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Abstract

While digital transformation offers a number of opportunities for today's organizations, information systems scholars and practitioners struggle to grasp what digital transformation really is, particularly how it differs from the well-established concept of information technology (IT)-enabled organizational transformation. By integrating literature from organization science and information systems research with two longitudinal case studies – one on digital transformation, the other on IT-enabled organizational transformation – we develop an empirically grounded conceptualization that sets these two phenomena apart. We find that there are two distinctive differences: (a) digital transformation activities leverage digital technology in (re)defining an organization's value proposition, while IT-enabled organizational transformation activities leverage digital technology in supporting the value proposition and (b) digital transformation involves a new organizational identity compared with IT-enabled organizational transformation that enhances an existing organizational identity. We synthesize these arguments in a process model to distinguish the different types of transformations and propose directions for future research.

Keywords: Digital transformation, IT-enabled organizational transformation, Organizational identity, Value proposition, Imposition, Reconciliation, Digital technology, Process model

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Unpacking the Difference between Digital Transformation and IT-enabled Organizational Transformation

All the digitization in the world won't, on its own, make a business a digital company (Ross, 2017)

1 Introduction

The notion of digital transformation (DT) seems to have spread across academia and practice at a breathtaking pace as the increasing number of publications in our field shows (Vial, 2019). Moreover, special issues (Bresciani, Huarng, Malhotra, & Ferraris, 2019; Lanzolla et al., 2018; Majchrzak, Markus, & Wareham, 2016; Pappas, Mikalef, Dwivedi, Jacheri, & Krogstie, 2019), commentaries in leading outlets (Agarwal, Gao, DesRoches, & Jha, 2010; Lucas Jr, Agarwal, Clemons, El Sawy, & Weber, 2013; Majchrzak, Markus, & Wareham, 2016), debates in business practice (McKinsey, 2016), and policy documents (World Economic Forum, 2017) are testament to the importance of this matter. The fact that scholars pay so much attention to this topic and that businesses and policy makers are ready to invest heavily in DT renders it perhaps *the* technology-related phenomenon of our times. Yet, as attention and investments increase, conceptual questions emerge regarding whether DT really is a new phenomenon or whether it is merely an appealing label used to depict change processes that researchers in management (Mintzberg & McHugh, 1985; Mintzberg & Waters, 1985; Pettigrew, 1987, 1990) and information systems (IS) have already scrutinized for decades (Barrett & Walsham, 1999; Berente, Lyytinen, Yoo, & King, 2016; Gregory, Keil, Muntermann, & Mähring, 2015; Henderson & Venkatraman, 1992; Lyytinen & Newman, 2008; Orlikowski, 1996). Within the IS field, "IS/IT-enabled organizational transformation" (ITOT) emerged as a concept by the 1990s from studies of the transformational impacts that enterprise resource planning (ERP) systems had on organizations. Since then, it has grown into a rich and insightful body of work that offers frameworks and explanations for better understanding when and why IT-related transformation processes can be successful, as well as how these processes unfold

over time (for overviews see, e.g., Besson & Rowe, 2012; Crowston & Myers, 2004; Orlikowski, 1996). This rich literature raises the question of how DT is different from what we know already at an organizational level. Indeed, this is a central question to ask if we wish to advance the IS field and improve resource allocations of practitioners. Simply assuming that DT is new and different, without a conceptual delineation from prior concepts, puts us, as a field, at risk of reinventing the wheel and rendering the novelty of our suggestions for business practice opaque, as recent commentaries have highlighted (Andriole, 2017; Kane, 2018). However, the crux is that DT is currently conceptualized in almost exactly the same way as ITOT (Besson & Rowe, 2012; Vial, 2019), which stands in stark contrast to calls for revisiting classical models of transformation in order to clarify how digital transformation is different from ITOT (Yoo, 2013; Yoo, Henfridsson, & Lyytinen, 2010).

This paper sets out to deliver the first empirical study that disentangles these two processes based on an analysis of two cases. Alpha, a French hospital, implemented an electronic medical record (EMR) in order to become the world's most digital hospital, whereas Beta, a Finnish manufacturing company, implemented a new strategy that would alter the core value-creating activities from selling machinery to providing services based on machines augmented with digital capabilities. Following principles of grounded theory (Corbin & Strauss, 2008; Seidel & Urquhart, 2013), we were able to identify two distinct ways in which each organization related digital technology to its value proposition. Our overarching research questions were: *(1) How is digital transformation different from IT-enabled organizational transformation?,* and *(2) How do digital and IT-enabled organizational transformations unfold?*

Overall, we suggest that, while there are similarities and nuanced differences in terms of transformation agenda and driving forces, the key differentiator between DT and ITOT, at an organizational level, lies in how digital technology, value propositions, and organization identity interrelate in these respective processes. In DT, digital technology is central in redefining value propositions, which occasions the emergence of new organizational identity. ITOT, in contrast, involves the use of digital technology to

support an existing value proposition, implying that the existing identity of an organization is reinforced. Our contribution is two-fold. We provide an empirically-grounded conceptual differentiation between DT and ITOT, foregrounding fundamental differences, as well as similarities that earlier work relegated to the background. Second, we unpack the dynamics that characterize each transformation.

2 Theoretical Background

For several years, if not decades, a rich body of IS literature has explored transformation, that is, "a process that engenders a qualitatively different organization" (Besson & Rowe, 2012, p. 103) (for an overview see, e.g., Besson & Rowe, 2012; Crowston & Myers, 2004; Orlikowski, 1996). Under the heading of ITOT (Besson & Rowe, 2012), IS scholars have argued for the importance of transforming organizations in order to align functional IT strategies with business strategies (see, e.g., Brown & Magill, 1994; Chan, Huff, Barclay, & Copeland, 1997; Scott Morton, 1991). More recently, scholars have increasingly challenged this "alignment view" (Henderson & Venkatraman, 1999), stating that digital technologies increasingly shape business strategy (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013) and organizational contexts (Yoo, Boland, Lyytinen, & Majchrzak, 2012; Yoo et al., 2010); hence, classical models beg reconsideration given their underlying logic that strategy would shape technology but not the other way around (Baskerville, Myers, & Yoo, 2019; Yoo, 2013). Although literature on DT is emerging rapidly in research (see, e.g., Vial, 2019), practice (Accenture, 2016; McKinsey, 2016), and policy (World Economic Forum, 2017), few of these contributions distinguish between DT and ITOT.

2.1 Conceptualization of ITOT in IS Research

2.1.1 Tracing the Historical Foundations of Transformation in IS

A key publication that defines the path along which we, as a field, think about transformation is the chapter by Henderson and Venkatraman (1992) that highlights the strategic role of IT in supporting the existing business strategy (see also, Henderson & Venkatraman, 1999; Venkatraman, 1994). The key

idea behind this work is that IT, as a tool, can be leveraged to align organizations with their strategic objectives (Brown & Magill, 1994; Chan et al., 1997; Scott Morton, 1991). Up until recently, it has been a widely accepted assumption that succeeding in aligning IT with business strategies of organizations has positive performance effects (Chan & Reich, 2007; Gerow, Grover, Thatcher, & Roth, 2014). Consequently, transformation is broadly considered a strategic necessity to achieve favorable or even superior levels of organizational performance (Henderson & Venkatraman, 1999).

The conceptualization of IT as a means to achieve alignment has substantially shaped how IS scholars think about ITOT. Despite studying ITOT from diverse angles, such as business process reengineering (Hammer & Champy, 1993), IS strategy (Besson & Rowe, 2012), or practice theory (Barrett & Walsham, 1999; Orlikowski, 1996), scholars interested in ITOT have mainly focused their efforts on addressing questions that arise once managements have implemented IT in order to "revolutionize" (Hammer & Champy, 1993) their businesses. For example, scholars working on organizational "deep structures" have found that core values, power distribution, and existing control mechanisms in organizations explain why implementing strategic IS poses difficulties (Heracleous & Barrett, 2001; Silva & Hirschheim, 2007; Soh, Kien Sia, Fong Boh, & Tang, 2003), and hence have offered important explanations for why achieving alignment is a challenging endeavor (Gerow et al., 2014; Sabherwal, Hirschheim, & Goles, 2001). Others have worked on how to design effective transformation processes (Galliers, 1998), suggesting, for example, that alignment can be reached through incremental processes during which small-scale changes, combined with existing practices, accumulate over time (Järvenpää & Ives, 1996; Orlikowski, 1996; Robey & Sahay, 1996). Furthermore, scholars have argued that the agency of executives to design transformation initiatives (Abraham & Junglas, 2011; B. L. Cooper, Watson, Wixom, & Goodhue, 2000; R. B. Cooper, 2000; Sarker & Lee, 1999) may not align with the agency of those organizational members who enact the transformation (Boudreau & Robey, 2005; DeSanctis & Poole, 1994; Orlikowski, 2000). While drawing from various theories, methods, and levels

of analysis, the broad literature on ITOT has commonly looked at how interactions between organizational contexts and IT systems impact on transformation.

While research on ITOT builds on a long-standing trajectory, DT is the proverbial "hot topic" that currently concerns our field as the increasing number of dedicated publications in AIS's leading outlets suggests (e.g., Vial 2019). Generally, current research defines DT as the use of digital technologies to improve business outcomes (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2014; Liere-Netheler, Packmohr, & Vogelsang, 2018; Piccinini, Hanelt, Gregory, & Kolbe, 2015), technology-driven changes in core business processes (Demirkan, Spohrer, & Welser, 2016; Nwankpa & Roumani, 2016; Singh & Hess, 2017), automation of tasks (Clohessy, Acton, & Morgan, 2017; Horlach, Drews, Schirmer, & Boehmann, 2017; Legner et al., 2017), transformation driven by IT (Hartl & Hess, 2017; Heilig, Schwarze, & Voss, 2017), or impacts of IT on organizational contexts (Haffke, Kalgovas, & Benlian, 2016; Hess, Matt, Benlian, & Wiesböck, 2016; Matt, Hess, & Benlian, 2015). Other definitions have suggested that DT emphasizes alignment (L. Li, Su, Zhang, & Mao, 2017) or improved use of ERP systems (Chanias, 2017). The logic underlying most definitions is, however, that some sort of digital technology is expected to lead to favorable business outcomes.

