Temporary constellations of people and effective digital transformation

MASTER THESIS IN STRATEGIC MANAGEMENT

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Content

Abstract

Digital transformations require entire organizations to adopt digital business models. These should at least consist of an integration between IT and domain expertise, the use of scalable and data-drive methods, and include a way to capture the value that comes from people interacting with the digital world. Reaching this state of maturity is well addressed in literature from a manufacturing context, wherein the increased use of services to enrich physical products is a common journey to take. But in people-based service firms, where organizing knowledgeable individuals to co-create value with consumers is key, there is a gap in understanding what a digital transformation journey entails. Informed by literature on managing dynamic capability and conflict that arises from integrating IT and domain expertise this research explores how resources can best be structured to support a digital transformation in people-based-service-oriented organizations. The findings show the importance of coordinating the sensing, learning and integrating mechanisms that comprise the digital transformation capability. Integrating is shown to be a potential bottleneck as the temporary constellations of people are well equipped to sense and seize opportunity, but spreading what was learned across the organization, allowing that organization to transform was inhibited by a lack of coordination and ownership of changing business-as-usual towards a digital approach. An architectural framework emerged that can inform managers and researchers in what to address when setting up for a successful digital transformation.

1 Introduction

Organizations increasingly need to keep up with 'digital' replacing or augmenting analog tools and human activity and a plethora of new opportunities (de Wit, 2020). Digital transformation impacts entire organizations (e.g. Sebastian et al., 2017). When organizations embark on transformation journeys that are of such wide impact, they inevitably need to take their past and current state into account. What sets a digital transformation apart from any other transformation follows from a maturity model of digitizing, digitalizing and finally digital transformation (Sebastian et al., 2017). To reach the digital transformation phase firms must change their value creation logic and the way value is captured in all parts of the organization after already making most processes technologically driven and/or supported (Andal-Ancion et al., 2003). To further specify digital transformation, we must assume that organizations that reach digital transformation are already using IT. Currently, it is difficult to imagine multinationals that do not use IT. But this assumption is necessary, because next we can say that those organizations therefore have a business with domain knowledge, that is supported by an IT organization. For digital transformation the business model must change to a state where business domains and IT are fully integrated (Andal-Ancion et al., 2003; Hinings et al., 2018; Sebastian et al., 2017; Sklyar et al., 2019; Verhoef et al., 2021).

Further special characteristics of a digital transformation are found when diving deeper in 'digital business models'. Whilst each organization develops their own models, digital business models have some common factors. Tiwana (2017) and Weill & Woerner (2018) find that digital business models are: 1) scalable due to easy replication, 2) user (experience) oriented as people interacting with IT is where value is created – that is, unless decision making is delegated to machines, but even then at some point those algorithmic decisions end up by a human endpoint for now – and 3) use data as a source of value. Digital transformation is different from other transformation because it requires the entire organization to adopt digital business models that should include scalability, an (end) user orientation and data driven methods. The methods found in those models must also be interwoven with multiple domain expertise and especially the integration of IT as a key resource for this value creation.

Digital business models grow and develop over time, transformation is a journey (Lavie, 2006). The route is influenced by the organizations' context, what competitors are doing, which substitutes may come to light and what – sometimes fast paced – technological developments are driving these changes (Verhoef et al., 2021). Predicting the future is impossible, designing

the complete transformation journey before embarking on it is not feasible. Rather, adopting the new business models, designing them, experimenting with the designs, and refining them based on prior outcomes is required to keep a fit between organization and her environment (Andal-Ancion et al., 2003; Lavie, 2006; Zott & Amit, 2008). Societal expectations are ever changing. In the digital arena these changes can be driven by rapid technological development. Staying in tune with the globalizing outside world is crucial for business models built around digital value propositions and, resources and channels (de Wit, 2020). A digital transformation journey therefore leads through a dynamic, potentially even volatile, environment. Decisions made along the route influence what change to make next, and those decisions are ever changing due to the dynamic environment. Having the capability to navigate a digital transformation can thus be understood as a dynamic capability (Brown & Eisenhardt, 1997; Rindova, 2001).

Viewing digital transformation capability as a dynamic capability and given the characteristics of a digital rather than just any transformation there is a complication. For digital transformation, the replication of (often) data driven methods is key, but expectations of users, technological developments and changes to the competitive landscape require adaptation, as per the mechanisms of a dynamic capability (McGrath, 2013; Ashurst, 2015). This creates a paradox where standardizing processes, routines and data is opposed to trying to find a way to continuously adapt to the new context. A paradox wherein being able to deal with the complexities of striving for efficiency and innovation lead to valuable synergies. Ambidexterity literature focusses on this paradox, the conflict that exists if an organization wants to explore and exploit simultaneously. Extant literature shows that organizations can deal with the paradox sequentially, by separating the conflict in different business units or by building a context that deals with this paradox (Birkinshaw & Gibson, 2004; Johnson et al., 2008; Mom et al., 2015; Tushman et al., 2011). In all approaches there is a role for people who are positioned to manage the conflict, either as a manager in a hierarchy or as championed individuals. Both roles are played as an individual across multiple teams of people that work together as constellations, bound by the pull these champions can impose on the others or the systems created by managers.

Current research on digital transformation focusses to large extent on moving from a manufacturing and/or sales of goods context into an operating model that circles around providing services (e.g. Parida et al. 2015; Parviainen & Tihinen, 2017; Karimi & Walter, 2015). In firms that are already service-oriented, such a shift cannot be made. For service-oriented firms, managing knowledge and giving consumers access to concentrated, structured

bodies of knowledge is part of what makes those firms relevant and of added value. (Benedettini et al., 2015; Greenwood et al., 2005; Weeks & Benade, 2015). Adding value in a digital world and using IT can only occur on the human-computer interface, where people interact with IT (Tiwana, 2017). The position of knowledgeable individuals is therefore instrumental in how teams can achieve digital successes. To magnify the differences between the value creation mechanisms of manufacturing and service industries another specification is made. In manufacturing inputs are transformed into outputs that should have a greater value than the inputs (Helfat & Raubitschek, 2000; Parida et al., 2015; Sklyar et al., 2019), whereas in service industries value is (co-)created by providing a consumer an intangible asset with value for the consumer who is willing to pay for that value (Amit & Zott, 2001; Sklyar et al., 2019). Due to digital transformation in manufacturing the lines between the industries blur, for example by coupling services with manufactured products (De Wit, 2020). A clearer distinction can be made by focusing on services that are created by people for people such as knowledge work or consultancy. To address the gap in the literature where less is known about digital transformation in service industries and keep a clear distinction from manufacturing a focus is introduced on people-based-service oriented organizations.

