakeholders may lead to a narrow project focus and limited integration with the core organization, but including too many could create increased complexity and cumbersome coordination in decision-making processes. Furthermore, this issue also reinforced the separation between the digital unit and the core organization, as the sales department felt excluded from decisions they were sure they could contribute positively to.

However, as the various digital projects progressed towards working prototypes, the employees in the digital unit became increasingly aware of the critical knowledge of the sales

department. As a result, one of the product owners in the digital unit took the initiative to create a series of coordination meetings regarding ‘Sales of Digital Applications’, inviting colleagues from other digital projects and representatives from the sales department to discuss and share “Lessons learned in the digital unit projects on sales” (title in the meeting invitation). During these meetings, they discussed sales channels, sales models, selling solutions and training of sales staff, tracking progress of KPIs in CRM and SAP, customer training approaches, logistic/stock decisions, and cross selling (extract from the meeting agendas) and they agreed on some alignment across the projects. These meetings led to a widening of the projects’ narrow foci towards a more holistic view among the participants. Such initiative, nevertheless, also affected the Organizing Paradox depriving to some extent the projects of their autonomy.

Knowledge Sharing Paradox: Formal and Informal Knowledge Sharing

Another intention of the hybrid organizational setup was that the employees in the digital unit should share the knowledge they gained in the unit with their colleagues in the core organization. Sharing knowledge was considered essential to create an organization-wide digital mindset. Literature highlights that this is important considering that innovation activities become increasingly horizontal with digital innovation (Yoo et al., 2012). In this case, the knowledge generated in the digital unit had the potential to be applied across multiple products and platforms in the organization. For instance, it was the intention of the firm that the software solutions and services developed in the digital unit could also be applied to other products in the core organization more broadly. This required the sharing of knowledge and learnings between the digital unit and the core organization.

Initially, knowledge sharing was not formalized in the digital unit. It was supposed to emerge in an informal manner, allowing seconded employees to connect to other individuals autonomously based on their personal initiatives, network, and individual motivations, rather than based on formalized procedures. The seconded employees were aware of their special role as boundary

spanners. For instance, various interviewees mentioned at the early stages that they met spontaneously and informally with various colleagues in the core organization to share key learnings and relevant knowledge. They expressed that this was a way to facilitate alignment between the activities conducted in the core organization and the digital unit, as well as to ask for help and support from other colleagues. Informal knowledge sharing was based on individual initiative and the choice to share knowledge that an individual deemed important and relevant with whomever they considered to be a relevant receiver. This freedom appeared to have a motivating effect for some unit employees, leading to repeated instances of knowledge sharing activities.

I'm a huge fan of network, and knowing what people are doing. So I know what everyone else is doing in the service department (ed. core organization), and I know what I can use them for, and I really use that (...) So this morning I was doing presentations for some of the service people (...) so in that way we get to collaborate quite a lot. (Digital unit employee)

Bringing in employees without connections. The example mentioned above concerned individuals who had a long history in the firm. However, as the digital projects started to grow, two recurrent practices emerged that affected knowledge sharing between the digital unit and the core organization. First, the firm increasingly insourced external developers and consultants with the needed competences to conduct specific tasks. Second, as the number of projects in the digital unit grew, the line managers in the core organization struggled to keep up with the demand for internal staff for the digital unit. They therefore began to recruit new employees from outside, seconding them directly into the digital unit. These new hires and external consultants did not have any previous relations with the core organization and they therefore only engaged to a limited extent, if at all, in knowledge transfer activities with the core organization. They also did not know how their knowledge related to other activities in the firm. The line managers became aware of this issue, but nevertheless continued these practices,

I would prefer the solution where I would hire a person into the team having the first task within the team and kind of more learning from the experience which resides in the core organization because I think that is a good baseline to have when starting in a large company

like ours. You have easier access to colleagues, to which tools do we use, to which guidelines and ways of working do we have. So that would be my preferred method. With this employee we hired him in and put him seconded directly. (Line manager in the core organization)

The result was that spontaneous knowledge sharing between the digital unit and the core organization was not as employed as intended. In some projects more than half of the project members were new hires who had only worked in the digital unit. Whereas the internal project members had a deeper understanding of the firm, its overall objectives, and how digital efforts related to these objectives, the consultants and new hires lacked all these insights and therefore tended to focus only on their work in the digital unit. Some project managers started to notice this and called for action,

I keep on mentioning this (ed. using external consultants) as a risk for our future development (...) I mean, now, my team, they are very...they're actually very good (...) in the sense that they are very much into the project now... But it's still a risk. We still need this groundedness to the company, the "greater-good-of-the-company mentality." (Project manager)

Their understanding of the firm was based only on the projects they were assigned to in the digital unit and this did not enable them to develop a more holistic understanding of the overall firm needs.

