

NATURE, DYNAMICS AND COPING STRATEGIES IN THE FACE OF PARADOXES IN A DIGITAL TRANSFORMATION: A RECORDS MANAGEMENT CASE STUDY

Research full-length paper

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Abstract

As a change in a setting displaying scarcity of resources, plurality of choices and technological change, Digital Transformation implies paradoxes of change. Following this, we wonder how paradoxes and Digital Transformation interact and unfold. We investigate the case of a records management company engaging with digitizing and digitalizing of their offers. We implement 23 hours of semi-directive interviews, two site visits and written sources analyses that we code thematically. We find that paradoxes of Digital Transformation can be managed leveraging specificities of digital technologies. Organizing and performing paradoxes are addressed through temporal and geographical splitting strategies, relying on external and internal skills, before developing the resources to hire. National-level reflection complements the strategy. Performing is demonstrated via expertise-oriented online and offline communication supports. The paradox of belonging, fuelled by splitting strategies is the most difficult to manage, addressed through reframing discourses, posters representing the human stories behind the file and expertise-raising actions. On the basis of these dynamics, we suggest an exploratory model.

Keywords: Digital Transformation, Paradox, Case Study, Records Management

1 Introduction

New phenomena like digitizing and digitization (Loebbecke & Picot, 2015) unveil exciting possibilities and potential for change (Leonardi & Barley, 2008). However, the outcomes of the implementation of digital technologies can be disappointing, up to counter-productive, leading to disaggregation of value chains (Clemons & Hann, 1999) or the collapse of entire fields (Bourreau, Cambini, & Doğan, 2012; Chae & Poole, 2005; Lucas, Agarwal, Sawy, & Weber, 2013; Utesheva, Simpson, & Cecez-Kecmanovic, 2015).

Digital technologies carry potential for change (Avgerou 2000, Barley 1986, Chae and Poole 2005, Lucas et al. 2013, Lyytinen and Rose 2003) while technological change leverages deep structure and Organizational Transformation. But the literature (Matt, Hess and Benlian, 2015) highlights how digital transformation strategies are different in nature and pursue different goals than classical IT strategies, as digital technologies intertwine with material products (Hinings, Gegenhuber, & Greenwood, 2018; Matt et al., 2015; Tilson, Lyytinen, & Sørensen, 2010) moving beyond traditional core businesses, activities or organizational boundaries, engaging with the Socio-technical structure of the organization. Digital transformation implies a change in the socio-technical structure of the organization (Lyytinen & Rose, 2003).

Digital Transformation (DT) has been decomposed in two different processes (Tilson, Lyytinen, & Sørensen, 2010). Digitizing is a data converting process of analog signals into digital ones through digital infrastructures (Tilson, Lyytinen, & Sørensen, 2010). The converted data is then valued because it can be transmitted over flexible loosely coupled digital infrastructures as the Internet. Digitalization can be considered as a sociotechnical process of applying digitization techniques to broader

social and institutional contexts (Tilson, Lyytinen, & Sørensen, 2010). Digital Transformation covers the overall transformation process implying both digitization and digitalization.

With organizational change spur paradoxes of change that need made sense of (Cameron & Quinn, 1988; Jay, 2013; Smith et al., 2017; Lüscher & Lewis, 2008; Weick, Sutcliffe, & Obstfeld, 2005). The dynamic tensions arisen through the effort to make sense of a consistent organizing vision (Swanson & Ramiller, 1997) can be analyzed as paradoxes when the organization cannot “attend to competing demands simultaneously” (Smith & Lewis, 2011, p.381).

Paradox theory has attracted our attention on the sensemaking process and on the risk materialized by the gap between the technical and the social components of change. The gap can widen into decoupling and under-evolving social artefacts. In the meantime, the ever-evolving technical artefacts seem to have a life of their own driven by the generativity of digital technologies, meaning the possibilities opened by digital technologies and seized upon by some actors, looking to appropriate value rather than resist change.

Digital Transformation researchers have begun to outline paradoxes inherent to DT. Beyond the ambidexterity and hybridization literatures, paradoxes have started to emerge, as studies alternatively outline autonomy or control (Alvesson & Willmott, 2002; Tsai & Gururajan, 2007), personalization or standardization (Adolphs & Winkelmann, 2010), deskilling or overskilling (Barrett & Walsham, 1999; Buganza, Dell’Era, Pellizzoni, Trabucchi, & Verganti, 2015), work-life balance against possibilities of working all the time paradoxes.

What dynamics does a Digital Transformation entail through a paradox lens? How can a paradox lens help us make sense and leverage Digital Transformation?

To answer our research question we investigate a records management company with an interpretive research design, focusing on the experience of the actors. The organization under study is undergoing the process of complementing their offers with digital services, both digitization and digitalization. To study the transformation, we engage during a year-long research study, involving sites visits, 23 hours of semi-directive interviews with strategy makers, managers and employees, observation of website announcements, social network actions and professional press coverage.

We find that paradoxes issued from DT are related to specificities of digital technologies: for instance, the immaterial side of digital technologies question the sense of self of employees used to associate with the material world, namely, paper and cardboard, thus fuelling a deep paradox of belonging. In the meantime, paradoxes of performing are confronted with a lack of legitimacy to sell digital technologies tackling the organizational core as digital technologies do. In the end, paradoxes actually point to possibilities of change and value reappropriation through human-centered meaning, artefacts and expertise.

2 Conceptual framework

To understand what a paradox lens can teach us on DT and if there are any specificities related to digital technologies, we rely on a dynamic paradox-based conceptual framework to which we integrate other OT constructs to inform the transformational dynamics of DT. We built this framework specifically for the purpose of our research. Digital transformation qualifies for the characteristics of change and scarcity outlined by Smith and Lewis (2011).

With time and depth of change, appear tensions that can expand into contradictions and even paradoxes according to the degree of incompatibility perceived by actors and the simultaneity required in their management (Andriopoulos & Lewis, 2009; Smith, Erez, Jarvenpaa, Lewis, & Tracey, 2017; Smith & Lewis, 2011). Paradoxes can be emergent, or salient.