These organizations will share one type of key resource: structures of knowledgeable individuals. Seeing the importance of having access to those resources and managing conflict therein the question arises how best to organize them. Digital transformation 1) requires management and integration of IT and domain knowledge in individuals, 2) requires the entire organization to change towards digital business models, and 3) carries the paradox ambidexterity literature is trying to manage. Research into ambidexterity and knowledge management show that focusing on several *champions* can build an ambidextrous, learning context where managing knowledge is another dynamic capability (Kulkarni et al., 2007). In combination with literature that takes a focus on integrating IT and domains, required for a transformation to be digital, research shows the importance of an interface manager to liaison between IT and domain expertise (Abcouwer et al., 2020). Such a role serves the purpose of integration of expertise and mediation of conflicts. Positioning certain individuals within teams in a role thus has advantages for 1) integration, 2) managing change, and 3) managing the paradox.

This research will bridge these two gaps. Firstly, the application of ambidexterity and knowledge management principles in digital transformations where having a digital liaison in teams may advantageous for integrating IT with domain expertise. Secondly the context of people-based-service oriented firms, that is less well researched than a manufacturing context and helps to isolate the importance of managing teams using structures of knowledgeable individuals. To address these gaps a central research question will be answered: *How do structures of people influence a digital transformation capability?* By exploring how this question can be answered a theory will be developed on how to best organize teams for a digital transformation.

The developed theory will contribute to the understanding of organizational characteristics that influence digital transformation capability and to the understanding of digital transformation in service-based organizations in general. This will in turn inform other research that aims to understand how organizations will create and capture value in a digital future by the adoption of digital business models. By doing so in a context wherein less research to the mechanisms of digital transformation has been carried out this research will also improve the understanding of digital transformation where people are the primary creators of value without a physical good to also be part of that value. In combination with the previous contribution this addresses another important consideration of digital transformation, namely the position of humans in the digital future. These ethical considerations are beyond the limits of this research, but by focusing on the importance of people in digital transformation as that transformation may greatly change the position of those people in the transformed organization. The practical relevance of this research follows this theoretical relevance, as understanding what constitutes a digital transformation capability can help organizations assess their maturity and understanding the influence of organizational structure can serve as a guide in decision making and strategic management. Understanding how the organizational structure may influence the digital transformation capability can help managers in rethinking business as usual, because as will be discussed, digital transformation requires more than digitalizing processes.

2 Theoretical background

In this chapter, prior research on organizational structure, its influence on digital transformation capability, through the mechanisms of dynamic capabilities is reviewed. The digital transformation capability depends on other capabilities that need to be in place before digital transformation can occur. This review will also include antecedent capabilities, viewed from a dynamic capability perspective. These capabilities are, in turn, influenced by organizational factors that promote or hinder their working.

2.1 Digital transformation

Extant literature on digital transformation places it at the end of a three phased development: digitization, digitalization and digital transformation.

2.1.1 Digitization

With the arrival of IT systems information is encoded to transform it from analog to digital carriers (Dougherty & Dunne, 2012). The exchange of these carriers also becomes digital and people interacting with the systems thus perform their tasks digitally and with the firms' goal to improve the effectiveness of resources (Verhoef et al., 2021). This is digitization, the first phase in digital transformation, the change from analog to digital.

2.1.2 Digitalization

Next comes digitalization. Here, IT is the enabler for the alteration of existing business processes to the end of improving efficiency, coordination, reach and customer experience (Li et al., 2016). In comparison to digitization, in digitalization there is an additional focus on *altering processes* to improve customer experience (Pagani & Pardo, 2017). In addition to digitizing information the socio-technical processes around the creation, distribution and consumption change as well (Tilson et al., 2010). Both digitization and digitalization can have impact on a limited part of a firm (Amit & Zott, 2001). Communication or financial functions may adopt a level of 'digital' to perform their tasks, the operations may not be affected by this. Going beyond the limited part of the firm that is impacted to a full adoption of 'digital' in an organization brings the organization in the next level of maturity.

2.1.3 Digital transformation

In the final phase, digital transformation, the business logic or value creation process of a firm is changed, thus affecting the entire firm, but also providing a new potential strategic (dis)advantage (e.g. Andal-Ancion et al., 2003; Sebastian et al., 2017; Hinings et al., 2018;

Sklyar et al., 2019). A key change that needs to be made to be able to speak of digital transformation is therefore a change in the business model. What makes a digital transformation special from a transformation perspective is the dynamism of the factors driving and determining the transformation journey and the strategic changes this entails (Sebastian et al., 2017). Information Technology (IT) and business models that capture the value of new technologies or new applications of existing technologies are developing rapidly. Incumbent firms face a plethora of new threats from substitution or disruption, in part due to the scalability of digital solutions. Digital transformation is therefore not synonymous with digitization. The latter is the increase in use of digital solutions to perform the same *job to be done*, but the former requires the complete organizational shift to make the individuals in an organization see, experiment, learn and implement opportunities and threats that come from digital solutions in order to morph the business model of the organization into a digital technologies driven one (Verhoef et al., 2021, p. 892). The stages towards a digital transformation are illustrated in figure 1.