The idea to use digital technology to improve business outcomes is also what guides most theorizing in the area of DT (L. Li et al., 2017; Vial, 2019). Digital technologies, such as analytics (Dürr, Wagner, Weitzel, & Beimborn, 2017; Günther, Rezazade Mehrizi, Huysman, & Feldberg, 2017), cloud computing (Clohessy et al., 2017; Du, Pan, & Huang, 2016), or platforms (Tan, Pan, Lu, & Huang, 2015; Tiwana, Konsynski, & Bush, 2010), are often seen as forces that disrupt markets (Lucas Jr et al., 2013; Vial, 2019) and call for organizations to respond to these disruptions (W. Li, Liu, Belitski, Ghobadian, & O'Regan, 2016; Matt et al., 2015; Yeow, Soh, & Hansen, 2018). Moreover, organizations go through internal transformations to change how they create value (Dremel, Wulf, Herterich, Waizmann, & Brenner, 2017; Günther et al., 2017; Huang, Henfridsson, Liu, & Newell, 2017a; Porter & Heppelmann,

2015; Wulf, Mettler, & Brenner, 2017) and how they structure their processes (Morakanyane, Grace, & O'Reilly, 2018; Piccinini et al., 2015), as well as to identify ways to overcome inertia (Kohli & Johnson, 2011; Roecker, Mocker, & Novales, 2017; Töytäri et al., 2017).

2.1.2 Conceptual Confusion and a Search for Clarity

The existing literature on DT parallels the literature on ITOT in many ways. While the literature on DT takes as a starting point more recent digital technologies (Yoo, 2010; Yoo et al., 2010), it conceptualizes the changes associated with them in ways that we know from ITOT. For example, some definitions of DT directly reference "alignment" (L. Li et al., 2017) or ERP systems (Chanias, 2017), in other words, topics that IS scholars have worked on since the early 90s. Others suggest that DT refers to the use of digital technology for the sake of advancing business outcomes; however, save for the technology being different, this is conceptually very similar to what alignment scholars have been interested in for decades. Likewise, conceptualizing DT as a process wherein organizations react to technological change and have to deal with internal problems resembles some of the key topics that ITOT scholars have researched for a long time.

From the foregoing, the question that remains to be answered is how DT and ITOT differ. Extant work has tried to provide an answer by differentiating them in relative terms. Vial (2019) has suggested that DT is an evolutionary step of ITOT that unfolds on a larger scale. In his view, there is a set of properties that differentiates them. For example, whereas the impetus for ITOT would be a managerial decision, the impetus for DT would be wider, comprising "society and industry trends" (Vial, 2019, p. 132). Hartl and Hess (2017) also use a relative distinction, suggesting that digital technology affects organizations more holistically and at a greater pace.

However, the crux of these relative distinctions is that the boundary between the two becomes blurry and hard to grasp. For example, it is not clear where managerial decisions begin and where industry trends end. Likewise, even alignment can imply an organizational transformation at a quick pace and

with holistic effects. Hence, trying to differentiate the two processes in relative terms may make sense on a very high level, but once scholars move into more concrete empirical research, it may quickly become difficult to uphold a clear boundary between ITOT and DT.

In summary, we believe that the abovementioned problem results from the more fundamental issue that we as a field think about DT using the same assumptions that shaped the debate around ITOT and that go back to Henderson and Venkatraman (1992). This stands in stark contrast to calls for changing these assumptions when we talk about DT in order to account for the distinctive qualities of digital technologies (Bharadwaj et al., 2013; Yoo, 2013; Yoo et al., 2010).

2.2 Using Identity to Disentangle ITOT and DT

Whereas much of the literature has conceptualized ITOT and DT according to their strategic significance, leading to remarkable conceptual similarities between these processes (see above), in this paper, we suggest that we can distinguish them if we attend to how the strategic initiatives involved in any type of transformation have consequences for organizational identity. Specifically, a focus on how dynamics in value propositions and organizational identity interrelate has "earned its way" (Glaser & Strauss, 1967) into our inquiry throughout multiple rounds of coding and analysis (Berente & Yoo, 2012; Gregory et al., 2015; Suddaby, 2006).

Organizational identity offers a powerful complement to extant ways of conceptualizing different transformations, as it is widely recognized that digital technologies enable organizations to offer much different value propositions built around data, services, and digitally augmented products (Barrett, Davidson, Prabhu, & Vargo, 2015; Günther et al., 2017; Huang, Henfridsson, Liu, & Newell, 2017b; Yoo et al., 2010). There are several examples of how important the links between organizational identity and value propositions are. For example, Netflix changed from being a provider of rental movies to being a streaming platform. However, the literature on organizational identity does not capture the importance of value propositions. Similarly, the broader literature that focuses on value propositions does not reflect

the importance of organizational identity (Baiyere, Salmela, & Tapanainen, 2020; Chesbrough, 2010; Chesbrough & Rosenbloom, 2002). Yet a strategic change such as altering the value proposition of an organization may have profound implications for how individuals, groups, and organizations think of who they are and what they do (Whitley, Gal, & Kjaergaard, 2014). This is captured by the concept of organizational identity that depicts considerations of what an organization is (Albert & Whetten, 1985; Whetten & Mackey, 2002), as well as how its members may make sense of what the organization claims to be (Corley & Gioia, 2004; Gioia & Thomas, 1996). Both of these dynamics likely intertwine with changes in value propositions during transformation. For example, the literature on DT is replete with examples of executives claiming to make their organizations "more digital" (Haffke et al., 2016; Singh & Hess, 2017), but then we know next to nothing about how middle management or even workers on the "ground floor" react to these claims (Alvarez, 2008; Leclercq-Vandelannoitte, 2014; Van Akkeren & Rowlands, 2007). The literature on organizational identity enables us to forge this link between value propositions and organizational identity through the two dimensions suggested by Ravasi and Schultz (2006): relatively stable "identity claims" made by top management about what an organization is (Whetten, 2006; Whetten & Mackey, 2002) and more dynamic "identity understandings" that unfold among organizational members who relate to and enact an identity set forth by top management (Corley & Gioia, 2004; Gioia, Schultz, & Corley, 2000; Gioia & Thomas, 1996). These dimensions interact during transformation (see also, Nag, Corley, & Gioia, 2007; Ravasi & Schultz, 2006), for example, when the introduction of new IT affects organizational identity (Alvarez, 2008) or a new identity emerges through IT-mediated interactions between different organizations (Gal, Blegind Jensen, & Lyytinen, 2014; Gal, Lyytinen, & Yoo, 2008).

Against this background, there are several studies that have linked the dynamics of technology, transformation, and identity. Some of the most influential work in this area are Barley's studies on how CT scanners have altered the role of the relationships among organizational members (Barley, 1986)

and on how these technologies alter the relational and non-relational elements of one's role in the work context (Barley, 1990; see also, Barrett & Scott, 2004; Barrett & Walsham, 1999; Lamb & Davidson, 2005; Walsham, 1998). These insights offer powerful starting points to delve into the different identity-related micro-dynamics that arise during different transformation processes as managements will often ask organizational members to perform new work practices (Reay, Goodrick, Waldorff, & Casebeer, 2017, p. 6) that are aligned with an organization's value proposition.

When identity-related dynamics are set into motion during transformation, they often pattern how organizational members learn (Besson & Rowe, 2012; Lyytinen & Newman, 2008; Silva & Hirschheim, 2007). Several IS work practice changes that entail learning how to use new ICTs (Boudreau & Robey, 2005; Robey, Ross, & Boudreau, 2002; Robey & Sahay, 1996), as well as striking balances between contradictory tensions linked to IT (Gregory et al., 2015), have been found to be linked with organizational identity (Barrett & Walsham, 1999; Robey & Boudreau, 1999). This is particularly meaningful for DT since formulating strategies or value propositions normally calls into question the existing identity of an organization (Dutton & Dukerich, 1991; Gioia & Chittipeddi, 1991), while rendering its current knowledge base less valuable (Cook & Yanow, 1993; Nag et al., 2007). How identity and learning intertwine when managements push for such changes thus forms a valuable means for unpacking the differences between ITOT and DT.

3 Method

3.1 Overview: Research Design and Paper-a-thon Provenance

We aim to conceptually disentangle DT and ITOT on the basis of an empirical study that emerged from the inaugural Paper-a-thon at the International Conference on Information Systems (ICIS) in 2017 in Seoul. At the Paper-a-thon, two authors contributed datasets on the implementation of digital technologies and strategies in two organizations that we decided to call "Alpha" and "Beta" for purposes

of preserving anonymity. The former is a French hospital intending to transform itself into "the world's most digitized hospital," and the latter is a Finnish manufacturing company aiming to transform itself into a "leading provider of digital services" with plans to stop selling only machinery and hardware. By inductively analyzing these cases, our focus on disentangling ITOT and DT emerged as Alpha resembled comparatively more of the former while the opposite was the case for Beta. The authors doing the field work closely investigated Alpha for 18 months and Beta for slightly more than one year. They entered the field at the point in time when the intention to transform each organization was formulated and implementation was beginning. Discussing the cases at the Paper-a-thon revealed that both cases were similar in several ways. In the first iteration of our analysis of the two datasets, we decided to conceptualize the similarities between the cases using an "imposition" lens (Strong & Volkoff, 2010). While this intermediate idea (Baiyere, Cha, Ologeanu-Taddei, Wessel, & Blegind Jensen, 2017) changed in many ways over time, it shaped the building blocks of transformation in our final model.

Following the Paper-a-thon, iterations between data and the literature led to an emergent understanding of how our data related to and extended prior literature. It became clear to us that one case was similar to the characteristics of ITOT while the other case was similar to what would be labelled as DT. In subsequent analysis of the data, we started focusing our attention on the differences between these two cases. We realized that the differentiating criteria were connected to how dynamics in value propositions and organizational identity interrelated. We conducted this process of analytic reflexivity (Srivastava & Hopwood, 2009) in two steps that we describe in more detail below:

1. The authors, who were in the field, wrote narratives of each case (Langley, 1999). The purpose was to understand the data and to identify important aspects that could help sharpen the emerging conceptual categories (Berente & Yoo, 2012; Corbin & Strauss, 2008; Gregory et al., 2015). This proved useful in identifying the commonalities and differences between the transformation processes in both cases.

2. All authors were involved in the iterative analysis step that aimed at both consolidating and developing a delineating process model of DT versus ITOT (Berente & Yoo, 2012). We deployed visual mapping, which is a technique to organize first-order observations over time by drawing process diagrams that interconnect observations by “boxes and arrows” (Langley, 1999).