Paradox theory has mainly been used in IS discipline to study exploration-exploitation tensions (Gregory, Keil, Muntermann, & Mähring, 2015; Gupta, Smith, & Shalley, 2006) or digital-physical tensions in separate studies (Piccinini, Hanelt, Gregory, & Kolbe, 2015), fuelling the literature on ambidexterity

and dynamic capacities. Leadership has also been analysed in this perspective (Schad, Lewis, Raisch, & Smith, 2016). Our study focuses on the learnings afforded by a paradoxical lens on the overall DT, the dynamics and the specificities related to a digital context. To address both dimensions in our study, we had to maintain a wide angle covering all tensions types and enabling processual analysis.

We draw on Lüscher and Lewis's (2008) framework to build our paradox framework. We present the three types of paradoxes we use. Paradoxes of belonging are originated in the tensions in the sense of self, values and artefacts that employees associate with. They appear at the level of the team. Paradoxes of organizing refer to routines or processes that clash and are located at the organization level. Finally, paradoxes of performing engage with the accomplishment of an individuals' multiple roles and missions (Lüscher & Lewis, 2008) to achieve success and are also located at the level of the organization.

Paradox Type	Definition	Level of analysis
Paradoxes of belonging	Paradoxes in the sense of self, values and symbols	Individual (micro) or team-level
Paradoxes of performance	Paradoxes in accomplishing multiple roles and missions	Organizational
Paradoxes of organizing	Paradoxes in the processes or routines	Organizational

Figure 1. Nature of paradoxes and level of analysis (source : Lüscher & Lewis, 2008)

The formalization of paradoxes can be given through emergent discourses. Precedent researchers have chosen to focus on artefacts (Pinch & Bijker, 1984) or routines (Feldman & Pentland, 2003) or both (D'Adderio, 2008). The identification and highlighting of paradoxes are necessary to confront and assimilate them. We contend the identification can be done through discursive enactment and sensemaking. « Any change in practice adoption needs to be accompanied by a change in its underlying and supporting discourses » (Clemente & Roulet, 2015, p. 98). In other words, for a strategic change to be adopted the strategic discourse need to formalize, enact and support the change. On the opposite, the detection of paradoxes can be made within discursive interactions because they signal an interruption of the sensemaking process. The interruption of the sensemaking process is also signalled by the emergence of inertia (Lüscher & Lewis, 2008; Maitlis, 2005).

Responses are usually separated in defending, integrating or accepting reactions (Jarzabkowski, Lê, & Ven, 2013; Lewis & Smith, 2014). In our study, inertia act as intermediary but is also a defending response to a paradox. We are interested in coping strategies that have a dynamic effect on inertia and paradoxes. We only retain splitting and synthesis strategies (Poole & van de Ven, 1989). Both can be declined in sub constructs. Splitting, the least conflictual response (Jarzabkowski, Lê, & Ven, 2013), can be structural, geographical and temporal (Poole & van de Ven, 1989). Synthesis can either cover an adjusting strategy or a reframing strategy.

We use inertia as intermediary to paradoxes and a manner to access implicit or unconscious paradoxes (Lüscher & Lewis, 2008; Maitlis, 2005). Inertia accounts for resistance to change, but is related to paradoxes generation and management. Inertia, as a visible signal, sustains paradoxes identification and management. Inertia can be socio-cognitive (SC), coming from limited cognitive frames, socio-technical (ST), coming from STS resistance, have political reasons (Po), or economical ones (Eco) or, else, stem from negative psychology prejudices (Besson & Rowe, 2012).

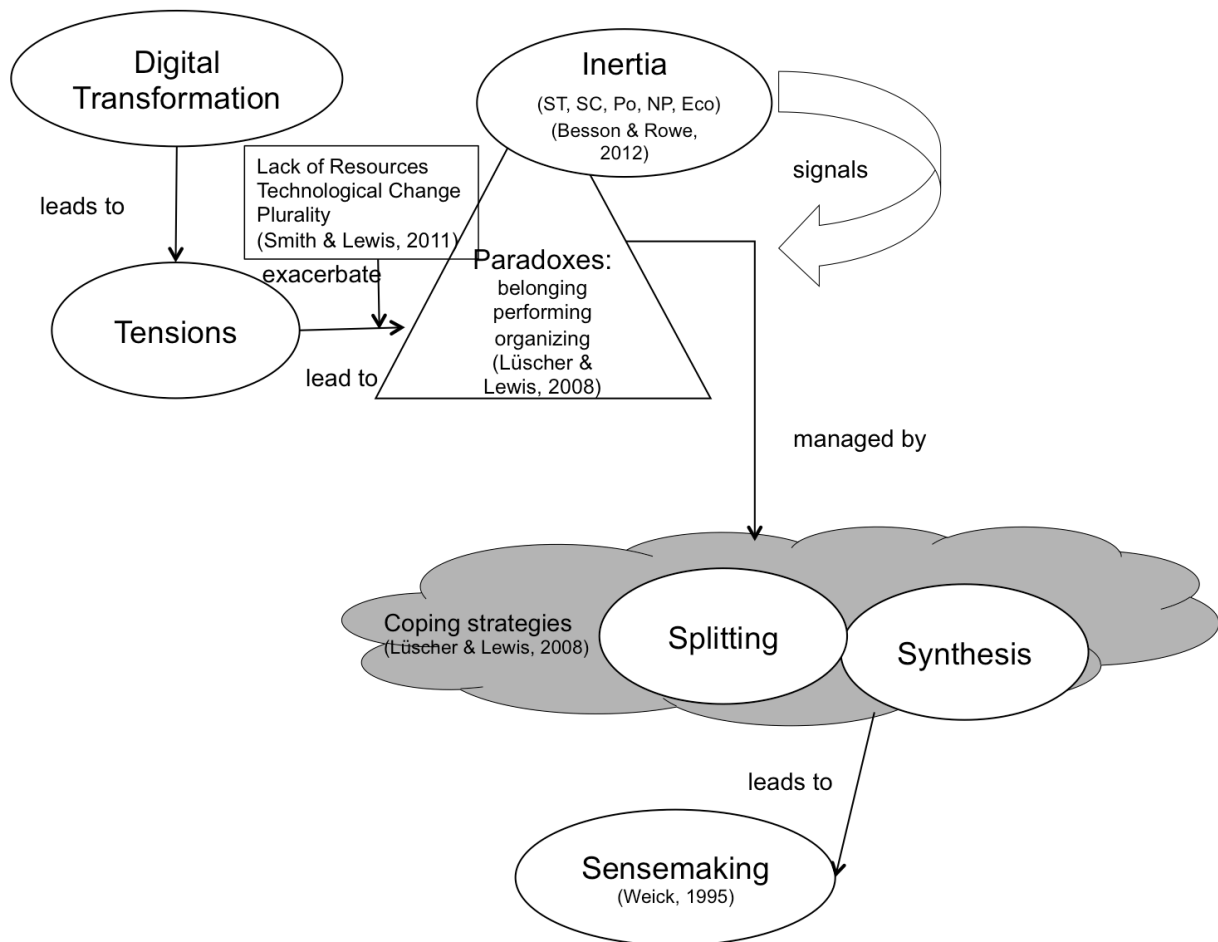


Figure 2. Conceptual Framework.