Digitizing
- Digital like-for-like replacing analog
- Scaling and sharing benefits captured

Digitalization
- Digital assets connecting (networking)
- Digitizing accompanied by socio-technical processes
- Services enriched, created or distributed using IT

Digital Transformation
- Digital and non-digital assset integration
- Business models becoming digital
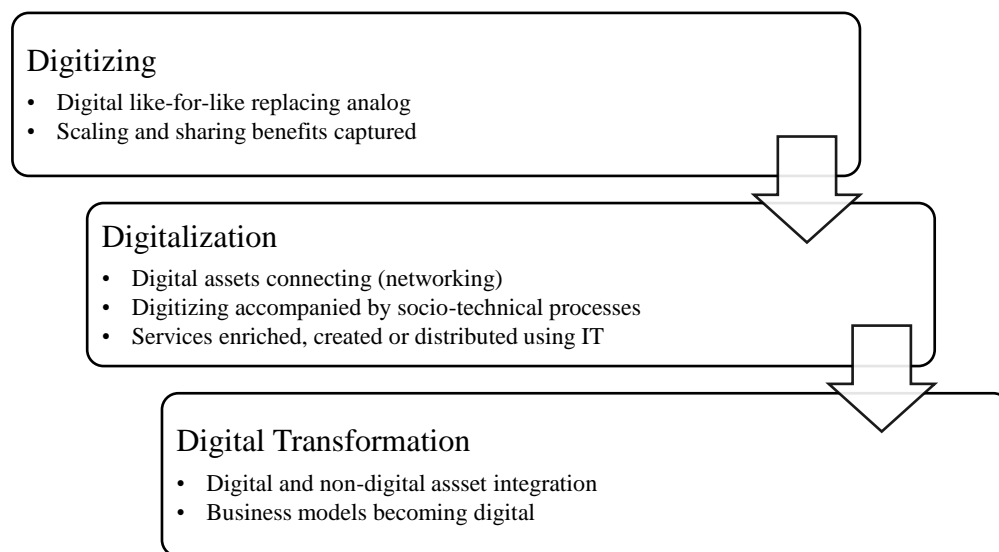
Figure 1 Digital transformation as final level of digital maturity for organizations.

Being able as an organization to mature and reach the digital transformation stage is called the digital transformation capability.

2.1.4 Digital transformation capability

Fitzgerald, Kruschwitz, Bonnet & Welch (2014) and Warner & Wäger (2019) provide a definition for digital transformation (DT) as it being the adoption of new digital technologies to enable major business improvements or creating new business models. DT capabilities

therefore are the capabilities an organization should have to be able to adopt digital technologies and to implement new business logic to create and capture value (Zott & Amit, 2008).

Adoption of IT systems is a well-researched area. Tiwana (2017) summarizes the outcomes by stating that IT's capabilities, business activity and people's perception of IT usefulness must be in balance. Ashurst (2015) takes this a step further and places people at the top of a prioritized list of factors that determine IT's success, proposing that all value from IT comes from people interacting with it.

IT and digital transformation are not synonyms. Rather, IT should be regarded as a capability (i.e. the toolkit) that is necessary for digital transformation. Andal-Ancion, Cartwright, & Yip (2003) found that adoption of "new information technologies" was difficult for established firms, because it requires the entire organization to adapt to new business models. Westerman & Bonnet (2015) include the embedding of IT adoption in employee mindsets in their definition of digital transformation. In line with Lavie (2006) this research distinguishes transformation of capabilities from the formation of new capabilities because in transformation there is an element of reconfiguration and adapting to something new. The definition of digital transformation in this research follows Andal-Ancion, Cartwright, & Yip (2003) and includes the mindset addition of Westerman & Bonnet (2015) to distinguish from trendsetting companies that are not reconfiguring or adapting: *the capability of an organization to embed the adoption of existing and emerging digital technologies in the mindsets of employees to enable major business improvements or to create new business models.*

A crucial part of a business model is a mode by which value is created and captured. Creating such models requires creativity and insight (Teece, 2010). Furthermore, due to the pace at which digital technology evolves and matures, and the possibilities for replication (i.e. limited protection against imitation), any success is subject to having only a transient advantage. McGrath (2013) suggests that keep competitive advantage, organizations must continuously learn and deploy improved incentives in the arenas of focus. This is a call for agility, digital capabilities should be adapted continuously to be aligned with the strategic focus, market demands and technological developments (Eggers & Park, 2018). A digital business model includes the use of digital technology as a key resource, activity or channel and usually provides a data-driven, scalable and replicable value proposition.

2.2 Dynamic capability

Prior research has determined that an organization that set out to reach digital transformation need to integrate existing and emerging digital technologies in their capabilities to enable major business improvements or to create new business models. Organizational learning and integrating thus influences the digital transformation capability. Furthermore, due to the pace of technological development (Ashurst, 2015) and the limited sustainability of the competitive advantage that entails (McGrath, 2013), digital transformation capability cannot be static. The learning and integrating that occurs needs to be repeated based on developments in an organizations environment, the organization should sense what is happening around itself. Finally, digital transformation is also a strategic direction, thus requiring some sort of coordination or decision making on what to embed and where to explore.

"Dynamic capabilities are higher-level competences that determine the firm's ability to integrate, build, and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments" (Teece, 2012, p. 1395). Eisenhardt & Martin (2000) differentiate the way dynamic capabilities develop by the dynamism of the market. The unpredictability of the future determines how organizations learn, the less predictable the future the more experimentation is needed. Lavie (2006) described transformation in terms of acquiring, discarding and modifying routines. This leads Lavie to distinguish transformation from experiment and learn processes found specifically in what he calls evolution. This separation of transformation and evolution by the dividing line of whether change is iterative or a 'step function' is introduced by Helfat & Raubitschek (2000, p. 21) who make this distinction because of a requirement for product feedback in step function learning. In the context of service-oriented firms, where the 'product' sold is knowledge and is rendered by people interacting (Thomas, 1978), the distinction between transformation and evolution is insignificant, because of the creation by continuous interaction making the steps by which learning occurs negligibly small. This simplifies the model of Lavie (2006). To transform from one state to another, an organization needs to reconfigure by acquiring, discarding, and modifying routines. Being able to do so in a dynamic manner makes the digital transformation capability of sustainable competitive advantage.