3.2 Data Collection and Analysis

Because of the longitudinal nature of our study, we drew on different data sources for our empirical evidence (See Table 1). For Alpha, we relied on five interviews with managers and secretaries. All interviews were conducted at Alpha’s premises in France. The interviews lasted 50 minutes on average and were transcribed verbatim. Interview questions captured the perspectives of different organizational members on the ongoing transformation process, particularly how the implementation of an EMR system was affecting and shaping the work practices in the hospital. In addition, we carried out 320 hours of non-participant observation of various events occurring during the transformation process. We conducted these observations via weekly visits to the organization. We were privileged to participate in meetings and had several interactions with organizational members during the course of the study. Part of these observations focused on how secretaries dealt with challenges that resulted from the EMR. Specifically, we observed about 21 hours of meetings devoted to sorting out these challenges. We took notes during these observations, which were supplemented by the minutes of the meetings. We also gained access to about 2,000 internal emails, which were a primary source of data. As Alpha was a bureaucratic hospital, much of the communication had to be official and written. Hence, emails played a key role in this case. Internal strategy documents complemented our data. Data were triangulated across sources to ensure validity.

Data collection at Beta proceeded along the same lines. In this case, interviews proved more important in uncovering the rationale behind the ongoing transformation. During our 13-month investigation, we conducted 41 interviews with management and employees at different hierarchical levels. The

interviews lasted from one to two hours and were transcribed verbatim. Interview questions addressed the rationale behind the transformation and the unfolding of transformation plans over time across different levels of the organization. We further collected data via 224 hours of non-participant observation and 42 hours of workshops and regular meetings. Non-participant observations occurred via weekly visits to the organization over several months. These also included attending exhibitions by the organization at fairs where the salespersons and marketing team showcased innovations in their attempt to attract new customers. We also observed the monthly meetings in which members of the entire organization assembled at the headquarters where the CEO and leadership team presented the status quo (financial, ongoing, and anticipated projects, human resources, etc.), as well as the strategic vision for how to leverage digital technology to advance the organization. Observations occurred via active participation in workshops and ideation meetings organized and conducted at Beta. During observations, notes were taken continuously, or directly after the corresponding events. Finally, we collected archival data in the form of 52 documents covering Beta's DT process. The data collection is summarized in Table 1.

Table 1. Summary of Data Collection

	Case 1 – Alpha	Case 2 – Beta
Context	Health care	Manufacturing
Duration	18 months	13 months
Interviews	5 interviews with the hospital's top manager, the senior manager, and secretaries	41 interviews with senior management, middle management, and operational employees
Observations	320 hours of observation of practices and activities related to the DT efforts 21 hours of meeting observations	224 hours of observation of practices and activities related to the DT efforts 42 hours of meeting observations
Archival Documents	2,000 emails, 6 documents (1 related to the hospital's policy and 5 official reports related to the meetings held)	52 documents (including strategy documents, monthly reports, presentations, and intranet archives)

We adopted an inductive approach, involving constant comparison among different data sources and framing our emergent understanding in light of the conceptual sensitivity derived from prior literature. Our approach was consistent with the grounded theory methodology applied by Berente and Yoo (2012), as well as with studies that build theory (Corley and Gioia, 2004; Nag et al. 2007). Thus, we first engaged in open coding to discover concepts, their properties, and relationships within the data (Berente & Yoo, 2012; Seidel & Urquhart, 2013). In this process, we assigned descriptive codes to our data that would oftentimes reflect informant language (Gioia, Corley, & Hamilton, 2013). We then began synthesizing these quotes into more analytical concepts that would still relate to the cases but reflect emerging abstractions (Gioia et al., 2013). These abstracted concepts formed the basis for beginning to theorize the distinction between DT and ITOT from our data.

Specifically and consistent with Klein and Myers's (1999) principle of abstraction and generalization, we iterated between our initial set of concepts and the existing literature (including misfit, alignment, practice theory, digital innovation, and identity, among others). These iterations yielded a first understanding of the differences between ITOT and DT on micro and macro levels. First, by taking a macro level view in engaging with our data, we increasingly began to understand how central the relationship between value propositions and organizational identity (Albert & Whetten, 1985; Gal et al., 2008; Ravasi & Schultz, 2006; Whitley et al., 2014) was for understanding the differences between these two transformations. By carefully tracing and examining the trajectory of both transformations, we found that Beta's transformation entailed redefining the value proposition based on digital technology leading to a change in the identity of the organization. In contrast, Alpha's transformation was much more about implementing IT in order to support an existing value proposition entailing enhancement of the hospital's existing identity. This preliminary finding supported our "hunch" that the interrelations between value propositions and identity mattered greatly for the differences between DT and ITOT. This step of our analysis provided us with the overarching conceptual dimensions on the macro level of the organization

where value propositions and identity shape the building blocks of transformation, that is, its technological change, transformation agenda, transformation activities, and impositions and reconciliations, as well as the ensuing organizational identity outcome.

Second, by probing the data for differences on the micro level, we shifted the attention of our analysis to the inner workings of the transformation processes, in which we consciously moved beyond focusing only on strategies that prior literature has revealed. We particularly questioned the data for the role of digital technology and examined the effect of the transformation process on work practices. By looking at the transformation activities, we discovered that digital technology remained relevant but played different roles (redefining or supporting) in shaping value propositions in both transformations. By comparing the activities around the creation of value in both cases, we were able to highlight the difference in the interplay between digital technology and these activities, that is, core value "(re)defining" activities at Beta and core value "supporting" activities at Alpha. When uncovering the work practices, we specifically narrowed our analysis down to two roles that appeared to us to be of surprisingly high relevance to the transformation agenda of both cases and indicative of the roles that capture work practices on an operational level. At Beta, our DT case, we found sales personnel to be particularly relevant in this context because their role was threatened to be morphed into the role of a consultant. Their reluctance and initial inability to sell digital products turned out to be pivotal to the progress of the transformation. At Alpha, we found secretaries to be particularly relevant as new tasks resulting from the EMR system were grafted onto their existing roles. This resulted in their reluctance to use EMR as well as unexpected bottlenecks that were a barrier to attaining the transformation agenda. Sales personnel and secretaries responded to the impositions arising from these transformation activities, leading to a need for reconciliation actions. We summarized these micro level interactions into second order concepts that we then abstracted into the macro level dimensions. We summarize our

analysis in (a) a table with representative data (Gioia et al., 2013) at the end of the findings section and (b) a process model that captures the similarities and differences between DT and ITOT.

4 Findings

4.1 Alpha: Transforming into the Most Digital Hospital in the World

Alpha is a university hospital in southern France with a capacity of 2,700 beds and approximately 10,000 employees in units of primary, intensive, and emergency care. On an average workday, Alpha personnel oversee around ten births, conduct 155 surgeries, 1,220 radiographies, and provide 2,000 external consultations. The hospital treats about 340 emergency patients, 500 ambulatory patients, and 220 inpatients every day. Alpha's core purpose (its value proposition) is to provide health care services and undertake research. In 2012, the hospital decided to improve its work practices by introducing electronic medical record (EMR) technology, using IT to transform the organization in order to better fulfil that core purpose.

4.1.1 Technological Change: Challenge and Opportunity

Alpha has an excellent reputation both for the quality of treatment and care and as a leading university research hospital. Its staff regularly publish in high-ranked journals, while the clinical trials conducted in Alpha have a national impact. The expertise and knowledge of its doctors and researchers is crucial to Alpha's success, and hence top management gives them the far-reaching autonomy in order to deliver excellence in research and treatment. Apart from standard procedures and strict hygiene requirements before and after surgery, there are very few official guidelines about how the clinical work and research should be conducted.

Alpha's ambition is to become a world leader in terms of research and quality of treatment. To this end, the formal structure of the organization comprises highly specialized units and departments such as cardiology, oncology, and gynecology, since such specialization is conducive to the development of

expert knowledge in these respective domains. Largely autonomous specialists frequently acquire diverse software packages to support consultations, research or training of residents. An unintended consequence of this is that over time, the departments have become information silos operating on stove-piped IT systems. In 2010, this led to a situation in which more than hundred different software applications were used across different departments. These were producing a myriad of patient-related data, scattered across the hospital on a daily basis.

While this was consistent with Alpha's ambition to develop multiple medical specialties, the differentiation of departments had a detrimental effect on the efficiency and timeliness of operations. Moreover, some patients with multiple chronic conditions needed to consult several departments, which mean information had to be exchanged and integrated between departments. In 2012, Alpha's management recognized that the difficulty of doing so was undermining the hospital's ambition to deliver excellent health care services. Top management decided to leverage the affordance of digital technology to allow the integration and exchange of information across the hospital, in keeping with Alpha's ambition to become the most digital hospital in the world.

4.1.2 Transformation Agenda

The Healthcare Information and Management Systems Society's (HIMSS) has established a scale to measure the degree to which electronic medical records (EMR) have been adopted by an organization. Alpha's ambition was to reach level 7, the highest level, reflecting "*the adoption and utilization of EMR functions required to achieve a paperless environment that harnessed technology to support optimized patient care*". To this end, an EMR system was introduced to allow cross-departmental information exchange, improve the timeliness and effectivity of health care delivery and to integrate information produced in different parts of the hospital into streamlined business processes. Specifically, it was decided that, *"Imaging, digital dictation, medical devices, and digitizing medical records have to be optimized"* (Official document: Hospital's Strategy for the Information System, 2013-2017, Alpha).

Management pushed toward this goal rapidly, in what informants called a 'big bang mode': *"Alpha wishes to arrive at zero paper as soon as possible"* (Strategy document, Alpha). This was because allowing an overlap of paper and computer systems was deemed to be *"very costly, demotivating, counterproductive, and a risk generator"* (Official document: Hospital's Strategy for the Information System, 2013-2017, Alpha). As the senior executive put it, *"I wanted a fast go live for the new system; if we keep two systems, we can be certain that the old system 'wins'"*.

Alpha rolled out the EMR across all departments apart from emergency care. Functions were focused on supporting health care services and included modules for the admission, discharge, and transfer of patients, computerized physician order entry, treatment planning, resources and appointment scheduling, and a clinical data warehouse. The use of EMR implied a number of organizational changes in ensuring system maintenance, quality of information, and in ensuring doctors comply with legal requirements related to privacy and security of patients' data.