When studying change, a processual lens is necessary. Digital Transformation often improperly viewed and presented as an incremental evolution, also needs to be studied through Organizational Transformation (OT) lens. The separate conceptualization of digitization and digitalization observed in the empirical field is consistent with both theoretical lenses. Determining a priori value sources to reach presents the risk of a counterproductive prescriptive act and a mindless exploitation (Swanson & Ramiller, 2004). Digitization authorizes continuity and incrementality while digitalization supposes deep structure OT (Tilson, Lyytinen, & Sørensen, 2010). An open perspective towards the nature of change is consistent with a process perspective including temporality (Jay, 2013; Tsoukas & Chia, 2002). For that reason, among others, process research has been advocated in the study of digital transformation (Jay, 2013; Tsoukas & Chia, 2002).

3 Methodology

3.1 Case study

Our field research relies on a qualitative interpretive research design within a longitudinal case study (Langley, 1999; Pettigrew, 1990). Our interpretive approach (Walsham, 1995) enables for a reconstitution of stages before our year-long real-time data collection. Case studies are the best suited designs to answer how and why research questions (Yin, 2013).

As we relied on an interpretive stance, we had to make sure our perception of what actors had expressed was right, that is why we verified and checked by email, consistent with a proximity oriented stance. We also cross-verified dates and most factual data or events with secondary written sources, documentations, website or the professional press. Finally we cross-challenged the data in between interviewees, instancing paradoxes when interviewees did not agree with one another, scheming memos and analytical tables within mindmapping software and spreadsheets. Each interview led to a re-transcription or memo and a validation with the interviewee and their reaction, if notable was also noted and analyzed. Spatial and temporal dimensions were included in our analysis, aiming for a theoretical generalization (Walsham, 1995).

3.2 Case selection

For the choice of the organization, we proceeded to a theoretical sampling method, interviewing as many as twenty organizations in an exploratory fashion between May 2016 and May 2018. We wanted to select a medium-sized organization that was really engaged with a Digital Transformation internally. DT had to be perceived and implemented in practice beyond the strategic discourse of management. This ensured to give a practice-oriented perspective to our study. We proceeded to 29 interviews, lasting almost 23 hours. Table 1 summarizes our interactions with the field, according to titles of employment.

3.3 Data collection

The data collection occurred within a yearlong study between December 15, 2017 and December 3, 2018. We relied mainly on 23 hours (1'372 minutes) of 37 oral interactions, our main interviews lasting between 45 to 120 minutes, generating a 47.000 words (82 pages) of transcription file. We also transcribed oral informal exchanges in a journal. This gives an ethnographical tone to our research but also allowed triangulation and secured a proximity factor for the researcher. Triangulation was secured through secondary sources (internal and professional press, company website, and company posters). Interview guide was drawn from previous reading and previous research (Eisenhardt, 1989; Walsham, 1995) from literature review papers engaging with e-commerce based digital transformations. Our questions were formalized with vocabulary from the records management field collected by professional press articles and layman vocabulary for more informal exchanges.

Roles	Minutes	Number of Interviews	Dates
CEO & Partners	510	11	Jan, 10, Feb, 7, Feb, 5, Feb, 19, Oct, 19, Oct, 29
Various Directors (HR, Projects, Digitization)	368	6	Feb, 7, April, 20, Oct, 19, Oct, 29, Dec 3rd
Various employees (IS digital expert, Business developer 1 & 2, Communications Manager)	290	4	Feb, 7, Feb, 19, June, 1, Oct, 9
Two Sites visits & informal exchanges (not recorded)	90	5	Feb, 19, Oct, 29
Informal exchanges and contacts (not recorded)	90	10	Jan 10, Feb 5, Feb 7, Aug 3
External partner (bank)	24	1	Dec 15 (2017)
Total	1'372	37	Dec 15, 2017- Dec 3 rd , 2018

Table 1. *Table of Data Collection*

The topics of our interviews revolved around the digitization and digitalization projects, how they were brought to attention and how they fared, how customers perceived the transformation and what

was done to sustain the projects. Our attention was not focused on paradoxes rather the concepts emerged inductively from the field and became a topic of attention from the 6th interview onwards. We never pronounced the name but rather tackled the meaning given to the transformation and the adhesion of the interviewee to this meaning. For this reason, we translated our quotes only while writing our paper to preserve the units of meanings the longest (Temple and Young, 2004).

Interviewees were selected by spontaneous nomination in the course of our exchange and implication in the transformation. We engaged with the formal organigramm from the 6th interview onwards. Because our research question engages with understanding the meaning and dynamics of the transformation, the first interviewees were the decision-makers and actors of the transformation. Access was negotiated along the study and progressively, each new interview being authorized, and finally on seeing the benefits of questioning and reflecting, after the ninth interview (Myers & Newman, 2007).

4 Case study

4.1 Empirical setting

BigScan is a records management organization that was founded in 1986. Recently acquired by its current management in 2009, it displays 250 employees and has a turnover of 350ME. The organization proposes records management services and, in the past ten years, has started offering digitizing and digitalizing services as a courtesy to current customers before organizing its activities more proactively. We study the development of these digitizing and digitalizing activities and the tensions that develop around the appropriation of the change from the socio-technical structure.

All three types of paradoxes, belonging, organizing and performing, have appeared in our study, showing the deep generativity of digital transformation in creating and fuelling paradoxes of STS appropriation related to DT. We examine further in detail the paradoxes and related coping strategies explored by the records management company.