This systematic generation and modification of routines also aligns with the definition of dynamic capability by Zollo & Winter (2002, p. 340): "*A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness."*. Wang & Ahmed

(2007, p. 35) use terms like behavioral orientation, integration, reconfiguration, renewal, and recreation to upgrade organizational capabilities. The changes in routines mentioned by Lavie (2006) are therefore elements of having a dynamic capability with a goal of organizational change in response to competitive forces. The capability must furthermore be aimed at improving efficiency (e.g. Amit & Schoemaker, 1993; Collis, 1994; Teece et al., 1997; Wang & Ahmed, 2007; Galunic & Rodan, 1998).

Most organizations will have IT in place and will have some experience, in the organization or embedded in its resources, with interacting with IT. The digital transformation capability is, like all other dynamic capabilities a combination of simpler capabilities and routines (S. L. Brown & Eisenhardt, 1997). So, apart from learning new routines to complement digital capabilities, to undergo a digital transformation firms must also learn how to sequence the implementation and recombination of existing, ordinary, capabilities (Eisenhardt & Martin, 2000, p. 1116; Rindova, 2001, p. 1274). Pavlou and El Sawy (2011, p. 251) combined many of these views in their model with four groups of activities that falls in line with the elements that were found to be relevant for understanding how digital transformation takes place and why it is a dynamic capability: sensing, learning, integrating, coordinating.

Dynamic capability is seen as the mechanism for the continuous morphing that is a prerequisite for digital transformation. Changes made to a business model reshape the area where sensing and learning takes place, based on what is learned new (changes to) business models must be created and integrated. This is a continuous process that inevitably carries path dependency yet is unpredictable because of the sensing element. To further specify, for digital transformation, not only integration of what was learned in a business model is required, but also integration of domain and IT expertise (in business model terms: IT must be a key resource or have some other integral part of the business model.

2.3 Constellations of people as part of organizational structure

Digital transformation capability is, especially when viewed from the lens of dynamic capability, a specialized form of an organizational capability (or a set of organizational capabilities) (Harreld et al., 2007). Organizational capabilities are defined as *"information-based tangible or intangible processes that are firm specific and are developed over time through complex interaction among the firm's resources"* by Amit & Schoemaker (1993, p. 35). The organization will be viewed as a community of knowledgeable communities that interact. James & Jones (1976) provide a definition for organizational structure. The concept is defined as the enduring characteristics of an organization reflected by the distribution of units and positions. Matt et al. (2015) suggest that changes to the organization structure may be necessary to align the digital transformation strategy, as digital transformations have a cross functional character.

This cross-functional character is specifically relevant for digital transformation as it points not only to the need for integrating IT with domains, but also the integration of different domains as to cater to the requirements of standardization and business model changes. In addition to the use of technology and business model changes Matt et al. (2015) include structural changes in their digital transformation framework. Underpinning these views is the need for the organization to learn and knowledgeable communities need to adapt to the new direction of the business (James & Jones, 1976).

Hedlund (1994) proposed an organizational form that is especially suited to integrate the creation and created knowledge: the N-form. Opposed to dividing complexity or knowledge, as in the unitary or multi-divisional forms (respectively U and M-forms), the N-form is characterized by recombination and integration of resources based on a current need and by the promotion of lateral communication, which is actively supported and orchestrated by the top management. However the multi-divisionary form (M-form) does support the absorptive capacity of a firm, the rate at which knowledge can be integrated (Van den Bosch et al., 1999) and is more suited for radical innovation (Hedlund, 1994). Both forms promote the interaction between individual actors and the sensemaking and learning that can occur through those collaborative interactions and share an *"architecture of collaboration"* (Fjeldstad et al., 2012). This architecture has three elements that allow the recombination of resources into "temporary constellations of people and units" (Hedlund, 1994, p. 82) and that positions management as guardians and coordinators of relationships using those elements: 1) **actors** are socialized by the organization and also have the capabilities and values to self-organize (Voronov & Weber,

2016, p. 456); 2) **commons** where actors accumulate and share resources (including knowledge); and 3) **protocols**, processes and infrastructures that enable multi-actor, cross divisional, collaboration (Fjeldstad et al., 2012, p. 739).

Actors are either individuals such as employees with agency or can be constructed out of clusters of actors, making that cluster a social actor or a self-organizing group driving action and making decisions (Lupova-Henry et al., 2021). This broader concept than, for example, employees builds on research by Lusch & Nambisan (2015) who use this concept to position *"innovation as a collaborative process occurring in an actor-to-actor (A2A) network"* (p. 155).

This research explores the relationship between the organizational architecture and the four clusters of activity that comprise dynamic capability in the context of digital transformation. The dynamic capability, as explained in the next paragraph, shapes how the (new) digital business model is created and adapted. That business model shapes the current behavior of actors and carries in it the commons and protocols, thus the business model influences the architecture. As illustrated in Figure 2 below.
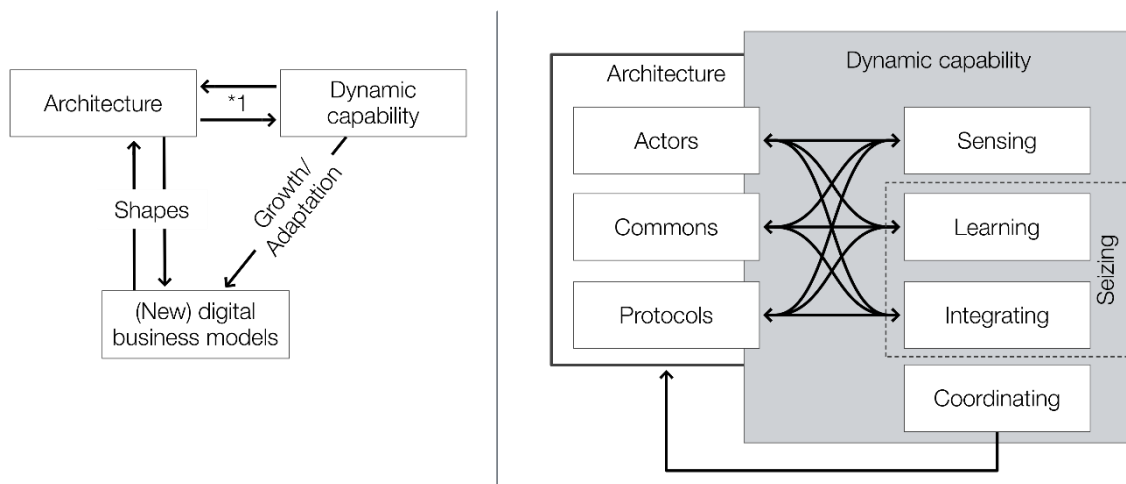
Figure 2 exploratory research model.