While doctors would be asked to use the EMR for documenting prescriptions and treatments, the new system did not fundamentally alter how doctors prescribed and treated patients. A more far-reaching change was foreseen in the work of secretaries, who would have to use the EMR for scheduling treatments for doctors so that they could easily retrieve up-to-date patient lists.

4.1.3 Consequences of the EMR Implementation and Impositions on Work Practices

Most of Alpha's key personnel reacted favorably and saw the benefit of using the EMR rather than paper files to centralize, share, and transfer information. Nevertheless, challenges arose in the context of transforming secretaries' work. In contrast to the doctors' autonomy, secretaries' work was highly formalized and pre-structured by a corpus of rules that prescribed what and how secretaries ought to do. They would traditionally create and maintain paper-based patient files and pass them on to whoever patients needed to consult. Changing this led to difficulties, particularly when it came to information-intensive materials such as radiology images.

A lot of patients brought radiology images from independent doctors outside Alpha. Traditionally, they came in x-ray format and enclosed into patient files. Increasingly, however, patients were bringing radiology images in digital format. Secretaries were then expected to copy images from a CD-ROM and paste them into the EMR system, tagging them with information such as name, age, and gender. In theory, this was a good thing, as digital images could be easily integrated into the EMR and made available throughout Alpha. As the senior executive put it, *"The EMR allows to access and utilize data in real time. Earlier IT could not do that"*. Of course, departments like cardiology or ophthalmology dealt with more radiology exams than psychiatry. This meant that secretaries in these departments were confronted with the need to handle large quantities of digital images, and this is where difficulties arose.

While secretaries were used to working according to strictly bureaucratic rules, initially there was no rule for how to handle radiology images, and secretaries in different departments administered them in different ways. For example, whereas the secretary working in cardiology would process radiology images right after the examination of each patient, the secretary in psychiatry would postpone the processing until the end of her workday.

Moreover, the use of EMR required new steps to be followed compared to what secretaries knew from paper-based files. Many secretaries reported being lost when trying to download, index, and upload pictures to the EMR. The Hospital Information Officer reflected on the new situation that secretaries were facing: *"It's necessary to put a better analysis in place to formalize this task. But it's also necessary to resolve the differences in secretaries' work practices."* While the EMR system was intended to replace existing legacy systems and optimize procedures, in reality it increased their workload and a majority of secretaries felt overwhelmed by the system. Consequently, the uptake of the EMR among secretaries was slow and it did not live up to expectations.

A further problem was that, compared to paper-based documentation, digital indexing required 11 steps within Alpha's Picture Archiving and Communication System (PACS) and 10 additional steps for

downloading images using special CD transfer software, which was a prerequisite of indexing into the EMR. This would take around 20 minutes, assuming the system was functioning smoothly and free of bugs. In fact, as one secretary complained:

> *"The PACS is slow in the afternoon. We were told that we could not work because too many people tried to access the server. We were told to do something else and then return to this task […] Uploading digital images is cumbersome due to bugs and the systems being slow"* (Secretary, Alpha).

Secretaries described the process as tedious and lengthy, and they also saw this standardization as clashing with the department-specific workflows they had experienced in the past. Both timing and insensitivity toward workflow procedures made many secretaries consider digital indexing a nuisance. Secretaries were particularly afraid of making mistakes, such as unintentionally registering patients twice in the system, resulting in confusion among doctors about which of the two files to use. A representative explained, "*There are different paths on how to upload and index digital images. This makes the whole process error prone"*. Indeed, errors had already happened; for example, a patient complained that the MRI scans he received from a secretary on a CD-ROM were those of another patient. This incident increased the pressure on the secretaries as more and more patients started bringing radiology images on CD-ROM.

A secretaries' representative summarized the problem this way:

> "We have to define clear rules on how to upload and index digital images […] The process is complex and requires experience and expertise, because it contains several steps and the patient's ID is sometimes not recorded correctly –or worse, not recorded at all. Moreover, there are more and more images brought by patients and the secretaries are not sure how to deal with those" *(Secretaries Representative, Alpha)*.

4.1.4 Reconciling the Issues

Between late 2015 and summer 2017, Alpha's senior management realized that the secretaries' use of the EMR system did not live up to their expectations. The secretaries' representative kept track of the time used for digital indexing and used these insights to voice concerns to senior officials from HR and to the Hospital Information Officer. A follow-up study documented that the current use of the EMR system was not optimizing workflow, that secretaries needed more training, and that more knowledge on how specialists in different departments worked was needed.

In response, senior management initiated the design and implementation of a formal plan for how to train secretaries in using the EMR and how to integrate EMR with existing software like Alpha's PACS. Furthermore, senior management and a radiology technician arranged workshops dealing with (1) secretaries' work overload and (2) lack of a formal tutorial for digital indexing. A key question discussed in relation to (1) was who should perform digital imaging; ie, all secretaries, a few, or the radiology technicians from the Alpha Radiology Department? Furthermore, it was discussed how a tutorial could protect secretaries from legal action in the case of errors.

The discussions continued into several internal email conversations, in which the Hospital Information Officer acknowledged the problem and proposed a way forward:

> "Unfortunately, this (current) solution does not satisfy users because the response times are extremely long (…). We therefore face a real problem. To make certain that the patient ID issue is resolved, we want the secretaries who are closer to the patients than the radiology technicians to be able to index pictures and return the CDs to the patients immediately. Hence, it will be necessary to automate indexing and acquire new software […] Now you've got to make a decision that I obviously cannot make alone and that's why I'm asking all of you" *(Doctor and Hospital Information Officer, Alpha)*.

Several changes emerged as a consequence. The tutorial was introduced to show secretaries how to ensure secure indexing. Also, learning digital imaging became part of secretaries' routine training. Moreover, a compromise was that secretaries and radiology technicians would split the indexing tasks in very busy departments as secretaries' workload was supposed to be reduced: *"So secretaries will upload and index images in those departments that are very busy while in the other departments the radio technicians will do this duty"* (Doctor and Information Hospital Officer, Alpha).

These measures enabled secretaries to learn how to use the EMR technology effectively in order to achieve the management's goal of improving work practices. The difficulties mentioned above made the implementation process slower and more expensive than planned, but the EMR was eventually integrated into Alpha.

Today, Alpha's core purpose of providing health care services and undertaking research remains unchanged, and indeed reinforced.

4.2 Beta: Becoming the Leading Provider of Digital Services for the Manufacturing Industry

Beta is a Finnish hardware company with over 500 employees, which has been selling machinery since it was founded in 1901. For a long time, Beta was one of the leading providers of customized and tailormade manufacturing equipment. It was known for delivering top-quality machinery, and its reputation for quality enabled the organization to sell its products for very high prices. Global clients from industries such as aerospace, automobile, and manufacturing largely saw the value in paying high prices and receiving outstanding quality in return. In response to evolving technology, however, Beta embarked on a transformation involving substantive change in how the organization created value. Beta intended to change from being a hardware company to becoming a service supplier. This would involve

a DT leading to a new revenue model, redesign in departmental structure, and change of organizational practices.

4.2.1 Technological Change: Challenge and Opportunity

The root cause of Beta's decision to fundamentally alter how it created value was the emergence of software and sensor-based technologies. These enabled much smaller software companies to enter into Beta's core market by augmenting off-the-shelf hardware with software, and also enabled them to collaborate with industrial players to offer 'smart machinery' while operating on much smaller inventory than Beta. A first sign that this change was significant occurred when Beta lost a major bidding process to a software company in North America, an event that prompted concerns over Beta's competitiveness to grow: *"Our competitors in the software business, they don't have the workshop and factory downstairs like we do here. They just have programmers and computers and nothing else"* (Chief Information Officer, Beta). The sales manager echoed this concern: *"We are in trouble if we are unable to see and change our business and behavior"*.

4.2.2 Transformation Agenda

In order to respond to these challenges, Beta's senior management implemented a "digital strategy" to fundamentally alter the nature of the value offered by Beta. It would do this by redefining the organization as provider of digital services that catered to manufacturing companies. Beta hired a chief digital officer and instituted a "digital business unit" tasked with rolling out several organization-wide changes. As the new digital unit executive explained: *"The [new organizational] structure enables us to run an independent digital business unit meaning that we are also able to sell software to [customers]… and develop new stuff that's not related, not tied to our hardware at all"*.

The purpose of the unit was three-fold: making hardware and software distinct product categories; incorporating a data-rich logic into the design and development of hardware; and moving in the future to selling only software and digital services. In the words of the digital business manager:

> "We will have pure software projects [in the future]. No single piece of hardware will be involved. That is what it means […]. We could deliver that [software] product with very small sales effort, very small support effort all over the world, with a very low unit price and get money from that" *(Digital Business Manager, Beta)*.

These measures reflected the top management's belief that the days of being solely a provider of traditional machinery was nearing an end:

> "Doing business in the future means that we need to listen and understand customers' real needs and provide an adequate solution, which may or may not contain hardware. The solution might be solely digital; i.e., contain only software and/or data driven services" *(Strategy presentation, Beta)*.

Beta's revised strategy document explained:

> "The future lies in the digitalization of manufacturing. […]. We will take our customers into a new era with our winning combination of hardware, software, and services. It will deliver competitive advantage as software, robotics, and intelligent automation [to] deliver value at unprecedented scale" *(Revised Strategy document, Beta)*.

Beta initially achieved a competitive edge by offering control software that generated data through remote connections. This software was picked up enthusiastically by customers, and began to transform how Beta created value, since the organization now handled 83% of all customer requests remotely without needing to fly technicians to customers, meaning those customers could continue production instantly.

Building on this initial success, Beta continued in the same direction by investing in Industrial Internet of Things applications, virtual reality services, and promotion of their control software as a standalone product. As the digital unit executive explained: *"Whatever [Beta] has done in the past was driven by*

hardware. That's something which has to change". The strategy document also notes an accompanying change in business models, involving *"software maintenance, licensing models, and variable pricing as an everyday activity"* rather than one-time sales of hardware.