4.2 Paradox of performing and expertise-building coping strategy

Paradoxes of performing are originated in the tensions from multiple goals and stakeholders, be they internal or external. In our case, a paradox of performing emerges, as the organization has to choose and develop new technologies-related skills. The organization is not equipped to know which standards are going to develop and does not have an R&D department. The first attempt to develop digitizing and digitalizing services mainly relies on internal skills, meaning the IS department. First the IS Director is responsible for it, then when comes the opportunity to recruit a digital expert, with previous experience of digital thought leadership, he is tasked with understanding the stakes and being able to select adequate partners, as outsourcing providers.

The paradox of performing is built on the lack of consistent skills and the related necessity to build a digital legitimacy to access the right customer, to perform the right digital and digitized records management sale.

“Maybe we will have to change sales’ profiles in the future or at least their performance,” New Technologies Development Director

In the mean time, it also falls on the IS director and the IS department to come along salespeople to attend prospects, for a given period – until 2017. We coded this action a temporal and spatial splitting coping strategy. Indeed, there is temporization in choices to make, as the organization solely relies on standard tools and external partners and is thus able to pull the plug at any moment. The technological mission to sell technology-oriented and digital services is first attributed to the IS team before being transferred to two teams, the digitizing team and the digital business developers team. The splitting between digitizing and digitalizing also echoes geographical splitting, as a coping strategy to a burgeoning paradox related to sensemaking progress. The digitizing team has managed to develop their

practice along the traditional values and practices of records management in an exploitation-oriented mindset, highlighting the continuity of their practice with paper practice. On the opposite, the digitalizing team is for several reasons, among which political differentiation might not be the least, fierce on their disruption and differences with the traditional activity. Indeed, the director of this team is a partner of the organization. While being an outstanding salesperson, he had a special interest in complex digital services development.

As far as the strategic orientation is concerned, even though the uncertainty weighs on strategic development decisions, strategy makers are reluctant to rely on consultants to better identify the evolution of the market. They consider they are best suited to do so and money is better invested in technology or hiring skills or investing in new headquarters.

An advantage of temporal splitting resulted in the maintaining of traditional selling practices. In our case, it was successful in buying additional time for strategy makers to allow for additional resources to be found, human resources, but also financial resources leveraged through communication-oriented events in order to build and develop a digital legitimacy.

The IS digital expert is specifically tasked to participate to thought leadership within the regulator activities, taking part to the reflection and creation of norms from the inside. This mission consists in weighing on regulating decisions.

“Those are norms that engage us, as records managers, digitizers or else (...) We take part to these reflection at the FNTC¹, (...) but FNTC cannot be everywhere, we try to influence, and contribute to certain national norms, to the transfer towards IOS² (...) some of our work is also of interest to IOS,”
IS Digital expert

An interviewee established the parallel with this work to that which led to the creation of a norm protecting records management companies from the competition from moving boxes companies. And indeed the sessions around the establishment of a norm encrypting the communication between two digital safes, will eventually lead to a better protection of records management organizations in the face of a technological competition from high tech leaders.

4.3 Paradox of belonging and human-centered coping strategy

The paradox of belonging is deeply related with the immaterial quality of digital technologies through which employees define the loss of their identity.

For the employees, the immateriality of digital technologies undermines their sense of self, generating a paradox of change as the organization evolves further from their original symbolic association. Indeed, employees from the records management field associates with paper and cardboard. As a consequence, assertions to reduce paper, as witnessed in the Press have strong effects on the sense of self of records management employees. And indeed, « *The zero-paper coverage hurt us badly* » (Human Resources Manager, 2018). The aggressive zero-paper motto of some competitors and media coverage disturbed deeply the organizational identity of employees at BigScan. To cope with the paradox of belonging experienced by employees, there was a conscious banning of the wording zero-paper, to assuage « *the fears of losing one's identity* » (HRM, 2018). It did not stop here, concomitantly, as BigScan intended to renew its organizational identity, to undust it, The CEO began a series of posters staging people rather than storage boxes to recenter focus of the organizational identity on the human stories behind the file.

¹ French National Federation of Trusted Third Parties

² International Organization for Standardization that aims at elaborating international norms

“behind a credit file, there is a story, behind an insurance file (...) it is that story that we tell on these (posters),” CEO, January 10th, 2018

For strategy makers also exists a paradox of belonging that is mostly related with the loss of legitimacy and the change in customers. For the strategy makers the paradox of belonging was instantiated as the realization settled that they needed to gain and build a digital legitimacy. To do so, they needed to appear modern to customers in a sector where they were used to no interest on that part. Differentiation was kept to a minimum, mainly thanks to the longevity of the company and the professionalism that comes along. Now, they are expected to appear high tech, to have clean paintings and modern, glassy offices where they can receive customers if they want to come. Beforehand, customers mostly did not come to the storage facilities. This change in image came as a surprise to strategy makers who however quickly undertook the process of investing in new offices and renovating and rehabilitating the old ones. Similarly, they quickly took the decision to invest in a high tech scanner room that they were eager to show off.

“With the digital, they expect to see something, dustless, white room, people in blouse, white gloves, High Tech!” CEO

Coping strategy consisted in establishing the organization’s legitimacy by organizing events and take part to trade shows, demonstrating expertise. A Question and Answer session was organized for customers shortly before the GDPR entry into effect Trade shows now come back each quarter. A communications project manager apprentice has been especially recruited in this goal. Online communication has especially been leveraged, the project manager setting up the profiles of the main directors into the professional social network, LinkedIn. The company blog showcased experts’ answers on sharp policy topics, confirming a positioning towards content. In the same vein, the website was slowly updated and restructured, in 2019, as part of the action plan on the image of the company. All actions participate to the building and communicating of a digital expertise and legitimacy, eschewing a move towards content and materiality.

“For us to be the most legitimate possible, so that it does not come only from above, from a service or from Management, all services need to be engaged. I help so that we are the most credible.” Communication project Manager

The splitting strategy that is implemented is both geographical and temporal. Geographical in so far as the IS team is deemed responsible for digitization until 2017 and sometimes takes part to propective and confirmed sales meetings. Temporal in so far as the digitization skills and know-how have been compartmentalized from the digitalization team that already existed beforehand even in a very reduced fashion. First only one partner intended to be responsible for this evolution, while in effect sales people rather implicated the IS team, as the partner had very limited time to attend sales meetings.