*Left: overall model. Right: detail of the '*1' – the interaction (dynamism) between architecture and dynamic capability*

2.4   Mechanisms influencing constellations

Having established the importance of organizational architecture for dynamic capability and that the digital transformation capability is a type of dynamic capability, this paragraph reviews the workings of these mechanisms in this context based on prior research.

2.4.1 Sensing

"Organizational transformation is seen (…) to be an ongoing improvisation enacted by organizational actors trying to make sense of and act coherently in the world." (Orlikowski, 1996, p. 65). When applied to the context of this research sensing remains the starting point for digital transformation. As digital transformation requires a change in business models and this change occurs if an organization is able to sense what happens around it (Teece, 2010). Executives have a key strategic function to sense and adapt by allowing and coordinating the (re)allocation and/or (re)combination of resources (Teece, 2007, p. 1341). The organizational architecture must thus allow for this to occur, either by being flexible enough to stretch or by being both rigid and appropriately organized. In either case, signals from the environment must also reach decision makers at different (hierarchical) levels as to respect the subprocesses and roles that play a role in strategic renewal (Floyd & Lane, 2000).

2.4.2 Learning

Transferring knowledge across divisions through these interactions leads to stronger learning effects of shared routines that developed along similar paths (Miller et al., 2007, p. 309). Learning and routine evolution are path dependent thus more interconnected firms may be more capable to undergo a digital transformation. If, however, the units are too similar, there is too little selection of superior ideas over inferior ideas. Within unit learning inhibits the exploration into new ideas (experimenting) and across group learning enhances the advantages of similar paths and thus exploitation of existing capabilities (Fang et al., 2010, p. 636). For transformation it is crucial to embark on initiatives, what is related to exploiting knowledge

The ability to *"revamp existing operational capabilities with new knowledge"* (Pavlou & El Sawy, 2011, p. 244) and to learn – absorb new knowledge following Zahra & George (2002) – from this endeavor is one of the mechanisms that makes the organizational structure of influence on the digital transformation capability. By managing resources and steering protocols managers can influence where more learning occurs. What was learned must also become embedded in protocols to lead to a lasting change in behavior (Feldman, 2000), also described by Levitt & March (1988, p. 320) as: "encoding influences from history into routines that guide behavior".

2.4.3   Integrating

From research into new and possibly disruptive business models comes the general view that a new business model is best developed in a separate business unit or a separate business altogether (e.g. Birkinshaw & Gibson, 2004; Johnson et al., 2008; Mom et al., 2015; Tushman et al., 2011), whereas digital transformation must influence the entire organization. This poses a question on a lower level of analysis, individuals in a group must integrate their knowledge and insights with the knowledge of the group if collective change is needed. Together with the interrelation of diverse knowledge (Grant, 1996), within group and across business unit integration plays an important role in the transformation process. Without integration of individuals' knowledge in the group, there will be no development of collective logic and shared interactions (Okhuysen & Eisenhardt, 2002).

The organizational structure is related to each of the underlying routines (Pavlou & El Sawy, 2011, p. 245) in the integrating capability. How collection and recombination of individual inputs occurs and the overall knowledge sharing (promotion) is dependent on group size and thus on organizational structure (Okhuysen & Eisenhardt, 2002, p. 382). The interrelation of diverse knowledge as well as the knowledge sharing mechanisms lay at the basis of the knowledge-based theory of the firm (Grant, 1996) as learning is what makes organizing worthwhile. How you organize is partially described in the organizational structure.

2.4.4   Coordinating

Coordinating is the orchestration of activities, assignment of resources to tasks, and identification of synergies between tasks, activities, and resources are inherently firm specific as the routines that make up this capability (Teece et al., 1997). The ability to coordinate within the organizations' own, existing and new, operational contexts is influenced by the organizational structure, thus including the architecture. Centralization of coordination negatively influences the innovativeness by exploration (experimentation), but *formalization* positively influences the exploitation of existing routines. (Jansen et al., 2006, p. 1670). Especially in a knowledge-intensive, service-oriented context, interconnectedness between and within units (i.e. dense social relations or social capital) is an important coordinating mechanism that supports innovation (Subramanian & Youndt, 2005). When a firm has a strategic target, this coordination is an orchestration of activities that bring the plan closer and adapting the plan to new insights gathered along the implementation and execution of the strategy (Porter, 1996). Formalizing actors, commons and protocols is expected to positively influence the effectiveness of the sensing, learning and integrating mechanisms.

2.4.5 Summary of interactions

Based on the literature described before a set of two tables is used to show the influence of the architecture on the mechanisms and of the mechanisms on the architecture, in tables 1 and 2 respectively. Coordination is overarching the other three mechanisms and influences them.

	Sensing	**Learning**	**Integrating**
Actors	Behavior and mixing determine the number of opportunities that can be sensed.	Behavior and culture determine the extent to which effective (organizational or individual) learning takes place	Behavior needs to change in order to integrate what is new in the existing way of working.
Commons	Commons need to be created or need to emerge to remain aligned with what there is to sense.	(Information) systems enable and empower the commons and support absorption.	Commons need to be able to adapt to what is new, or emerge based on gaps that come to light
Protocols	Protocols are a formal way of arranging sensing and of assuring efficacy.	Protocols are a formal way of organizing learning, that also enables the steering of what is later sensed.	Formal and informal protocols determine how integration takes place and in part of effective integration is.

table 1 the influence of architecture on the clusters of activity in dynamic capabilities.