4.2.3 Consequences of Beta's Digital Strategy and Impositions on Work Practices

As this shift in how Beta created value began to scale within the organization, more and more members of staff were affected. Traditionally, sales personnel were key to Beta's success, as they managed relationships with profitable business customers who purchased machines and maintenance contracts. The control software mentioned above was initially sold as complement to hardware and was thus part of these deals. While selling the control software as a complement in this way did not require a drastic change to how sales were made, once the changes implemented by the new unit began to scale, sales personnel were increasingly being asked to change what they were used to doing.

As Beta moved towards selling services and software only, sales personnel had to move from selling a 'product' for a one-off payment to selling subscriptions or pay-per-use services. Indeed, management began to argue that sales personnel should move from being salesmen to consultants. As the marketing director put it, *"To take on the ongoing wave of digitalization, [we need to develop] consulting capabilities, especially our sales personnel"* and *"to start processing and consulting the customer before he even decides or knows what he needs"*.

As management and Beta's new unit increasingly pushed for new ways to create value, this redefinition of the role of sales personnel became an issue of dispute between sales, management, and Beta's new unit. Sales personnel felt increasingly undermined. From their perspective, traditional ways of selling machinery had earned Beta a profitable position in the hardware market. It was sales personnel who built and managed relationships of trust with 'key accounts' with whom they would strike 'big bang' one-off deals sometimes involving hundreds of thousands of Euros.

New pricing models and selling software ran counter to this way of doing sales, threatening the relevance of expertise in traditional sales. As Beta's sales director explained, *"I would say that 99 percent of our sales personnel have lots of experience in selling machines, but not software or software solutions or digital services. There's a lot to learn".* Moreover, precisely because their relationships with customers were based on trust, sales personnel were uncomfortable selling 'products' they did not fully understand. "*It doesn't fit their way of thinking when you ask them to sell a USB drive that is worth of 1 EUR to customers for 100,000 EUR. This doesn't make sense and it looks like a rip-off to them"*. Beta's digital business director confirmed, *"Sales personnel are used to selling physical objects. So, they just can't reorient their system to recognize the value of (selling) invisible software"*.

This was underscored by informants repeatedly stressing that expertise accumulated through selling machinery did not apply to software (see, e.g., Table 2). Sales personnel were used to demonstrating hardware with models, mock-ups, or physical illustrations that do not apply in the case of software. Likewise, the revenue model remained unclear to sales personnel. Hardware-related maintenance agreements were common, but they were skeptical about why software needed such agreements. Crucially, in many ways the sales personnel's attitude reflected that of customers. Beta's customers were mainly interested in machines and often could not see why software would be helpful. In fact, the very fact that Beta had sold its control software as a complement meant its customers considered software an add-on but not the product.

Cumulatively, changes to customer relationship management and a perceived devaluing of expertise led to substantive problems among sales personnel. Beta's vice president acknowledged: *"The most difficult part then – it's not the development of the digital product, it's the sales of the digital products, because we are really a hardware-oriented company, and we have been so in the past".* The dilemma was that sales had direct access to customers but were reluctant to sell those products and services

management saw as key to the company's future. Tensions arose, and several sales employees left Beta, noting that the new strategy was out of step with their skills and expertise.

The sales manager, for example, related:

> "Currently, the guys are not able to see it and [this] comes from the nature and background of [sales personnel] working in the company for 10-35 years […]. The transition for them is most probably even impossible. I have done this before [i.e., sales], so I know what I am talking about" *(Sales Manager, Beta)*.

In a meeting on this issue, it was observed that, *"Customers want machines to automate their production processes. Therefore, they are interested in buying hardware not software. This makes it difficult to convince to buy software"*.

Clearly, in pursuing a DT of the organization, Beta's senior management had underestimated the consequences for sales. Management was determined that sales personnel should be consultants, but many had "no clue" about how to go about it. For example, informants shared that it was unclear to them how sales personnel could act as consultants for customers, and whether the consulting would be based purely on software or on a mix of software and hardware. A second aspect was that what customers really needed was very unclear as digitally augmented machinery was new to them too.

4.2.4 Reconciling the Issues

As these challenges mounted over time, they also made the digital business unit react. It ran a three-day internal training session with the aim of *"explaining the possibilities of the different digital products and services that the digital business unit had developed and familiarize sales personnel with them".* Beta also hired external experts to train sales personnel in selling digital products. An attendee of the training said, *"the biggest mentality change"* was for personnel to learn to see subscriptions as *"revenue pipe"*.

The same person contended that *"the workshop was a two-way learning experience" as* sales personnel challenged a number of assumptions prominent in the digital business unit. For example, they challenged the simplistic assumption that the digital unit would create a *"cool digital product"* and sales would just get on and sell it without any kind of context or support. In contrast, Beta's innovation manager explained that, *"When we equipped the sales personnel with educational material about digital products and services, this was positively received and improved how sales engaged with customers"*.

Our observations suggest that the workshop was successful in that it led to sales personnel increasingly agreeing to sell digital products and supporting management's ambition to become a provider of digital services. Nevertheless, this came at a cost since a number of salespersons also left the company and Beta had to hire replacements, who were digitally savvy but lacked access to high-end customers. Over time, it emerged that one out of every six employees was a software developer. Table 2 gives an overview of our key findings with representative quotes that highlight the building blocks of our model.

Table 2. Representative Data from the Analysis

Technological Change
1. Environmental context
(a) Alpha • Alpha wishes to live up to the market standard: *"We have to achieve level 7 on the Healthcare Information and Management Systems Society (HIMSS) scale, meaning we have to become a paperless hospital"* (Senior Executive). • The French "Digital Hospital" program was published in 2012. It stated that "*the development and the modernization of Information Systems had become a major player in improving patient care*." The strategy focused on the coordination of care and on five functional domains including EMR and IT support for radiology images (Digital Hospital Program, French Healthcare Ministry, 2012, p. 3). • "*The "Digital Hospital" national program came with important funding for the EMR implementation for several years. Alpha hospital applied for this program*" (Doctor and Hospital Information Officer). • There is an increasing tendency of patients bringing their radiology images on CD provided by radiologists outside the hospital (Meeting observation notes). **(b) Beta** • Beta faces increasing competition from software companies that compete based on the capabilities of their software while buying cheap hardware from other vendors to accompany

the software: *"[…] there are these pure software companies that don't have any, kind of, you know, physical machines [or legacy equipment]"* (Chief Information Officer).

- Increasing shift in the growth area in Beta's market: *"[…] where the growth and competition [lies] is in software-based solutions, not [just] the software itself, but products and services that it enables. […] Of course, the challenge is that for the last eight years, there have come new players in this area. So, competition is getting tougher. In that sense, even though the market is growing, it is getting more and more difficult to grow or get that market growth. Of course, then one place where we are looking for growth is currently [in] the software products that we have […]"* (Service Manager).
- The rise of new digital innovations such as the Internet of Things (IoT or Industry 4.0) brought pressing awareness of the opportunities and threats of IoT to their current business: "*I think we need to take Industry 4.0 [IoT] seriously and search for the opportunities it offers as well as threats it represents"* (Chief Executive Officer, blog comment).
- *"After going through the Industry 4.0 [IoT] final report I think it would make sense to join this train"* (Vice President, blog comment).

2. Organizational context

(a) Alpha

- Before EMR, radiology images were brought in an X-ray format and kept in the paper patient files by secretaries. Gradually, patients began bringing their radiology images on CD and, hence, it was not possible to have them in paper format and to keep them in the patient files (Meeting observation notes).
- *"Initially, the radiology technician uploaded all the radiology images"* (Secretary).
- "*Doctors from various specialties need to be able to access patient records including radiology images for patients with chronic conditions. We [doctors] use to go to each department to access the patient's paper file*." (Doctor and Hospital Information Officer).
- "*Some departments use only paper, some use their specific software, some use paper and software*" (Doctor and Hospital Information Officer).

(b) Beta

- Internal search for growth potential among existing products intensifies and draws attention to the existing software that is typically bundled with hardware: *"[…] one [area] for growth is that currently the software products that we have are always directly related to the hardware that we are delivering. So, that's of course one area that we are looking for growth. [We need] to be able to provide our software as products to this industry that we work in"* (Service and Maintenance Director).
- After a period of declining revenue, Beta employed a new Chief Executive Officer (CEO) who made digitalization one of his key mandates: "*DIGITALIZATION of manufacturing is the cornerstone of growth*" (Strategy document).
- The existing digital capabilities of Beta and the good reception of its control software gives it a footing for embarking on a digital transformation journey: *"I think that part of the competitive advantage, at the moment, that comes from [Beta] is the [control software and] connection to the different tools, robots and machine tools [at the client's manufacturing floor]. These are still pretty much not standardized, and there is still some expertise needed to [take advantage of them]"* (Chief Information Officer).

- *"[…] the larger emphasis [is] on digitalization. And that is the future! Like I said, if you are not doing it, you're going to die. If you're doing it, it depends how well you're doing it. You're going to be very happy, or you're just going to survive"* (Marketing Manager).

Transformation Agenda

3. Existing organizational identity *initiates* new identity claim

(a) Alpha

- *"The project of IS development for 2013–2017 has three objectives: improve patient care, improve IS and hospital management, and improve management of administrative tasks and patient appointments"* (Official document: Hospital's Strategy for the Information System, 2013–2017).
- "*Administrative departments used to work in silos, but doctors from the medical departments had to coordinate with each other in order to manage more complex paths of patient treatment. Therefore, we [doctors] used to go in every medical department to access parts of the patient file. For cross-functional care, there was no unique patient file*" (Doctor and Hospital Information Officer).
- *"[Alpha] wishes to arrive at zero paper as soon as possible by applying to the national program. The aim is to digitalize patient records and to keep only one computerized medium"* (Official document: Hospital's Strategy for the Information System, 2013–2017). This means that the EMR would be the unique tool for recording, storing, and sharing patients' data.
- *"Maintaining two systems (paper and computer) is very costly, demotivating, counterproductive, and a risk generator. Therefore, we have committed ourselves to the zero-paper strategy"* (Official document: Hospital's Strategy for the Information System, 2013–2017). The zero-paper strategy means that all information would be in a digital format only.