It is a challenge, actually, because then much of this forming of what it means to be in this firm is done by the project, and [it is] a little bit out of my control and too focused on these specific project needs rather than, maybe, the larger firm needs. (Line manager in the core organization)

This led to a narrow project focus in the digital projects reinforcing the Attention Paradox. It also led to an increased level of separation of the unit from the core organization. The project managers tried to get the new hires and the external consultants involved in the digital transformation and agile journey, enrolling them in training activities, but they realized that this was not enough, especially concerning the external consultants,

We are doing this digital transformation, and doing this with only, or mainly, external consultants, it seems headless, simply put. Because you want to educate people to become agile and think creatively and work as a team. But when you have external consultants, and some of these people are more connected to their company than they are to the company they are sourced into. We used a lot of time getting them into the agile mindset - they got the scrum courses, they got the PO courses, and we tried to talk to them about the retrospectives, about being honest and transparent, about trusting each other so we can fail fast and learn fast... (Project manager)

One year into the process, a serious error occurred in one of the projects. This error could be tracked directly back to a team of external software developers, who did not make sure that their code was compatible with the in-house IoT platform. This error caused a six-month delay and made the management realize that the use of external consultants had to be reduced,

We have made a huge change in team members: All the external consultants have been shipped out, and we have now only one external consultant on the team. All the others are from our own firm... The management team realized that these digital projects are going to be here forever, they don't have an end date. So, they took the decision that we can only use internal employees in the projects - FINALLY! That's what I have been asking for these last two years! (Project manager of the project where the error occurred)

By reducing the use of external consultants, the management sought to create a more seamless connection between the digital unit and the core organization, thereby increasing integration. By replacing the consultants with staff from the IT organization they hoped to create a better knowledge flow between the two parts of the firm.

Contrasting knowledge, limited alignment. Another issue with the reliance on informal knowledge sharing mechanisms was that employees in the core organization often received contrasting or ambiguous information from various sources about the state of the work in the digital unit. This led to confusion and frustration in the core organization with regards to what was actually going on in the unit and the status of the projects. This was brought up at a meeting in the digital unit,

Person 1: He (a manager in the Service Department) is frustrated about what it is that we are doing. And how do we create transparency [as to] where we do things and how we do things? We are trickling information, but information is coming from different places, and we run different ways down through the organization. (Manager in the digital unit)

Person 2: I agree, and we experience something like that too...and I think there should be some alignment...at least in how we communicate and to whom. (Employee in the digital unit referring to the Sales Department)

It led to a state where employees in the core organization, especially sales and service staff, felt they were being left in the dark. They expressed that not being informed properly and consistently gave them the impression that their colleagues in the digital unit did not want to engage with them:

I have a hard time getting them engaged, that's it (...) just go into a dialogue, because it's always us (ed. from the core organization) that come to them, it's not them who come to us. That is a bit irritating. (Employee in the core organization)

This sense led to an increasingly negative impression of the digital unit in the core organization and employees in the digital unit were also aware of their bad reputation,

I think some of them are thinking this is some bullshit hippie place with all the pallets and we're trying to invent a new way of working compared to the normal one, which the train is running on... So, there are different comments about what's going on here. They joke a lot of: "Oh we are earning the money and you are burning all the money up here in this place." (Employee in the digital unit)

The lack of knowledge sharing and the sense of being ignored affected the balance between separation and integration, reinforcing separation. One of the scopes with the hybrid model was exactly to avoid silo mentalities. The management picked up this sentiment and intervened. To deal with this issue, they decided to formalize knowledge sharing further to ensure that all information coming from the digital unit to the core organization was transparent and, most of all, *aligned*. For instance, it was decided to create a project overview and status for all activities in the digital unit to be communicated to the core organization, and organizational members in the digital unit were then required to refer to this overview in future knowledge sharing activities. This was intended to ensure alignment and transparency in the communication. However, in practice people in the digital unit were now required to be much more systematic in communicating and sharing knowledge with others. This example shows the fine balance between, on one hand, letting knowledge flow freely (informal) but risking ambiguous outcomes, and on the other hand, formalizing knowledge sharing with the risk of limiting more spontaneous and organic knowledge sharing. Such balance is highlighted to be a challenging task in the literature (Lawson et al., 2009).