	Actors	Commons	Protocols
Sensing	Actors may change behavior after sensing actionable new insights, opening the way for new interactions or learning.	In commons a richer sensing can be achieved because of diverging views on incoming information.	New insights may lead to the questioning or review of existing protocols, though change of protocols is not expected until behavior has changed, and this has led to learning.
Learning	Encoding influences from history into routines that guide behavior. (Levitt & March, 1988)	Groups can absorb knowledge, changing the discourse or the mechanisms of a common.	Routines that guide behavior are changed. (Levitt & March, 1988)
Integrating	Actors combine new with old in business as usual.	Changes in the commons, their discourse or the mechanisms that build on an incumbent common	Changes to existing protocols to support the new behavior (actors) or directions (commons), or creation of new and additional protocols.
Coordinating	*Coordinating in this context is seen as the influence exerted over actors, commons and protocols as to influence the influence and possible interaction of and between clusters of activity and elements of architecture.*		

table 2 the influence of the clusters of activity in dynamic capability on architecture

2.5   People based service-oriented firms

Thomas (1978) explains why the context of people-based-service oriented firms is different from, for example, a manufacturing context and provides a definition for it. In this research his definition is used: *firms wherein the primary entity sold is a service and where that service is rendered primarily by people (interacting)*. This sets this context apart from the manufacturing context where more research on digital transformation has been carried out. In this context, business models are expected to be aimed at digitized solution and service coupling as a digital transformation strategy (Sebastian et al., 2017) and these models are expected to be most prevalent in the chosen context. The digital transformation therefore is a matter of changing a business model without also having to change supply chains, manufacturing processes, and products. This increase in focus on learning and adapting also aligns with the recognition of digital transformation capability as a dynamic capability (Robertson et al., 2003).

People based service oriented firms are likely to work project-based and are organized as such (Hobday, 2000). This sets them apart from most functionally organized firms by making the functional coordination of activities obsolete (Blindenbach-Driessen & van den Ende, 2006). These organizations run on knowledge (Alvesson & Karreman, 2001; Robertson et al., 2003). In these organizations, greater dependency on social capital is recognized in literature on communities of practice (J. S. Brown & Duguid, 1991; Wenger & Snyder, 2000) and on other forms of 'network organizations' (Hansen, 1999; Kogut & Zander, 1992; Nahapiet & Ghoshal, 1998). Network range, social cohesion and individual ties all influence the sensing and learning activities and are influenced by the organizational form (Reagans & McEvily, 2003). Assuming that lateral communication between actors, information processing and technological excellence are of influence on the digital transformation capability, a focus on firms that have a cross-functional structure is additionally relevant as these factors were named as main advantages in cross-functional structure research (Ford & Randolph, 1992, p. 275), whilst also stressing the increased importance for coordination compared to other structures (p. 278).

3 Methods

This was qualitative research, as the goal of the research was to explore influence of organizational structure on digital transformation capability. For exploration, a qualitative method helps in capturing the richest information (Bersselaar, 2003). The two main methods used are literature review and interviews. These methods were used to shape a view on the research problem, next data was collected and analyzed to uncover patterns that in turn inform theory building (Easterby-Smith et al., 2018). Downside of this approach is limited generalizability due to a lack of appropriate data to make predictions about cases that are outside of the research population. However, as the goal of this research was to explore a complication whereof no extensive prior research is available. This approach appropriate as it is used to describe a gap in existing literature and as a basis for future research.

3.1 Case selection

Data on three cases was collected. Cases were selected based on the organization being a multinational people-based service provider and being readily accessible for research. The multinational should openly report on having a digital transformation (element in their) strategy. This selection is done by accessing public information provided by the firms themselves. Selection of cases was purposive and convenience sampling (Easterby-Smith et al., 2018, p. 111). By including at least three different firms from a comparable context basic triangulation is possible, whilst also having a diverse group to allow for at least some generalizability to other contexts (Easterby-Smith et al., 2018, p. 134). Nevertheless the nature of the research is to provide a basis for future research, transferability will remain limited as a consequence of these methods (Easterby-Smith et al., 2018, p. 270; Tracy, 2010). By comparing different respondents and firms, and taking solid footing in existing literature, different 'lenses' are used to look at the research problem. A potential issue still comes from the single researcher working on this subject (Tracy, 2010, p. 843), this can however not be resolved at the root of the problem. Additional attention is given to taking a critical stance towards the data and if possible a 'negative' case will be used as will multivocality be used to offer opposing views within the data analysis. This should not only lead to a more rigorous analysis but can also shed light on the complications and decisions made in the findings of this research (Tracy, 2010, p. 844).

3.2   Data collection and analysis

Within each case an accessible yet knowledgeable group of three or four employees was selected: a business manager, a manager responsible for a digital transformation initiative or digital innovation, and a line manager. These roles were selected as these 'middle managers' are expected to be involved in coordinating of resources and activities what is part of the mechanisms studied. These ten interviewees are convenience samples (Easterby-Smith et al., 2018, p. 111). To manage the internal validity appropriate attitude and language were used in data collection and by the active use of clarifying probes during the interviews. The collected data thus reflects the understanding of the topic or question of the interviewee and latent interpretations are brought to light as much as possible (Easterby-Smith et al., 2018).

Figure 2 illustrates the leading concepts and their relations. Interviewees were asked to explain their understanding of each of the concepts and next data was collected on the expected model and mechanisms. The interviews were conducted semi-structured, using a topic guide with guiding questions per topic, to allow some freedom in creating a more natural and thus richer conversation (Bersselaar, 2003). Due to the limited sample and the expected variance in the population it is not expected to reach the theoretical saturation a qualitative research may otherwise look for. Instead analysis across cases is used to spot emerging patterns (Corbin & Strauss, 2015), these patterns are summarized as a final step in the analysis.