However, inertia has multiplied at the employees level. Why change, what for, in what direction are all questions asked. Employees believe what they have been taught is still legitimate. Digital transformation can appear as ill legitimate to long-time employees. The organization wants to preserve the employees, their sense of self and expertise. That is why they favour internal promotion over recruitment. Three directors were all employees before, sometimes coming from the base level, becoming director for digital production, Chief Financial Officer or Projects and Operations Director. The latter was indeed recruited as a teleoperator progressively elevating to director level. The communication practice centered on persons and to highlighting personal expertise concurs with this concern.

The complaints around the immateriality of digital technologies can be also found within the customers’ organization. As employees within BigScan, employees of the customers’ organization complain they cannot see the results of heavy investments into digital services.

“The major hurdle of a digital strategy is that we have nothing to show, thus there is nothing in it, thus the users end up complaining...we have spent millions for nothing (...) We have to upload the history so that Electronic Files Management is at its best.” Sales Director.

We circle back to performing paradox (how to show we are good at it?) and to the interest of decision makers of customers' organizations to witness BigScan Headquarters. The CEO related it to the Image of High Tech. Thus, humanization through posters, high tech-looking HQs, and expertise-oriented communication actions specifically aimed at building content at stake are the main paths leading back to untie the paradoxes.

This paradox of belonging is built by an underlying question on legitimacy, on the company's image, both for strategy makers and employees, except it does not mean and translate in the same way, illustrating the deep complexity of a multi-level and multi-stakeholders fragmentation

4.4 Paradox of organizing and splitting coping strategy

Paradoxes of organizing emerge when competing processes are needed to reach a desired outcome. They are the least specific as the very process of organizing generates paradoxes (Lüscher & Lewis, 2008; Weick, Sutcliffe, & Obstfeld, 2005). In our case study they are deeply enmeshed within the two previous paradoxes. And indeed, organizing aims at performing in an organizational context. Belonging can be seen as a by-product of organizing and performing activities. The consequence of this entanglement is that paradoxes of organizing are also dealt with, at least partly, through the same coping strategies.

The paradox of organizing of our case study consists in the capacity to organize to continue selling traditional records management services, cardboxes within storage facilities, and be able to slowly organize to perform the sale of innovative digitization and digitalization services. The IS department was key in managing the tension, revealing a temporal splitting strategy, where strategy makers found internal resources to fill in the sales and technical needs, while progressively recruiting an IS digital expert, a Digital Business developer, then two and setting up partnerships with smaller expert providers. If this strategy allows for time to find and recruit the right persons, to let the market mature, find its standards, it does not support sensemaking within the organization, as employees do not witness the evolution but learn to rely on internal skills. Widening the time gap, the splitting strategy leads to a longer time of transition and fuels a paradox of belonging while buying time for the paradoxes of performing and organizing.

Sometimes, the temporal splitting strategy almost appeared involuntary, really constrained by the time and the lack of skills.

"The thing is that we don't decide not to go, but we don't really go because economically, it was a bit difficult..." Sales Director

"It was a huge site work, we worked from scratch, really, we had digital offers but not really, we had nothing, zero digital offers, those were opportunity contracts. We had no sales approach on the topic," Human Resources and Strategic Development Director

The table hereafter summarizes the entangled paradoxes of our case study and the actions taken to surmise the necessary resources to cope with paradoxes. A recurring construct emerged in our interviews constraints on several resources have been highlighted: constraints on technologies, constraints on getting customers and expanding in consistent markets, constraints on digital services legitimacy, and thus on reputability, constraints on skills and sales practices development, fuelling paradoxes that could not properly and fully be addressed.

4.5 Levels of analysis

Paradoxes appeared on several levels. For instance, paradoxes of organizing, usually located within the organization, behind the boundaries of the organization also appeared on the field level, as experienced by all actors of the field. Interestingly, emerges a we-field, a "we" designing the ensemble of actors from the field experiencing the paradox, suggesting a sense of belonging within the field within the paradox of organizing. In our case study, this field-level paradox is especially experienced and shared by the IS digital expert taking part to the national reflection at the federation.

“We aren’t finished, some things are still unnerving, but at the federation, they were saying if your certificates are two or three years old, well, you get the signatures once again, we said, yes, but if you have like one million documents, you can roll, two, three, ok, but once you are on the billion level, we won’t anymore...- but why? Because there are going to be too many and the machine won’t be doing nothing else, and we are going to receive more and more documents.” IS Digital Expert

Even though a coping strategy can address more than one paradox at a time, a paradox of a given level appears better managed on the same level it unfolds. To take the last paradox of organizing unfolding at the field level, concerning the need to have a renewal on certificates or else, the creation of a normalized protocol of exchange between two electronic safes, this can only be resolved at the field level because of the might of the problem. This is what led Schad and Bansal (Schad & Bansal, 2018) to actualize Rittel and Weber’s (1974) conceptualization of wicked social problems. Wicked problems cannot be solved at one sole level. The initial definition by which the understanding of the problem changes each time the problem is addressed (Rittel & Weber, 1974) also suits our model and the result by which the best way to address Digital Transformation, is to iteratively reframe the understanding of the phenomenon.

Coming back to levels, determining the level is not always simple: this is also a contribution of our study. What could appear as an individual or team-level paradox, as belonging paradox usually does (Jarzabkowski et al., 2013), is actually more pervasive in our study – a paradox of belonging can be found within the sales team, the accountant, the desk assistant and warehousepersons. Even strategy makers find themselves questioned in their identity as they struggle for markets and customers. For this paradox, the pervasive communication strategy unfolding at multiple levels and aiming for a better sense of legitimacy and improved sense of self appeared well adapted.

5 Discussion

5.1 Stages of paradox management and model proposition

In our case study, splitting strategy comes as a managing response to performance-organizing paradoxes. Both are very entangled as stated above. If splitting addresses two paradoxes, it actually fuels the last one, the paradox of belonging, unwillingly, because of different time frames, highlighting the importance to integrate a processual lens into technological change.