Alignment of data analytics. The different projects in the digital unit had to run on the same IoT-platform and many applications were to be joined in software-based product suites. However, the projects were developing their applications in very different ways and with little or no alignment

with other relevant projects or systems or with little consideration for future scaling of their applications. This turned out to be a problem, as expressed by a line manager in the digital unit,

On the one hand you have the ability to make the pilots, then you can go and validate the value with the customer, also when using data...On the other hand we have the platform building, data foundation and good data quality...We need both ends. The teams are very focused on that pilot, and not on spending time and efforts on understanding how they do it, so other teams cannot really copy it.

Due to this narrow project focus and limited sharing of knowledge, the management decided to create greater alignment between projects by implementing a ‘data pipeline playbook’,

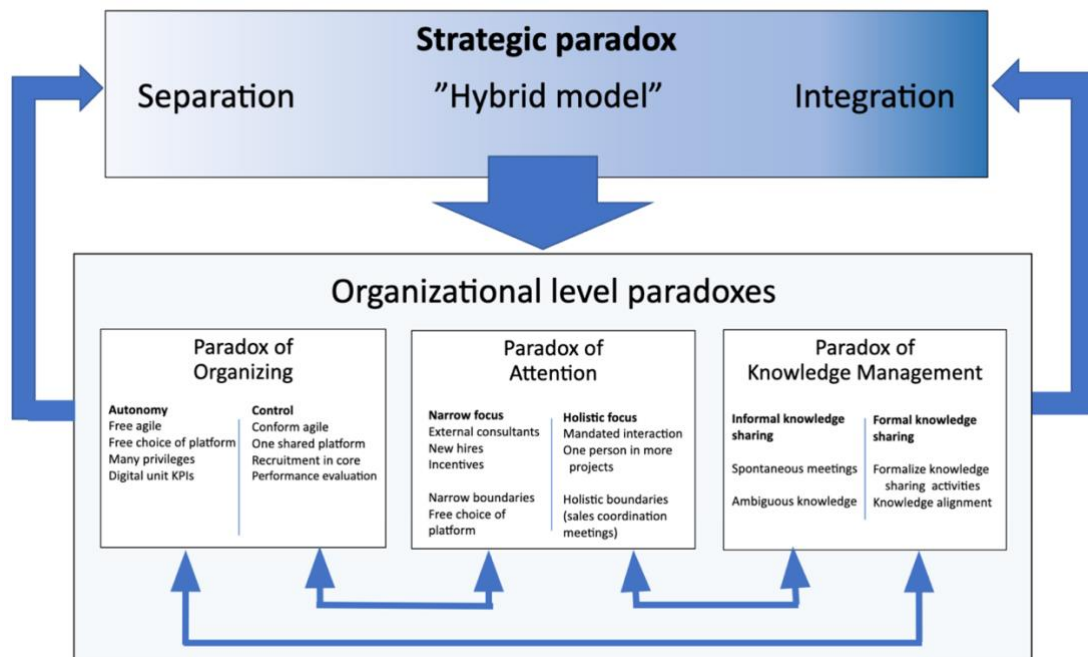
It's a description of key roles, such as the data pipeline owner, and data decision processes, how it works with analytics and data science...it was inspired from the agile manifesto, it was an inspiration to say: how can we talk about and work with data and bring some clarity. This is what it was about - having a structure in place to describe it and have a common view on it. (Line manager in the digital unit, and architect behind the playbook)

The playbook was implemented to foster a mutual understanding and codify the sharing of knowledge between projects with respect to their work on data analytics: how to gather data, how to make sense of them and how to extract relevant insights to create better value to customers with the digital solutions. A part of this initiative entailed the adjustment of the agile framework, where new roles were introduced in the agile teams (e.g. data owner) with a specific focus on the data aspect to better align with the needs of the projects. These roles should informally share learnings and knowledge about data analytics across projects in the digital unit and the core organization, but also ensure adherence to the formal playbook to increase alignment and integration. The decision to implement a playbook also affected the Attention Paradox in a positive way creating a better balance between a narrow and holistic focus, but at the same time it affected the Organizing Paradox in a negative way limiting the autonomy of the projects. This initiative aimed to also increase integration between the digital unit and the core organization, thereby affecting the hybrid setup.