(b) Beta

- *"[…] there will be more projects that are only about software in the future in a really different setting compared to what we have now. We will have projects that are only software, no single piece of hardware involved […] That's what it means"* (Digital Director).
- *"We will capture the potential of digitalization. [Beta] will play a leading role in this new era of manufacturing"* (Strategy document).
- *"What is remarkable is that we are having a Digital Business Unit. Right, so, what changes? Actually, this new structure means that we are aligned with the strategy because, in the strategy, it says that digitalization is an essential and central focus of our company"* (Digital Business Manager).
- Beta aims to position itself as a trusted digital partner for the manufacturing industry: *"Digital technology and automation set the pace in making manufacturing profitable in any country of the world. Our customers, who compete around the world for markets, talents, and performance, trust in Beta to create innovative [digital] solutions that help them achieve their goals*" (Digital Director).

Transformation Activities

4a. Digital technology *supports* value proposition (core value supporting activities)

(a) Alpha

- The EMR had to replace paper but also other business IT: *"I wanted a fast go live for the new system; if we keep two systems, we can be certain that the old system 'wins'"* (Senior Executive).
- *"Senior management wanted to improve performance in all departments by implementing the EMR as a cross-functional software"* (Doctor and Hospital Information Officer).
- *"The EMR allows us to access and utilize data in real time as part of patient care. Earlier IT-systems could not do that. This is a true organizational revolution, if we consider that health givers had the habit of asynchronous information"* (Senior Executive).
- *"The aim is to improve the quality and security of patient care by use of one common technology"* (Doctor and Hospital Information Officer).
- *"The EMR is just the digitalization of the patient's file. It allows doctors and all health care professionals to access the patient's file across departments and geographic locations of the hospital, without requiring them to go to every department to access paper files"* (Doctor and Hospital Information Officer).

4b. Digital technology (re)*defines* value proposition (core value redefining activities)

(b) Beta

- Beta's software products redefine the nature of the value that they now offer to their customers as well as their underlying value creation process: *"We used to be machine manufacturers. We had the [product name], a really mechanical product having control [software] system on the top of it, but now the control [software] system has grown in such scale that it doesn't need the hardware anymore, and it's a completely different sport, it's a different game, and kind of shakes up the way of doing things"* (Digital Business Manager).
- They carried out a massive structural change to the whole organization and instituted a new digital business unit to be the driver of the transformation agenda: *"[We are establishing a] new digital unit [to] run an independent digital business and thriving existing business […] [this is] essential for creating a clear, sustainable, and successful [digital] offering [...] The ongoing structural change will allow us to utilize all this"* (Strategy document).
- In response to the question of how digitalization creates value: *"[…] For example, real-time production control; the possibility to make lot-size-one production [i.e., single customized unit as opposed to mass manufacturing] in a cost efficient way; the possibility to share resources in manufacturing networks; transparency in manufacturing networks. Those are things that we [can now do] that are most probably creating [new] value. And these are all enabled by digitalization"* (Unit Director).
- *"If we consider our previous model, the businesses were kind of set vertically, [while] the software was horizontal over all businesses. Now the software is flipped from the horizontal position to the vertical position alongside the other businesses"* (Digital Business Manager).
- The company leverages IoT to create new types of value propositions that would typically be the domain of software companies: *"They [i.e., customers] have certain needs related to life cycle services that require IoT-driven solutions, and that's something we are developing and providing [to] them. […] There will be lots of new data-driven services that will be our own products that are not related to life cycle services at all. So, that's something that we are going to have more and more of in the future. That will be our own business"* (Digital Director).
- *"I mean, when it comes to our software functionalities, there's nobody else who is able to offer something that we have. So, we are able to provide more added value for the*

customers' processes than anybody else. So, it's unique in that sense. If you want to buy something that is simple and cheap, it's not us" (Marketing Manager).

- *Then of course, the value proposition. [For] whatever services or software, we have [to] formulate a key value proposition for the customer, and every item in our own roadmap should have a clearly defined value proposition* (Unit Director).

Imposition and Reconciliation

5. Imposition: Transformation activity *imposes* work practices changes

(a) Alpha

- *"There are different paths on how to upload and index digital images. This makes the whole process error prone"* (Secretaries' Representative).
- *"We have to define clear rules on how to upload and index digital images"* (Secretaries' Representative).
- Secretaries may work for one or several departments, and there is an significant turnover among secretaries. They learn how to perform their tasks on the floor, and there is a big difference between their practices of uploading radiology images and using the EMR depending on their habits (Meeting observation notes).
- *"Secretaries have difficulties with downloading patient images directly"* (Secretaries' Representative).
- *"The process is complex and requires experience and expertise because it contains several steps and the patient's ID is sometimes not recorded correctly – or worse, not recorded at all. Moreover, there are more and more images brought by patients and the secretaries are not sure how to deal with those"* (Secretaries' Representative).
- *"Secretaries are overloaded especially in some departments"* (Secretaries' Representative).
- *"Secretaries want to continue using paper. It demands fewer steps"* (Secretaries' Representative).
- *"The Picture Archiving and Communication System (PACS) is slow in the afternoon. We were told that we could not work because too many people tried to access the server. We were told to do something else in the meanwhile and then return to the task at a later point in time"* (Secretary).
- *"Uploading digital images is cumbersome due to bugs and the systems being slow*" (Secretary).
- *"It's necessary to investigate how to formalize this task. But it's also necessary to resolve the differences in the secretaries' practices"* (Doctor and Information Hospital Officer).

(b) Beta

- *"Sales personnel are used to selling physical objects. So, they just can't reorient their system to recognize the value of (selling) invisible software"* (Digital Business Manager).
- A number of employees quit the company as they considered the change in the direction of the company to be in misalignment with their competence or the prior identity that they could relate to (Observation notes).
- Similarly, a large number of new employees were hired, which implies a huge change in the composition of the workforce that sets in motion a state of continuous flux as they try to define new and re-established work practices that reflect the new value creation and value delivery activities required for the transformation (Observation notes).

- The salespersons were asked to act as consultants and do what is called "consultative sales" in order to sell the new digital products; however, this was outside their traditional role or work practices: "*But if we are discussing about, for example, consultative sales, it's very difficult to tell somebody else [i.e., the salesperson] what to tell to the customer, because that [has] not [been] their job previously"* (Marketing Manager).
- Shifting expectations toward the revenue model: *"We aim at using new pricing models. There has to be new pricing models for sales because our current pricing relies on fixed prices. It doesn't work if we talk about software deliveries, software products, etc."* (Digital Business Manager).

6. Reconciliation: Reconciliation actions *refine* transformation activities

(a) Alpha

- *"We need to seek different solutions. For example, can we use a new software that automates indexing and uploading in order to decrease the time that these tasks take?"* (Secretaries' Representative).
- *"We need to verify whether the additional time results from technical problems or lack of skills and competencies" (Doctor and Information Hospital Officer).*
- *"It's necessary to put a better analysis in place to formalize this task. But it's also necessary to resolve the differences in the secretaries' practices"* (Doctor and Information Hospital Officer).
- *"So, secretaries will upload the index images in the departments that are very busy while in other departments the radio technicians will be responsible for this task"* (Doctor and Information Hospital Officer).
- *"We will write a tutorial on how to perform the process"* (Quality Manager).

(b) Beta

- Bullet points on how to develop HR: *"[We will establish] a trainee program 'Nurturing Future Specialist'; [we will establish] a leadership development program encouraging ambition-and result-oriented work"* (Strategy document).
- *"We have a lot of responsibilities also regarding teaching the sales organizations how to deal with [digital offerings], how to sell software, and how to sell new kind of products"* (Digital Director).
- *"[Reorganizing the company with a digital business unit] was done for a very practical reason, definitely. With our products and with the employee know-how that we have and with the market potential, this equation provides faster growth with better revenue than we were able to deliver, meaning that we needed to shake the teams up a bit to have a wake-up call"* (Software Development Manager).
- Reducing uncertainty surrounding institutional structures: *"In some countries, it's hard to sell and to offer digital products. So, I think we need some kind of, let's say, market research and analysis to really convince and figure out the right offering for our customers" (*Marketing Director).

5 Discussion

The aim of this paper was two-fold: we wanted to disentangle the conceptual differences between DT and ITOT. Moreover, we wanted to unpack how these processes unfold over time. Consequently, we studied the transformation processes in two organizations, Alpha and Beta, to reveal their differences in terms of transformation agenda, transformation activities, and the impositions that these led to, as well as the reconciliation actions resolving such impositions. In the next section, we synthesize these insights into a process model and discuss contributions, practical implications, limitations, and future research.

5.1 Conceptualizing Similarities and Differences between ITOT and DT

Drawing on our case study insights, we theorized the similarities and differences between ITOT and DT in a conceptual model (see Figure 1). We have been inspired by earlier work that has highlighted the importance of integrating digital technology into one's value proposition (Barrett et al., 2015; Günther et al., 2017; Huang et al., 2017a) and that has placed digital technology in a central role in transforming work (Barley, 1986, 1990; Barrett & Walsham, 1999). Whereas the outer boxes in our model depict generic elements of transformation processes (on the macro level of the organization), the inner boxes depict the inner workings (micro level). The dotted arrows highlight the core differences between ITOT and DT. The two transformation processes differ according to the patterns by which the dynamics in value propositions relate to dynamics in organizational identity: technology can either *(re)define* (DT) or *support* (ITOT) value propositions, implying either the emergence of a *new organizational identity* (DT) or *reinforcing an existing organizational identity* (ITOT).