In our study, reframing could emerge after splitting strategies. We have seen how splitting strategy is temporary, mainly aiming at buying more time to mature, see through the results of reflection at the national level and find adequate resources to transform. In the end, those designated resources cover a wide range of adequate skills, both to sell and develop, adequate customers, legitimacy to sell digital records management solutions, both digitizing and digitalizing, and financial resources.

Reframing consists in a reappropriation of the sense of DT. Reframing appears while management tries to weigh on the meaning given to the transformation, to design a new symbol of identification focused on persons within the organization and centered on a human agency and value (Shin, 2014).

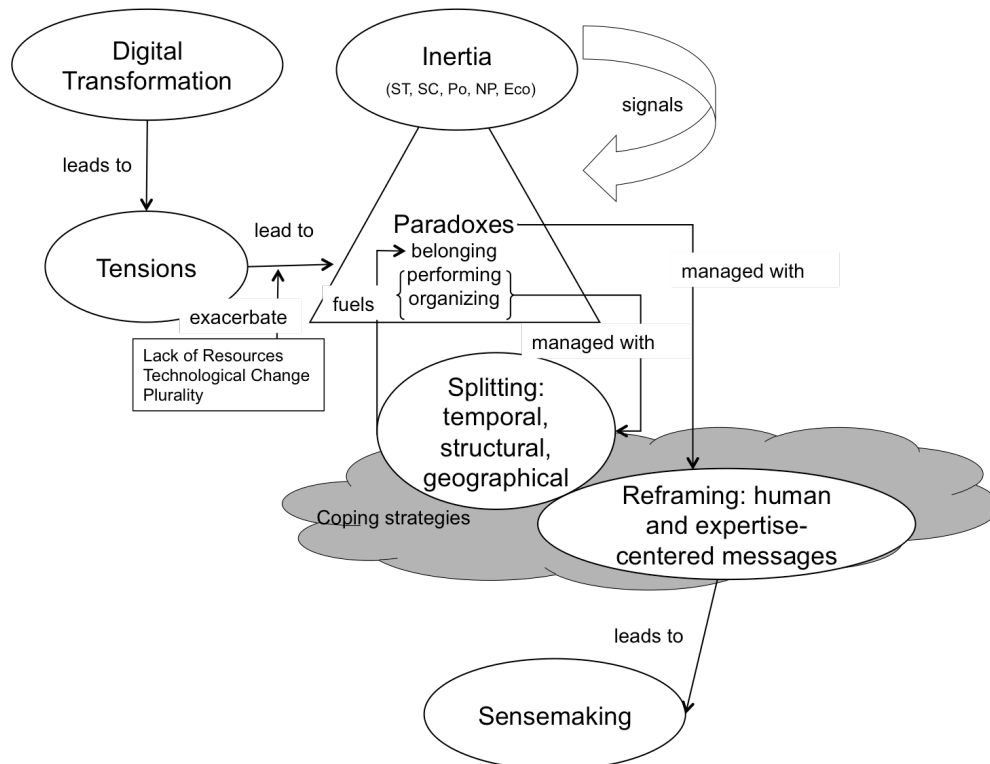


Figure 4. A Model of Paradoxes Management in a Digital Transformation setting

The communication project manager has repeated many times that the value of the organization is the people in it, their dedication, their know-how and that there is a will to preserve them, while acting on the artefacts and their perception through online and offline communication actions. In the meantime, the conceptual and drafting work within the Federation also aims at a human-centered design of DT within the records management field, gently influencing the reflection to preserve the interests of the employees of the field (the we-field) and also becoming active in the transformation, reappropriating the Transformation at the organizational level. What could be perceived as a mixed coercive institutional pressure can also be interpreted as a proactive participation to a socio-technical phenomenon in so far as to reappropriate value, to preserve value from being appropriated by outsiders of the field, or as to orient value displacement towards the individual persons of the records management field.

Understanding the transformation and the management of paradoxes as a process also leaves room for stages. Addressing the entanglement of performance-organizing paradoxes other than by a splitting strategy is not possible for the first cycle : specific technological and sales skills are missing and cannot be filled on the spot. Time is needed to define and identify them, to learn, and build an adequate network, to let customers and prospects know the organization is developing new offers and for customers to understand the context of these offers. The second cycle of paradox management consist in a communication campaign, internal targeting employees and their sense of self, external, targeting customers and prospects, focused on a human-centered and expertise oriented message. Because time has been involved, some employees, and some prospects are going to take longer convincing. We could relate this timing and transitional phase with the proposed institutionalisation from Baptista, Newell and Currie (2010).

5.2 A centripetal trajectory

A centripetal trajectory towards the core of clients' organizations can be outlined. The centripetal trajectory echoes the opening of the storage box. An expertise in files management will be related to the consistency it brings to the nature, type, and content of the file. The same evolution can be observed

on the posters where the box has left the stage to leave the place to persons, to epitomize the stories behind the boxes, to rehumanize the activity. It is not by chance that this evolution of posters happens at the same time as DT. To move away from the box, the organization has to be overall consistent with the centripetal trajectory it experiences. This can also be observed in the interest of client organizations decision makers: they show an interest to BigScan's headquarters that just did not exist before. They want to know what this organization is.

The centripetal trajectory towards the core of the clients' organizations and the content of the storage box appears consistent with the potential of digital technologies and the will to focus on individuals and human value expertise. This trajectory echoes the material stream of research blooming in parallel of digital considerations (Leonardi, 2011).

5.3 The case of the digital artefact

The digital artefact in our study covers the very wide range of digital services the organization is able to offer to its customers. Making sense and shaping the digital artefact is a difficult stance (Currie, 2009; Pinch & Bijker, 1984). One of the most prominent difficulty of DT covers the immateriality of the digital artefact, being opposed to the material precedent universe and associated symbolism (Leonardi, 2011). The rematerialization of the coping strategy is declined through material communication, re-centered focus on content, on human perspective, of people behind the box and content within the box, underlining the possible materiality and utmost importance of a reflection at this level (Leonardi, 2011, 2013).

Digital transformation implies the design and implementation of digital artefacts. Without being aware of it, actors, the STS, participate to the shaping while appropriating the artefact. The choices made between digitalization and digitization, the temporary but successful splitting strategies reveal a particular attention to the local expertise both at the individual, or rather personal, and at the organizational levels, putting forth an organizational expertise within trade shows.