Organizing for Digital Transformation

Overall, the findings highlight how organizing for digital transformation is complex and highly paradoxical. The analysis above shows how the new structural design implemented to balance separation and integration spurred new organizational-level paradoxes: Organizing, Attention, and Knowledge sharing paradoxes. Employees reacted to and coped with these emergent paradoxes by adapting their everyday work practices. Figure 1 illustrates how these emergent organizational-level paradoxes, and the way people coped with them, affected the strategic paradox of separation and integration by removing elements that kept the two opposites in balance.

Figure 1. Dynamic model of strategic and organizational paradoxes



The figure shows the interrelations between the macro-level strategic paradox and the micro-level paradoxes of organizing, attention and knowledge management. The big arrow in the middle illustrates how the hybrid organizing affects working practices at the micro-level, leading to the emergence of three new paradoxes at the organizational level: Organizing, Attention and Knowledge Management. Employees seek to cope with the paradoxes through actions, and these coping actions affect other aspects of the organization, thereby affecting other paradoxes (the arrows that go from one organizational level paradox to another). The arrows that go from the organizational level paradoxes to the strategic level paradox represent the instances when actions at the organizational level disrupts or alters the hybrid organizing model. The senior management may detect positive initiatives and adapt the original organizing model. When these new adaptations are implemented, these changes can then descend to the organizational level again (big arrow in the middle). From here employees respond to these changes and cope. The process thus continues to alternate from strategic level paradoxes to organizational level paradoxes and back again.

Every time organizational members attempted to cope with a paradox at the organizational level, such responses not only affected other paradoxes, but they also disrupted the hybrid organizing model, altering its original design. However, as organizational members coped with the emergent tensions, over time new organizing practices were included by senior management in the hybrid model in a more ad-hoc manner. Through a longitudinal perspective, it was therefore observed that the ‘hollowing out’ of the original hybrid model was not necessarily negative. Different examples in the data show how the attempts to cope with and embrace paradoxes ended up fueling development and change in a productive way (Smith and Lewis, 2011). First, the coping responses enacted by organizational members helped adapt (improve) the hybrid model to their specific needs at a given moment in time. These coping actions brought to the surface positive initiatives that had alleviating effects on the balance between separation and integration. These positive effects were noticed also by senior managers who started to extend these initiatives across the organization, thereby adjusting and improving the design of their hybrid model to be more sustainable over time. The model was adapted based on learnings that the firm could hardly have predicted in advance (given their inexperience with this setup). In this sense, by not insisting stubbornly on the original design but instead being flexible and open, the firm was able to build a dynamic ambidextrous organizing model for digital transformation to better balance separation and integration over time.

Discussion

Theoretical Contributions

The findings of this study extend the extant research on digital transformation in a number of ways. While previous studies highlight that digital transformation entails substantial changes in the structures of firms (Porter and Heppelmann, 2015), the effects of these structural changes on organizational members and the organization are seldom examined. This study sheds light on the micro-level dynamics caused by the paradoxical tensions inherent in these reorganizing efforts, as called for in recent studies

(Barczak, 2014; Biemans and Langerak, 2015; Nambisan et al., 2017; Piccinini et al., 2015; Svahn et al., 2017; Vial, 2019; Warner and Wagner, 2019). When firms design organizing models to accommodate both separation and integration, they unintentionally fuel the emergence of new paradoxical situations which organizational members have to cope with in their daily work.

Building on this, a first contribution of this study lies in providing substantial insights into the nature of paradoxes related to organizing for digital innovation. While both the ambidexterity and digital transformation literatures claim that the combination of separation and integration is a highly paradoxical endeavor (Nambisan et al., 2017; O'Reilly and Tushman, 2013; Piccinini et al., 2015; Raisch et al., 2009; Vial, 2019), previous studies have provided limited insights on how paradoxes inherent in these organizing efforts unfold at the micro-level. This longitudinal in-depth case study brings the specific nature of paradoxes inherent in digital transformation to the surface through concrete stories that illustrate paradoxes in everyday work and how and why they emerge and develop over time.