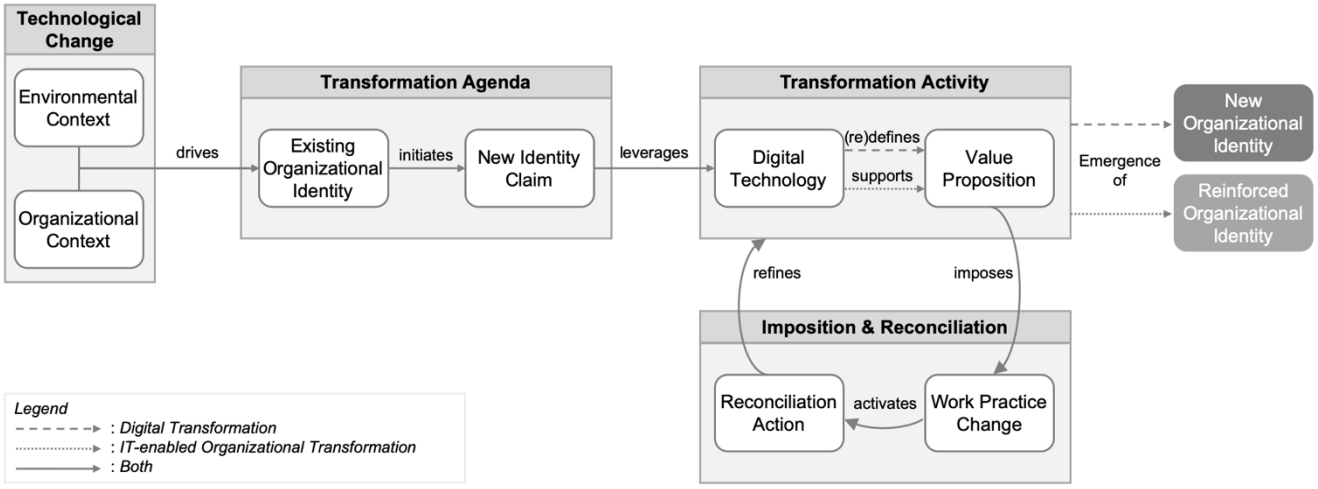

Figure 1. Process Model of Transformation

Our evidence reveals that both transformations are driven by the influence of the prevailing environmental and organizational contexts (Pettigrew 1987). The core similarity is that technological change in the environmental and organizational context *drives* the existing identity of the organization. Technological change can either unfold as a source of a digital threat or a source of digital opportunity that then jump-starts the process of DT and ITOT (Sebastian et al., 2017; Utesheva, Simpson, & Cecez-Kecmanovic, 2016). Yet, our empirical analysis indicated a possible difference in the technological changes that *drive* how DT and ITOT begin. For example, we saw how sensor-based technologies had a decisive impact on the Finnish manufacturing company Beta that was put under pressure by competitors to augment its physical machines with digital capabilities. This push changed Beta's perception of itself as a "digital service provider" rather than a hardware company. The goal of becoming more efficient and patient-centered pushed the French hospital Alpha to adopt digital technology that could enforce such ambitions. These goals are indicative of the different ways in which environmental and organizational contexts can drive an organization to embark on a transformation journey.

Building on this observation, we propose that the transformation agendas that underlie DT and ITOT lead to different dynamics of how value propositions and organizational identity inter-relate (Albert & Whetten, 1985; Ravasi & Schultz, 2006). For example, Beta's intent to become a "digital service provider" and no longer maintain its existing identity as a hardware company shows how they relied on digital technology to *initiate* a fundamental change in their value proposition. This went hand in hand with a renewed identity claim (Ravasi & Schultz, 2006) as Beta's management wanted the organization itself to become a "trusted digital partner," which is why management formed a new unit that was tasked with reorganizing Beta's core value-creating activities around digital offerings. Management thus gravitated toward a much different value proposition, identity, and core value-creating activities. In contrast, Alpha's intention to *initiate* activities to become a "more digital" hospital echoes what many other organizations aim at, namely becoming more efficient, better, and arguably "more digital," while keeping the structure of their core value-creating activities constant (Berente et al., 2016; Gregory et al., 2015). Like Alpha, organizations undergoing ITOT continue enacting their existing value propositions but want digital technology to support it through, for example, increasing efficiency. With this intent, technology reinforces the existing identity of the organization but does not transform it. The transformation agenda in these contexts is thus intended to make work more efficient, effective, or "digital"; yet, such an agenda draws from identity claims and value propositions that, in general, remain the same. To achieve this new identity claim of being "digital," both organizations *leveraged* digital technology.

Our evidence revealed a fundamental conceptual difference between DT and ITOT in terms of their transformation activities, particularly the role of digital technology in formulating and executing their value propositions. Our observations correspond with earlier research that highlighted the importance of value propositions for selling digital products (Barrett et al., 2015; Porter & Heppelmann, 2015) and that organizations adopt digital technology in order to become better at what they do (Besson & Rowe,

2012; Lyytinen & Newman, 2008). Whereas, in the Beta case, the technology was paramount in *(re)defining* a new value proposition as the organization aimed to become a provider of digital services, in the Alpha case, technology *supported* the existing value proposition. The key difference here is that in DT (Beta case), digital technology was used to redefine what value means in that context – that is, a fundamental change in the conception of the value that the company offers. This is evidenced in the shift from a seller of manufacturing equipment to becoming a provider of software and IoT services to the manufacturing industry. In contrast, in ITOT (Alpha case), the EMR technology was essential in supporting the hospital in fundamentally improving its existing value proposition. Unlike Beta, Alpha remained what it originally was, a hospital that delivered health care to patients, albeit in a 'more digital' way than before. In other words, the conception of value that they offer remained the same even though their approach to creating, capturing, and delivering that value was transformed by digital technology. In essence, both cases leveraged digital technology in their transformation activities; however, the DT case went a step further by using digital technology to redefine their conception of the value that they offer. How digital technology affected the value proposition was thus different between the two cases as it *defined* a novel value proposition in one case (Beta) while *supporting* an existing value proposition in the other case (Alpha).

Our cases revealed that placing technology as central to the value proposition is consequential for organizational identity as it sets into motion identity-related dynamics that differ between DT and ITOT. A value proposition can be seen as deeply related to an organization's identity in that it involves a definition of what an organization is and how it creates value for its customers (Teece, 2010). This corresponds well with the literature on organizational identity that has captured how an organization sees itself and what it does (Corley & Gioia, 2004; Gioia et al., 2010; Nag et al., 2007). Yet, while the literature on value propositions has typically focused on the strategic orientation of the organization only, the literature on organizational identity enables connecting strategic decisions, such as changes in value

propositions and how workers on the “ground floor” react to such decisions (Nag et al., 2007; Ravasi & Schultz, 2006). This enabled us to theorize the link between transformation activities and impositions, as well as the subsequent reconciliation actions they generate.

The recognition of impositions and reconciliations that occur during the transformation process is important as it highlights that transformation activities *impose* changes on the work practices of organizational members, which if not attended to, may derail the whole transformation agenda. These impositions on work practices then *activate* reconciliation actions that subsequently *refine* the transformation activities. Our empirical evidence shows that changes in an organization’s value proposition and identity claim often lead to changes to the micro level work in which organizational members engage. Indeed, the transformative effects of technology on work echoes the classical discourse in the literature. For example, Barley (1986) concluded that technology alters work through showing how CT scanners changed the way in which radiologists interacted with technicians because the scanners required technical knowledge in order for them to interpret an image. Digital technology thus became an enabler of change in roles since it initiated novel interaction patterns that became institutionalized over time (Barley, 1990). Likewise, Barrett and Walsham (1999) showed how digital technology altered identities of reinsurance traders in London (see also, Orlikowski, 1996). Our evidence is consistent with these findings in that each case showed that managerial decisions imposed change on organizational members and their work. For example, at Beta, sales personnel had to learn how to deal with marketing products with digital capabilities. At Alpha, secretaries had to learn how to use new technology to support their work. However, our evidence also foregrounds a more fundamental question that involves “what” work is transformed. When addressing this question, we did not find a single answer; rather, we found that our two cases differed on this matter and that our study extended earlier conceptualizations. Beta formed a new unit that was supposed to reorganize the whole organization so that it could effectively compete by selling digitally augmented machinery. Revenue models, product

offerings, and sales practices were envisioned to fundamentally change the entire organization with digital technology being at the core of this change. At Alpha, the hospital implemented digital technology in order to become more efficient and patient-centered. However, basic operational models underlying patient treatments remained intact as did the roles of key personnel such as doctors. Instead of transforming their work, Alpha's transformation affected administrative work that catered to the hospital's core value-creating activities. Thus, whereas current research has generally suggested that digital technology transforms work, our evidence points out that we need to ask more carefully about "what" work is being transformed. According to our findings, DT is much more about transforming work around the core value defining activities in an organization, whereas ITOT relates more to transforming work around the core value supporting activities.

The reconciliation actions that are *activated* in response to impositions on work practices are emergent efforts that are galvanized to *refine* the transformation activities. Transformation in the area of core value (re)defining or supporting activities is challenging partially because the prior organizational identity embeds work practices that are being affected (Nag et al., 2007). This is consequential for the transformation activities and their progress. For example, Beta's identity as a successful hardware provider granted to sales personnel a role identity that was central for the success of the organization. Likewise, Alpha's identity as a public hospital allowed secretaries to draw from a highly formalized order that lacked instructions on how to do digital imaging. Thus, both cases suggest that their transformation activities diverged from the work practices that Alpha and Beta's transformation agendas promoted. At Beta, digital technology was at the core of these activities, which called into question the salespeople's existing work practices – their metrics of success, their knowledge of how to sell products, and their power relationships within the new unit that was formed to help them learn how to capitalize on digital products. The Alpha case indicated a similar dynamic in the work practices of secretaries. Secretaries lacked knowledge and formalized prescriptions for how to do digital imaging, which set into motion

learning processes through which the organization increasingly enabled secretaries to use the EMR technology. Hence, even though there seemed to be a difference between what areas of an organization are transformed, our evidence suggests that what DT and ITOT seem to have in common is that they require organizational members to adapt to changes in work practices imposed by the transformation activities (Besson & Rowe, 2012; Lyytinen & Newman, 2008; Silva & Hirschheim, 2007). Furthermore, we found a commonality in the recalibration of the transformation activities to respond to the emerging mismatch in the envisioned value proposition, identity claim and the instituted work practices (Barley, 1986, 1990; Barrett & Walsham, 1999; Nag et al., 2007).

One of the key conceptual delineations between DT and ITOT lies in the outcome of the process. While the outcome of a DT process is the *emergence of* a "new organizational identity," the outcome of an ITOT is the *emergence of* a "reinforced organizational identity." For example, Beta ultimately gravitated toward sales practices that were aligned with the new identity claim promoted by top management. This novel identity claim thus became increasingly shared among the different organizational members as the reconciliation of work practice changes were incorporated into the transformation activities. This gradually paved the way for the offering of new digital-oriented value propositions, indicating that Beta was becoming a much different company compared with what it was originally. In contrast, the work of Alpha's secretaries also increasingly converged with the new identity claim promoted by the hospital; however, because this claim did not fundamentally differ from Alpha's original identity as a hospital, the convergence of the transformation activities with the identity claim did not lead to a new identity. Instead, this reinforced the existing value proposition, as well as Alpha's identity as a university hospital. In effect, after the reconciliation of the transformation activities in order to align or resolve the impositions to work practices, they effectively led to a transformed organization in both cases. The difference however was in the metamorphosis to a new identity in the case of DT and the reinforcement of an existing identity in the case of ITOT.