5.4 Implications

Our findings have implications. Indeed, if the best way to cope with an entanglement of paradoxes of performance and organizing in a digital transformation context is to split spatially and temporally, especially given the scarcity of resources, paradoxes of belonging need to be taken into account to fully understand the possibility of inertia and failures through a stopped sensemaking process. We have shown paradoxes of belonging are actually fuelled by splitting. In this context, focusing only on exploitation-exploration or hybridization might prevent us to take the full perspective into account. This paradox of belonging rooted in the Digital Transformation phenomenon is especially meaningful as it expands on all levels, individual, organizational up to the field. Not addressing the paradox of belonging could therefore lead to a twisted perspective and hint towards false needs.

Understanding the transformation and the management of paradoxes as a process also leaves room for stages. Addressing the entanglement of performance-organizing paradoxes other than by a splitting strategy is not possible for the first cycle : specific technological and sales skills are missing and cannot be filled right away. Time is needed to define and identify them, to learn, and build an adequate network, to let customers and prospects know the organization is developing new offers and for customers to understand the context of these offers. The second cycle of paradox management consist in a communication campaign, internal targeting employees and their sense of self, external, targeting customers and prospects, focused on a human-centered and expertise oriented message. Because time has been involved, some employees, and some prospects are going to take longer convincing.

6 Conclusion

To conclude, we wondered what dynamics could a paradox lens reveal in a DT context and how a paradox lens could help us leverage Digital Transformation. To answer these questions, we investigated a records management company implementing both digitization and digitalization of their offers for the past ten years. We explored the case study using an interpretive research design, gathering more than 23 hours of interviews, involving site visits, and written sources analysis. We have developed a model based on paradoxes, inertia, sensemaking and coping strategies in a digital context in order to gather and analyze our data. The paradoxes of our case study presented specificities associated with digital technologies. The paradox to continue to perform on the traditional cardboard and paper records management market while appropriating the new sales processes, stakes and interlocutors confronts sales people, and beyond them, many other within the organization. Splitting affords time to learn, understand and find adequate resources but fuels even more intensely the paradox of belonging. The paradox of organizing appears deeply entangled with the paradox of performing, revealing the same splitting strategy of relying on localized expertise, either outside the firm or even within the firm, while the sense of belonging is torn by the immaterial of digital technologies. The coping strategy centered on human expertise and person-centered poster communication is a longstanding approach with results on a different timeframe. We have found that splitting could constitute a temporary coping strategy with negative side-effects on the paradox of belonging. But, in so far as it can be conducive to reframing that would not have been possible earlier on due to a lack of a wide range of resources, the strategy can be integrated within an overall successful process model of Digital Transformation addressing appropriation of STS through rematerialization and human-centered focuses. The final design is that of a centripetal trajectory towards content and person focus to look inside the box.

References

- Adolphs, C., & Winkelmann, A. (2010). Personalization research in E-commerce-a state of the art review (2000-2008). *Journal of Electronic Commerce Research*, 11(4), 326.
- Alvesson, M., & Willmott, H. (2002). Identity Regulation as Organizational Control: Producing the Appropriate Individual. *Journal of Management Studies*, 39(5), 619–644. <https://doi.org/10.1111/1467-6486.00305>
- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation. *Organization Science*, 20(4), 696–717. <https://doi.org/10.1287/orsc.1080.0406>
- Baptista, J., Newell, S., & Currie, W. (2010). Paradoxical effects of institutionalisation on the strategic awareness of technology in organisations. *The Journal of Strategic Information Systems*, 19(3), 171–183. <https://doi.org/10.1016/j.jsis.2010.07.001>
- Barrett, M., & Walsham, G. (1999). Electronic trading and work transformation in the London insurance market. *Information Systems Research*, 10(1), 1–22.
- Besson, P., & Rowe, F. (2012). Perspectives sur le phénomène de la transformation organisationnelle. *Systèmes d'Information et Management (French Journal of Management Information Systems)*, 16(1), 3–34. <https://doi.org/10.9876/sim.v16i1.394>
- Bourreau, M., Cambini, C., & Doğan, P. (2012). Access pricing, competition, and incentives to migrate from “old” to “new” technology. *International Journal of Industrial Organization*, 30(6), 713–723. <https://doi.org/10.1016/j.ijindorg.2012.08.007>
- Buganza, T., Dell’Era, C., Pellizzoni, E., Trabucchi, D., & Verganti, R. (2015). Unveiling the Potentialities Provided by New Technologies: A Process to Pursue Technology Epiphanies in the Smartphone App Industry: Unveiling the potentialities provided by new technologies. *Creativity and Innovation Management*, 24(3), 391–414. <https://doi.org/10.1111/caim.12141>
- Chae, B., & Poole, M. S. (2005). The surface of emergence in systems development: agency, institutions, and large-scale information systems. *European Journal of Information Systems*, 14(1), 19–36. <https://doi.org/10.1057/palgrave.ejis.3000519>
- Clemente, M., & Roulet, T. J. (2015). Public Opinion As a Source of Deinstitutionalization: A “Spiral of Silence” Approach. *Academy of Management Review*, 40(1), 96–114. <https://doi.org/10.5465/amr.2013.0279>
- Clemons, E. K., & Hann, I.-H. (1999). Rosenbluth International: Strategic Transformation of a Successful Enterprise. *Journal of Management Information Systems*, 16(2), 9–27. <https://doi.org/10.1080/07421222.1999.11518243>
- Currie, W. (2009). Contextualising the IT artefact: towards a wider research agenda for IS using institutional theory. *Information Technology & People*, 22(1), 63–77. <https://doi.org/10.1108/09593840910937508>
- D’Adderio, L. (2008). The performativity of routines: Theorising the influence of artefacts and distributed agencies on routines dynamics. *Research Policy*, 37(5), 769–789. <https://doi.org/10.1016/j.respol.2007.12.012>
- Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing Organizational Routines as a Source of Flexibility and Change. *Administrative Science Quarterly*, 48(1), 94–118. <https://doi.org/10.2307/3556620>
- Gregory, R. W., Keil, M., Muntermann, J., & Mähring, M. (2015). Paradoxes and the Nature of Ambidexterity in IT Transformation Programs. *Information Systems Research*, 26(1), 57–80. <https://doi.org/10.1287/isre.2014.0554>
- Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The Interplay Between Exploration and Exploitation. *Academy of Management Journal*, 49(4), 693–706. <https://doi.org/10.5465/AMJ.2006.22083026>