Second, it brings into evidence how and why these paradoxes are interrelated through the coping actions of organizational members, as advocated by recent research (Jarzabkowski et al., 2013; Lüscher and Lewis, 2008; Schad et al., 2016; Smith and Lewis, 2011). As strategic measures are implemented, people will react to them and enact the design locally through their everyday work (Clegg et al., 2002). The findings show that the hybrid organizing design contained novel features that clashed with existing routines and practices, and that this novelty had to be coped with. The enactment of the hybrid organizing design led to the emergence of new paradoxes unfolding at the organizational level that employees had to cope with. These coping actions can be seen as an attempt to find ways to continuously balance these paradoxes (Lauritzen and Karafyllia, 2019). However, as organizational members seek to cope with each of them, their actions affected both *other (organizational-level) paradoxes* and *the hybrid model* in a fundamental way, altering its original

design. This article therefore contributes with a more refined understanding of the dynamic evolution of digital transformation at the organizational and strategic levels, as called for in recent research (Nambisan et al., 2019; Svahn et al., 2017; Vial, 2019; Yoo et al., 2012). It shows that it is not only complex to manage every single tension individually, but also how the different tensions are deeply *entangled*, occurring at levels of a nested system (March, 1991). By seeking to understand how different paradoxes are interrelated (Jarzabkowski et al., 2013), it was possible to unfold the paradoxical and complex nature of organizing for digital transformation. If the study had examined the case without this lens, it would have illustrated a number of isolated tensions unfold at various levels of the organization, at various moments in time and in various units. That would have led to a focus on managing micro-level conflicts or challenges. It would not have been possible to see that these different micro-level tensions are in fact strongly interrelated and that, when organizational members seek to respond to one tension, those responses create other tensions or even the emergence of new ones. The article thus empirically illustrates what Smith and Lewis (2011) stated theoretically: “Tensions forged through the act of organizing are not merely distinct from one another but are also oppositional and *relational*. The result is a *system of entangled tensions*” (p. 389).

Third, and relatedly, this study shows the complexities of digital transformation empirically. Due to the large number of stakeholders involved and interdependencies across projects, it is complex for any organizational member to grasp all the potential outcomes of one’s own and others’ actions, as it requires an understanding of how the multitude of combinations blend in all the corners of the organization. This visualization of organizational complexity confirms and demonstrates that digital innovation is indeed a different endeavor from other existing forms of innovation and that this phenomenon does indeed constitute a paradigm shift (Nambisan et al., 2017; Porter and Heppelmann, 2014, 2015; Svahn et al., 2017). Digital innovations require more intense and extensive involvement of diverse internal and external stakeholders, being characterized by broader boundaries (Nambisan

et al., 2017). Being complex systems, they also entail different interconnected elements that need to be managed as a cohesive whole (Henfridsson et al., 2014; Nambisan et al., 2017; Yoo et al., 2012). In more traditional innovation activities, in contrast, the problem at hand is typically more confined, the stakeholders are fewer, the scope more defined and focused, and the number of factors that are interdependent are typically more limited. This study provides a peek into this complexity: the development of digital innovations entailed that organizational members had to deal with a variety of interconnected aspects such as digital platforms, software and physical components, autonomous agile teams, ensuring control and alignment, big data analytics, project and holistic focus, and related tensions that emerged. It thus required organizational members to simultaneously attend to and cope with all these complex aspects that are at stake, to consider their reciprocal effects on each other, and to continuously adjust their organizing efforts. This inevitably leads to a greater number of paradoxical tensions and greater complexity and ambiguity. These findings depicting complex interdependencies and how such complexity unfolds at the micro-level are unique for organizations on a digital transformation journey.