In summary, we propose that DT and ITOT can be conceptually delineated in two ways:

- Transformation activities: In DT, digital technology *(re)defines* the value proposition, while in ITOT, digital technology *supports* the value proposition.
- Transformation outcome: DT is characterized by the emergence of a *new organizational identity*, while ITOT is characterized by the emergence of a *reinforced organizational identity*.

Despite these differences, our study indicated that both transformations share fundamental building blocks of transformation. However, how they relate to one another and the patterns of how they interrelate enabled us to better understand the difference between the two. Thus, we posit that such conceptual delineation is essential if we are to take the concept of DT seriously in our future theorizing. Importantly, such a clarification steers away from the trap of comparing apples and oranges in future empirical and conceptual scholarships.

5.2 Rethinking the Logic by Which We Discuss DT

Thus far, the scholarly discourse around DT, at an organizational level, has largely followed the same logic as the traditional ITOT discourse; that is, technology has been addressed as strategically relevant for improving business outcomes. A problematic consequence is that we as a field are at risk of making "digital" a buzzword that becomes attached to multiple phenomena in order to make them sound more interesting (Baiyere, Grover, Gupta, Woerner, & Lyytinen, 2017) even though our community increasingly recognizes that "digital" as concept requires a new logic of thinking about technology (Baiyere et al., 2019; Baskerville et al., 2019). Yoo and colleagues (2013, 2010) specifically suggested that the material properties of digital technologies call for reconsidering classical models of transformation, a call that corresponds with differentiating between IT strategy and business strategy (Bharadwaj et al., 2013), innovation management and digital innovation management (Nambisan, Lyytinen, Majchrzak, & Song, 2017), and entrepreneurship and digital entrepreneurship (Davidson & Vaast, 2010; Nambisan, 2017). All these works have pointed out that the role of digital technologies will

require new ways of conceptualizing their organizational consequences. However, extant work on DT has revealed that it has been conceptualized in essentially the same ways as ITOT. For example, Vial's (2019) comprehensive review and framework of DT has drawn on a body of work that builds on the logic of argumentation that we know from ITOT, making it difficult if not impossible to spot conceptual differences between these two transformations (Besson & Rowe, 2012; Vial, 2019). Both are cast as strategic changes that build on IT in order to improve performance, and this makes it hard to understand why we as a field should consider DT and its widely proclaimed novelty.

Better understanding of DT calls for, we believe, altering the logic by which we think about this topic. Particularly because researchers have addressed it by using the same underlying logic as ITOT, we argue for letting go of two ways in which DT has been conceptualized. One is to move beyond thinking about DT *only* in terms of its strategic significance. This way of thinking is evident already in Henderson and Venkatraman's (1992, 1999) work on strategic alignment and also characterizes most of the current literature on DT (e.g., Vial 2019). Both streams argue that digital technology calls for some sort of strategic action that aims at improving or sustaining business outcomes. However, continuing into this direction is unlikely to yield conceptual progress since all transformation initiatives normally aim at improving business outcomes. Therefore, the strategic significance of ITOT *and* DT will always be high, and it follows that the associated strategic change processes likely resemble each other (Besson & Rowe, 2012; Vial, 2019). Unless we move beyond a solely strategic perspective and acknowledge the interplay between the strategic and other viewpoints, for example, the organizational lens, we are unlikely to make much progress in understanding what is new about DT. To be clear, we are not suggesting that strategy does not matter for DT; rather, we argue that looking at it *only* from a strategic standpoint makes it hard to understand how DT differs from ITOT. In our study, the understanding that there is a distinction in how the interplay between digital technologies and value proposition unfolds could only be possible by unpacking the operational and strategic processes within the two

transformations. Such insights would be difficult to glean by adopting a unidimensional strategic perspective.

Our second proposal to alter our way of thinking about DT is to move beyond solely macro views that apply predominantly to the organization as a whole. Recent review articles on ITOT (Besson & Rowe, 2012) and DT (Vial, 2019) reveal that conceptualizing the latter on the organizational level is likely to lead to theoretical arguments that resemble key topics of the debate on ITOT; that is, organizations are required to react to technological changes while having to deal with internal challenges throughout. Similar to our first proposal, our empirical analysis and the process model led to the development a multilevel view of the underlying process of transformation. By taking this view, we were able to achieve a conceptual untangling of DT and ITOT, both from the micro level (inner boxes in our model) and the macro level (outer boxes in our model). This view has enabled us to observe and put forward differences between transformation in terms of both the outcome (i.e., new/reinforced identity) at a macro level and the activities (i.e., digital technology (re)defines/supports value propositions) at a micro level.

Against this backdrop, we suggest two ways to unpack how DT and ITOT differ. The first is to overcome the dominant focus on strategic significance at the expense of other viewpoints by looking into the organizational consequences of the strategic decisions that are involved in either type of transformation process. We thus take seriously that strategy matters, but we move the conceptual spotlight toward the interaction between the strategic choices and operational actions that underpin an organization's undergoing transformation. Secondly, in addressing these organizational consequences, we call for a multilevel approach that explores the differences between DT and ITOT from the vantage point of how such processes affect organizational members differently.

5.3 Theoretical Contributions

We offer two contributions to theory. First and foremost, we have disentangled the conceptual differences between DT and ITOT. This is important because the former has largely been

conceptualized in the same ways as the latter (Bohnsack, Hanelt, Marz, & Antunes, 2018; Kutzner, Schoormann, & Knackstedt, 2018; L. Li et al., 2017; Lucas Jr et al., 2013; Vial, 2019) despite calls for unpacking its conceptual specificities (Yoo, 2013; Yoo et al., 2010). Based on our study, we have shown that DT and ITOT indeed have several similarities; however, we have also shown that they differ in terms of their key activities and outcomes. DT involves using digital technology in order to (re)define a value proposition and to change the identity of the firm, whereas ITOT involves using digital technology to support an existing value proposition and reinforce an existing organizational identity. We could achieve this distinction because we thought of transformation in terms of how it involves changes in the ways organizations think of themselves and how they leverage digital technology in achieving that, that is, changing their identity (Albert & Whetten, 1985; Ravasi & Schultz, 2006). This brought to the fore the important consequences that arise when value propositions are (re)defined by digital technology, which alters the identity of an organization, whereas, in ITOT, digital technology is implemented within the bounds of an existing identity.

Our second contribution is that we have revealed how DT unfolds over time. Even though the phrase "going digital" (Kane, 2015) suggests longitudinal dynamics as important, we understand little about how DT unfolds over time (see also, Besson & Rowe, 2012). This issue is particularly crucial for DT because it has been scarcely developed as a concept. Instead, the literature on the matter is largely practitioner-oriented, foregrounding it in connection with the potency of executives to transform organizations (see, for example, Singh & Hess, 2017). While we acknowledge that executive actions matter (Dremel et al., 2017), heralding executives as heroic change agents is a problem (Mintzberg & Waters, 1985; Pettigrew, 1987) because it ignores the fact that changes in work practices can alter the trajectory of planned transformation activities. In terms of DT, we found that identity claims expressed by top management lead to impositions and reconciliations and that their interplays explain the outcome of DT, that is, a new organizational identity. This puts into perspective the literature that considers DT as radical

change (Matt et al., 2015; Sebastian et al., 2017; Westerman, 2016), but does not address the longitudinal dynamics or challenges occurring during the transformation journey.

5.4 Implications for Practice

Through clarifying the differences between DT and ITOT, our study assists managers in anticipating what challenges may arise during their attempts to transform organizations. Regardless of whether their transformation agenda is to leverage digital technology in reinforcing or changing their value propositions and identities, it is likely that they will encounter obstacles firmly rooted in work practices. These work practice impositions have considerable implications for how to budget and organize for transformation. This is demonstrated by the case of the salespersons at Beta who had to let go of their long and hard-earned knowledge about selling hardware while taking on the task of learning the skills required for consultative sales and sales of intangible software products and services. Our study findings also indicate that managers should critically assess the role that digital technology plays in transformation. A key consideration would be to assess if digital technology is being leveraged to define the conception of value that the company offers or to support or even enhance existing value propositions, that is, whether digital technology is considered key in (re)defining or supporting an organization's value propositions or whether it demands a fundamental change in their identity. An understanding of this different role of digital technology can be useful in helping managers contextualize digital technology within their chosen transformation agenda.

5.5 Limitations and Future Research

Even though our study offers significant insights regarding how to conceptualize transformation, it is not without limitations. First, given that we aimed at developing theory but not to test it, future work is needed to ensure that our findings can be further generalized (Lee & Baskerville, 2003). This study was devoted to analytical generalization and, hence, attempted to chart theoretical territory that future work will no doubt need to verify, revise, and advance. For example, it will be important to test the conditions under

which either DT or ITOT unfolds as we have described it here. Secondly, because our intent was to differentiate DT and ITOT, we separated them conceptually. This is not to say that they could not overlap. For example, DT could comprise ITOT when a company changes not only its IT use but also transforms its value propositions identity. Future research is needed to more elaborately show how such transformation processes unfold, and, especially, how value propositions identity-related dynamics interrelate during such transformations.

Also, since our process model was based on observations from our empirical evidence, we conceptualized the transformation processes around the key distinctive features of DT and ITOT. We, however, recognize that there might be more substantial differences in other elements of our process model. For example, although we highlighted the nuanced differences in the environmental and organizational context, which drive the transformation agenda that set both transformations in motion, we have refrained from making categorical claims about this. Similarly, although we identified nuanced differences between the work practice impositions and reconciliations in both cases (e.g., identity and learning), we believe we cannot make generalized statements based on focusing on one role within the organizations. We acknowledge the limitation of our data in these regards, and rather than overreach what is afforded by our empirical evidence, we propose that unpacking the interaction between each element of both transformation processes is a worthy area for future research.

6 Concluding Remarks

With transformation all around us, it becomes important to have a better understanding of it. We have made progress here by disentangling DT and ITOT based on how value propositions and organizational identity interrelate in these processes. This recalibrates extant discussions about the important cornerstones of transformation by highlighting how organizations think of what they want to be and the interplay between digital technology and their value proposition. While much remains to be done in

business and academia, this understanding enables us to rethink how we as IS scholars approach transformation processes, particularly digital transformation.

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