- Hinings, B., Gegenhuber, T., & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*. <https://doi.org/10.1016/j.infoandorg.2018.02.004>
- Jarzabkowski, P., Lê, J., & Ven, A. H. V. de. (2013). Responding to competing strategic demands: How organizing, belonging, and performing paradoxes coevolve. *Strategic Organization*, 1476127013481016. <https://doi.org/10.1177/1476127013481016>
- Jay, J. (2013). Navigating Paradox as a Mechanism of Change and Innovation in Hybrid Organizations. *Academy of Management Journal*, 56(1), 137–159. <https://doi.org/10.5465/amj.2010.0772>
- Langley, A. (1999). Strategies for Theorizing from Process Data. *Academy of Management Review*, 24(4), 691–710. <https://doi.org/10.5465/AMR.1999.2553248>
- Leonardi, P. M. (2011). *When Flexible Routines Meet Flexible Technologies: Affordance, Constraint, and the Imbrication of Human and Material Agencies* (SSRN Scholarly Paper No. ID 1607718). Retrieved from Social Science Research Network website: <http://papers.ssrn.com/abstract=1607718>
- Leonardi, P. M. (2013). When Does Technology Use Enable Network Change in Organizations? A Comparative Study of Feature Use and Shared Affordances. *MIS Quarterly*, 37(3), 749–775.
- Leonardi, P. M., & Barley, S. R. (2008). Materiality and change: Challenges to building better theory about technology and organizing. *Information and Organization*, 18(3), 159–176. <https://doi.org/10.1016/j.infoandorg.2008.03.001>
- Lewis, M., & Smith, W. (2014). Paradox as a Metatheoretical Perspective: Sharpening the Focus and Widening the Scope. *The Journal of Applied Behavioral Science*, 50(2), 127–149. <https://doi.org/10.1177/0021886314522322>
- Loebbecke, C., & Picot, A. (2015). Reflections on societal and business model transformation arising from digitization and big data analytics: A research agenda. *The Journal of Strategic Information Systems*, 24(3), 149–157. <https://doi.org/10.1016/j.jsis.2015.08.002>
- Lucas, H., Agarwal, R., Sawy, O. E., & Weber, B. (2013). Impactful Research on Transformational Information Technology: An Opportunity to Inform New Audiences. *MIS Quarterly*, 37(2), 371–382.
- Lüscher, L. S., & Lewis, M. W. (2008). Organizational Change and Managerial Sensemaking: Working Through Paradox. *Academy of Management Journal*, 51(2), 221–240. <https://doi.org/10.5465/AMJ.2008.31767217>
- Lyytinen, K., & Rose, G. M. (2003). The Disruptive Nature of Information Technology Innovations: The Case of Internet Computing in Systems Development Organizations. *MIS Quarterly*, 27(4), 557–595.
- Maitlis, S. (2005). The Social Processes of Organizational Sensemaking. *Academy of Management Journal*, 48(1), 21–49. <https://doi.org/10.5465/AMJ.2005.15993111>
- Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. *Business & Information Systems Engineering*, 57(5), 339–343. <https://doi.org/10.1007/s12599-015-0401-5>
- Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(1), 2–26. <https://doi.org/10.1016/j.infoandorg.2006.11.001>
- Pettigrew, A. M. (1990). Longitudinal Field Research on Change: Theory and Practice. *Organization Science*, 1(3), 267–292.
- Piccinini, E., Hanelt, A., Gregory, R., & Kolbe, L. (2015). *Transforming Industrial Business: The Impact of Digital Transformation on Automotive Organizations*. Retrieved from <http://aisel.aisnet.org/icis2015/proceedings/GenerallS/5/>
- Pinch, T. J., & Bijker, W. E. (1984). The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other. *Social Studies of Science*, 399–441.
- Rittel, H. W., & Webber, M. M. (1974). Wicked problems. *Man-Made Futures*, 26(1), 272–280.

- Schad, J., & Bansal, P. (2018). Seeing the Forest and the Trees: How a Systems Perspective Informs Paradox Research: How a Systems Perspective Informs Paradox Research. *Journal of Management Studies*, 55(8), 1490–1506. <https://doi.org/10.1111/joms.12398>
- Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. (2016). Paradox Research in Management Science: Looking Back to Move Forward. *The Academy of Management Annals*, 10(1), 5–64. <https://doi.org/10.1080/19416520.2016.1162422>
- Smith, W., Erez, M., Jarvenpaa, S., Lewis, M., & Tracey, P. (2017). Adding Complexity to Theories of Paradox, Tensions, and Dualities of Innovation and Change: Introduction to Organization Studies Special Issue on Paradox, Tensions, and Dualities of Innovation and Change. *Organization Studies*, 38(3–4), 303–317. <https://doi.org/10.1177/0170840617693560>
- Smith, W., & Lewis, M. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, 36(2), 381–403.
- Swanson, E. B., & Ramiller, N. C. (2004). Innovating mindfully with information technology. *MIS Quarterly*, 553–583.
- Tilson, D., Lyytinen, K., & Sørensen, C. (2010). Research Commentary—Digital Infrastructures: The Missing IS Research Agenda. *Information Systems Research*, 21(4), 748–759. <https://doi.org/10.1287/isre.1100.0318>
- Tsai, H.-S., & Gururajan, R. (2007). Motivations and challenges for M-business transformation: a multiple-case study. *Journal of Theoretical and Applied Electronic Commerce Research*, 2(2).
- Tsoukas, H., & Chia, R. (2002). On Organizational Becoming: Rethinking Organizational Change. *Organization Science*, 13(5), 567–582. <https://doi.org/10.1287/orsc.13.5.567.7810>
- Utesheva, A., Simpson, J. R., & Cecez-Kecmanovic, D. (2015). Identity metamorphoses in digital disruption: a relational theory of identity. *European Journal of Information Systems*. <https://doi.org/10.1057/ejis.2015.19>
- Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems*, 4(2), 74–81. <https://doi.org/10.1057/ejis.1995.9>
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409–421.
- Yin, R. K. (2013). *Case Study Research: Design and Methods: Design and Methods*. SAGE Publications.