Finally, the findings also have important implications for the ambidexterity literature. Ambidexterity research has previously been criticized for downplaying the complexity of organizing when firms pursue explorative and exploitative activities simultaneously (Andriopoulos and Lewis, 2009; Boumgarden et al., 2012; Schad et al., 2016; Zimmermann et al., 2018). This literature views the blending of integration and separation as leading to positive effects. It does not consider the paradoxical tensions that may arise *as a result* of such combination (Boumgarden et al., 2012; Raisch et al. 2009). This study highlights a more dynamic and interdependent relationship between conflicting demands and contradictory elements inherent in organizing than what is depicted by the extant ambidexterity research. This study responds to calls to generate a better understanding of how organizations, in practice, manage the interfaces between exploration and

exploitation when resorting to these organizing solutions and the challenges that arise (O’Reilly and Tushman, 2013; Jansen et al., 2009; Raisch et al., 2009; Zimmermann et al., 2018). This study shows that this balancing act is adaptive rather than linear. Although the hybrid model was designed to balance separation and integration in the long-term, this balance is not enduring. As organizational members carry out their everyday work and cope with its paradoxical nature, they in turn affect the organizing structures (Clegg et al., 2002). This confirms that the paradoxical nature of exploring and exploiting is in fact an ongoing process that unfolds through everyday work in which underlying tensions persist over time and shape each other (Jarzabkowski et al., 2013; Smith and Lewis, 2011). The result of this macro-micro interaction is a dynamic ambidextrous organizing model whose initial design is altered and adjusted over time.

Table 2. Key Propositions Emerging from the Study and Avenues for Future Research

Propositions	Description	Questions for future research
Organizing for digital transformation by balancing separation and integration is likely to lead to the emergence of sub-paradoxes.	Our findings show that the design of a hybrid model for digital transformation to balance separation and integration led to the emergence of three sub-paradoxes at the organizational-level: <i>organizing, attention and knowledge management paradoxes</i> .	<ul style="list-style-type: none"> - Which other types of paradoxes (external and internal) can emerge as a consequence of creating a hybrid model of digital transformation to balance separation and integration? - What factors can make certain paradoxes more salient than others for organizational members over time?
Organizational members will react to and cope with each emerging sub-paradox, creating unintended effects on other paradoxes.	Our findings show that, as organizational members attempted to cope with emerging paradoxes by adapting their everyday work, <i>these coping actions had unintended effects (positive and negative) on other paradoxes</i> . Paradoxes were thus interrelated through the coping actions of organizational members.	<ul style="list-style-type: none"> - What other types of coping responses can members undertake to manage emerging paradoxes of digital transformation? - How do these coping responses affect other paradoxes? - How can coping responses, in turn, lead to the emergence of new types of tensions?
Organizational members’ coping responses are likely to affect the hybrid organizing model of digital transformation in both negative and positive ways.	Our findings show that the <i>coping actions of organizational members ended up altering the original design of the hybrid model for digital transformation</i> . Some of these actions led to a hollowing out of the model, while others had positive effects.	<ul style="list-style-type: none"> - How does the effect of coping responses on the hybrid model depend on the hierarchical level of organizational members?
The coping responses undertaken by organizational members will favor the emergence of new management initiatives over time to adjust and improve the hybrid model for digital transformation.	Our findings show that the coping responses of organizational members <i>inspired management to both extend some of these initiatives to the rest of the organization and to implement new ones</i> to adjust the hybrid model and enable its sustenance over time.	<ul style="list-style-type: none"> - What is the long-term effect of newly implemented management initiatives on the hybrid organizing model? - How do newly implemented management initiatives affect organizational members? How do organizational members, in turn, react to and cope with these management initiatives?

Table 2 summarizes the findings of this study in the form of propositions to highlight the key contributions of this study and open up avenues for future research.

Managerial Implications

This study has several important managerial implications. First, because tensions are nested in systems and processes (Zimmermann et al., 2018), they cannot (and should not) be managed in a classical sense. Organizations cannot address the paradoxical nature of digital transformation through a static organizational design. Instead, organizations can start by recognizing the existence of the inherent paradoxes. This means that managers in charge of organizing and managing digital transformation must pay attention to their entanglement. When seeking to manage emergent issues related to one paradox, they must also take into consideration the ramifications that these actions have on other paradoxes or how these actions can lead to the emergence of new paradoxes. By paying attention to the paradoxical nature of ambidextrous organizing designs, firms can be prepared for the coping dynamics that will unfold among organizational members when they react to the tensions inherent in the design. By paying attention to this, firms can alleviate unintended negative outcomes as they emerge.

Second, this study shows that organizations that are flexible and open towards emergent change in their organizational design may more efficiently manage tensions by adapting the organizing model to the situation at hand. This is a highly difficult balancing act, but it appears to be suitable for an uncertain and highly complex transformation. In managing digital transformation and coping with paradoxes, organizations should create greater awareness both among managers and employees that all play an important role in this adaptation process. Even seemingly small actions can have wide ramifications elsewhere in the organization: being aware of this dynamic may help organizational members understand what is at stake and how their actions contribute to facilitating or hindering the digital journey.