The topic guide that is used in the interview is developed before starting with the interviews and is included in Annex 1. For each mechanism, the topic guide was be developed based on prior research and a translation into this context. First, each construct was be defined by the interviewee as to get understanding of an interviewees initial understanding of the construct. Next, for each construct questions was asked, if necessary with a theoretical introduction. This introduction helped in bringing an interviewees understanding of a construct closer to the definition in this research or can transfer understanding into the context of this research (Jones, 1985). Each of the four clusters of activities is a main topic, the dynamic digital transformation capability is the overarching topic. Each interview was recorded then transcribed. Interviews were taken using videoconferencing software in a one-on-one setting and thus closely resemble face-to-face interviews as they remain synchronous and mediated (O'Connor et al., 2008). This consideration revolves around health and safety. Whilst face-to-face interviews may offer richer data than video-call interviews (Easterby-Smith et al., 2018), the COVID-19 pandemic makes a virtual interview the better choice. Impact on the results of this research is deemed to be very limited as the research population is expected to be digitally savvy and to have at least one year

of experience in working at a distance. Respondents are asked whether they mind recording of the interview after receiving assurance about the recording being shared with the interviewee and being deleted within 6 months of transcribing the recording. Whilst interviewees may become more careful in what they share if they know a recording is being created this does not add to the overall confidentiality that is at least fair to offer (Easterby-Smith et al., 2018) especially as this research has no purpose to collect or distribute the recordings any further than the researcher. This approach also respects relational ethics summarized here as a show of mutual respect for the business and individuals involved in this research (Tracy, 2010, p. 847).

Analysis occurred on the level of the firm and focusses on a cross-case comparison to generate patterns (Yin, 2012, p. 146). In the data analysis a coding framework emerged that is presented at the end of this chapter. The analysis followed the seven stage model by Saldaña based on best-practices in qualitative research coding (2016, p. 14). By transcribing all data, familiarization has taken place and by taking notes during the interview and transcription, reflection was aided. After gaining this high-level understanding of the collected data a first round of open-coding was used to give meaning to the collected data. By analyzing the distribution of codes, a first conceptualization has taken The second-cycle coding was iterative and was repeated numerous times until a manageable set of top-level codes emerged from the data. These top-level codes were then linked to the concepts in the literature review after which implications have been identified and described in detail in the results chapter.

3.3 Overview of the cases and interviews

Data on three cases was collected using three or four interviews per case. To assess the comparability of the data collected per case and scan for methodological concerns in how the data was collected, before presenting the results an assessment of each case is given. A total of ten interviews was conducted.

Case	Description	Respondents
1	Technological consultancy, >15.000 employees	· R1 line manager of a digital focus business unit · R2 line manager of a digital focus business unit · R3 digital transformation program manager · R4 innovation portfolio manager
2	Organizational consultancy, >200.000 employees	· R5 line manager of a digital focus business unit · R6 digital transformation program manager · R7 innovation portfolio manager
3	Technological consultancy, >30.000 employees	· R8 line manager of a digital focus business unit · R9 digital transformation program manager · R10 business transformation manager

3.4 Coding scheme

Key theme	Category	Code
Digital transformation capability	Business model change	· Change in channel · Change in key resource · Change in value proposition · Ecosystems and partners
	Business model retention (no change)	· Retain/protect channel · Retain/protect key resource · Retain/protect value proposition
	IT integration	· Use of IT as key resource · Use of IT to deliver VP
	Digital value proposition	· Data driven service · Scaling existing capability · Standardized approach · XaaS[1] model
	Use of data in service co-creation	· Collection of benchmarks · Creation of libraries · Logging
Sensing	Incumbent industry changes	· Changing client requirements · Competitor changing business model
	Disruption or new entrants	· Changing client preference · Clients contracting new entrants · New entrant
	Technological advances discovery	· New skill required · New technology · Technology becoming relevant · Technology being expected · Technology coming in reach · Technology value increasing
	Actors sensing	· Conferences · Working from home opportunity · Working from home restriction · External inspiration · New unused skill available
	Actors sharing	· Actors getting together · Actors suggesting experiment

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[1] A value proposition / an offering 'X' as a service, offering a hosted service for customers to subscribe on.

Key theme	Category	Code
Learning	Actioning what was sensed	· Freedom to experiment · Partnering to understand new technology · Support to experiment
	Actor behavioral change	· Example Actor individual · Example Actor group · New groups forming · New skill being deployed
	Changing commons	· Example commons · Increase in commons · Increase in commons activity · New communication methods · New CoE[2] forming · New CoP[3] forming
	Experimentation	· Barrier to experiment · Example experiment · Experiment result · Experimentation experience · Freedom to experiment
Integrating	Adapting protocols	· Method change · Process change · Routine change (actor)
	Adapting resources	· Change in resource count · Change in resource distribution · Change in skills deployed · Change in skills required · Change in training requested · Change in training taken · Collaboration with IT · Global collaboration · New hire new ideas
	Actor to commons change	· Example show and tell · Introduction of new ideas · New commons methods
	Commons to actor influence	· Attendance change · Example C-A Influence · Idea shared and used

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[2] Center of Excellence (CoE), group of chose people formally determining what a practice or standard must be
[3] Communities of Practice (CoP), group of people deploying a similar practice using similar or related skills

Key theme	Category	Code
Coordinating	Picking winners	· Championing actors · Championing communities · Championing experiments · Ending experiments · Stopping protocols
	Driving change	· Accountability for development · Accountability for learning · Create community · Decentralized decision-making · Empowering others/actors
Actors	Actor interactions	· Example actor interaction · Indirect interaction/share · Virtual interaction
	Actor characteristic	· Actor description · Individual as actor · Group as actor
Commons	Group behavior	· Data sharing · Example sharing · Experience sharing · Model sharing · Practice sharing · Problem sharing · Values sharing
	Group characteristic	· Formal group (COE) · Informal group (COP)
	Commons characteristic	· Formal common · Informal common · Reporting to management · Virtual common
Protocols	Primary protocols	· Example employee responsibility · Example protocol for coordinating · Example protocol for integrating · Example protocol for learning · Example protocol for sensing
	Supporting protocols	· Enabling S, L, I or C
	Protocols under change	· Example protocol forgetting · Example protocol implementing

4 Results

4.1 Case 1

4.1.1 Description

All respondents for case 1 confirmed their firm has a cross-border digital transformation strategy and was pursuing and deploying digital business models. A digital business model is described to differ from non-digital business models by of the use of data and standardization in service delivery. A key resource used to produce their service is global access to knowledge that was made tangible by storing insights and data in a central database. That database is what drives a substantial part of the value the firm delivers, although expertise on connecting what is in the database with the client demands or needs (and determining those needs) was mentioned twice as what sets case 1 apart from others. Other examples of digital transformation given were related to benchmarking clients using increasingly advanced methods and by combining multiple data sources. This works on a 'common architecture' an example of global standardization effort with the goal of capturing more valuable data and generating new insights.