Although it is very important to stress that any kind of action to manage digital transformation should be seen as a part of a bigger system, there are certain initiatives that will have to be carried out in specific areas at the more micro-level. Table 3 provides a number of recommendations for how managers can deal with the micro-level issues that can emerge as a consequence of ambidextrous organizing designs for digital transformation. Keeping in mind the interrelatedness between paradoxes, these recommendations need to be considered in a more holistic manner.

Table 3. Managerial Recommendations

Emerging paradoxes	Recommendations
Paradox of Organizing (autonomy and control)	<ul style="list-style-type: none"> ● Employees should be provided with high degrees of autonomy. Implementing agile ways of working is important to enable rapid learning and experimentation with digital solutions. ● However, in order to avoid that agile teams will proceed in many different directions (creating issues of alignment and integration between projects over time), managers should also think about implementing initiatives to maintain some level of control on the work of the projects from the beginning. ● For instance, implementing training initiatives and formal agile frameworks becomes important to promote a shared understanding of agile between the digital unit and the core organization and facilitate the transfer of these new ways of working in the core organization. ● As agile teams start to experiment with different digital solutions, managers can address issues of alignment and integration by favoring the use of a shared IOT platform from the beginning.
Paradox of Attention (narrow and holistic focus)	<ul style="list-style-type: none"> ● Assigning employees to one digital project ensures focus and commitment. However, as knowledge and learnings start to accumulate, managers should develop incentive and performance systems that reward employees also for sharing learnings across projects to leverage synergies and facilitate alignment. ● Involving peripheral stakeholders from the early stages of the project (ex. sales and service people) is important to enable alignment and coordination across disciplines and facilitate the development of a holistic thinking. ● As digital projects start to grow and new employees become hired (ex. software developers), training initiatives for these employees should be developed to facilitate an understanding of the overall needs of the organization.
Paradox of Knowledge Sharing (formal and informal knowledge sharing)	<ul style="list-style-type: none"> ● In early phases, allowing for spontaneous forms of interaction and knowledge to emerge is important. ● As knowledge and learnings start to accumulate, these spontaneous forms of interactions should be coupled with formalized knowledge sharing initiatives to facilitate mutual understanding across projects and favor alignment. For instance, communities and online platforms could be implemented to facilitate sharing of knowledge about digital solutions across projects.

Limitations and Future Research

This study is not without limitations. The reliance on a single case study prompts questions regarding the generalizability of its findings. It is important to be aware of the specific characteristics and boundary conditions of the context of the studied firm. Furthermore, the focus was only on internal tensions. This firm, like any other firm engaging in digital innovation, is part of a much bigger ecosystem of suppliers, partners, customers, and other external stakeholders. Tensions in that arena are likely to be equally paradoxical and related to the internal tensions considered in this study, as hinted at for example by the existence of external consultants in the unit. Future studies should therefore seek to understand the complexity and emerging paradoxes across organizational boundaries. Another focus for future research could be to further investigate how digital innovation activities are significantly different from previous understandings of radical innovation. While this is often claimed, there is still only limited evidence of the difference. This article seeks to propose some insights into this, but more research is needed.

Conclusions

This article presents a longitudinal, exploratory case study of an incumbent firm and its digital transformation journey, by zooming in on how the firm organized and managed its digital transformation efforts at the micro-level. The findings shed light on the paradoxical tensions inherent in these reorganizing efforts. It provided more insights into how the hybrid model implemented by the firm led to the emergence of new paradoxes at the organizational level and how the coping actions undertaken by organizational members ended up affecting the hybrid organizing model in both positive and negative ways. This study highlights the importance of *time* in the digital transformation. Learning in an unexplored territory is hard and many errors are bound to be made by firms on this journey. In the selected case firm, it was by no means a perfect journey, but rather a trip full of unexpected events. By having a long-term perspective, organizations can cope with

mistakes, seeing the mistakes as learnings that had to be made in order for the entire organization to follow through. This is what the organization in this study did and it appeared to help them progress in their transformation. This is a typical tale of many organizations going through a digital transformation.

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