The knowledge database that was given as an example overlaps with two elements of Tyndale's taxonomy of knowledge management tools: *information retrieval engines* and *relational databases* (2002). Or with Liao's *expert systems* and *databases* (2003). These tools are used to reduce the influence of the limits of requiring on individuals' interaction by making knowledge tacit and findable and by making replication or improvement easier.

Another key resource are the knowledgeable and experienced employees who *"form the solid basis of our services"* (R2). A global inventory of expertise enables the creation of specific project teams and other temporary groups of experts to provide a service. The use of this system and the accompanying freedom in the creation of project teams given to both project managers and the experts creates flexibility in how a service is delivered and with what expertise. Virtual collaboration has made this more viable and is now regarded as the standard, above face-to-face service delivery and the related travel and logistics that entails. Digital solutions made this possible, but the cultural shift towards working from home due to the COVID-19 pandemic was experienced as the final push required to make this digital channel to customers the default.

The organizational form is described as a project-based matrix, based on solid reporting lines aligned with geography and area of expertise or function, in combination with dotted reporting

lines to project teams. Employees are, generally, responsible for managing their own time and workload and are reviewed based on feedback from the multitude of teams they contribute to. For specific functions there are additional metrics that may be used. Within this matrix several groups, both formal and informal, are created to develop digital tools. When asked if those groups had different business models than other groups two descriptions were given.

The digitally oriented groups split their time between external clients and internal clients, respectively delivering paid services and innovating. Performance metrics as billability (the percentage of time spent on billable work) are adapted to reflect this split. In this description no real difference in business model is reflected as the channels, cost structure and revenue streams are as far as can be judged identical to other groups, but the performance metrics are different. Secondly, groups exist that develop and globally deploy the subscription services and digital platforms. These groups were created specifically for this business model and as a part of the digital transformation strategy. Resources of these groups can be part of project teams, although only if a digital service is part of the project. Coordination occurs by the responsible managers of these business units.

The specialized groups are part of the digital transformation capability according to R1, R3 and R4 because the allow these specialists to bridge a gap between domain and IT that was previously experienced. Abcouwer, Takács, & Banga (2020) also describe this gap as stemming from the generally different backgrounds, targets and incentives of employees in the domains and in the IT field. Apart from simplifying the use of advanced IT in projects, this approach aims to coordinate the standardization of information models because dedicated and trained individuals work closely with the project teams and so are expected to better understand the needs and complexities in the projects. Next, these experiences feed the innovation efforts with ideas and an opportunity to experiment. Based on these interactions, innovations are tested in real projects when ready and new ideas found in project teams offer the opportunity to include that domain expertise directly in the development of the idea.

There are different coordinating protocols in place to keep track and steer these initiatives. The primary line is the formal line, where the digital business units and their members are in a sense a dedicated and specific group within the larger organization. Managers of these units use the time spent on certain initiatives to assess and steer the effort that goes into a certain technology or service. The oversight of the initiatives is the responsibility of the innovation manager who coordinates over the business units. Where the business units focus on project and employee

performance and development, the innovation manager focusses on roadmaps with goals for three time-horizons. This creates an intentional tension between a short- and longer-term focus. By deciding what development projects take place and the time dedication required the longer-term focus is implemented by the business units. The approach to sensing, learning and coordinating is implemented on purpose to support the digital transformation strategy. Integration of what was learned into the business takes place using the platforms, tools and databases that are developed but mostly there where project teams are created that include a 'digital resource'. Non-digital groups tend not to have a formal incentive to deliver a digital service, apart from sales-related groups that actively guide customers to the subscription services.

4.1.2   Empirical observations

Root concepts actors, commons, and protocols

All three concepts are represented in case 1.

Within actors, interviewees make a distinction between individuals and communities as a driving force for experimentation and adoption of new technologies or protocols. *"the CoP's promote their successes to give others inspiration". (...) after a presentation the presenters are contacted for more information or help."* (R2). *"the expert groups also drive those [the use of beneficial technologies] if they have been successful (...) by making whitepapers or sharing examples to other groups and colleagues. Usually, we reach into our networks."* (R4).

Furthermore, some emphasis is given to different forms of interacting, either though virtual or direct channels. This influences the type of common that is suitable for a form of interaction, a physical conference differs from an online group meeting in many ways, for example the ease of informal interactions is greater when people can directly continue talking in a physical event. The way a group behaves is influenced by this difference as well. Both the authority of the group and the ways they are able to interact is captured in protocols by giving the actors certain responsibility and agency: *"we expect them [CoP's] to have a session each couple of months. But people can always reach out and are encouraged to help colleagues, it is much about building relations so people now were to look."* (R1). *"After all the travel restrictions we do not expect many face-to-face events, we got used to meeting online and for this year [2021] have not included travel budgets. "Only when the value added is clear an event will take place, but that will also happen again as we also have many clients looking forward to this."* (R1). The group is not given complete freedom by restricting and formalizing travel and by the line

manager having a certain expectation about the frequency for 'formal' events. Based on the interactions employees are encouraged to experiment with what was shared, what illustrates a protocol for learning and implementing: *"if a team member want to try something and has an example of support from colleagues we usually have an easier approval for it"* (R1).

Mechanisms of dynamic capability

Of the four mechanisms, sensing, learning and coordinating were more present than integrating with R3 and R4 mentioning employee adaptation as emergent process and only R3 also as a result of decisions made by management. The most apparent change comes when a method or technology was applied successfully multiple times, allow it to become 'business as usual' especially for new joiners who did not follow the learning path. Two examples centered around the knowledge databases are provided where a CoP was formed around a technology that was previously introduced through an earlier and now deprecated CoP. Another change mentioned is a more "*intense*" (R1) collaboration between geographic regions, business and IT that followed from the increased knowledge of global capabilities and their points of contact. This in turn led to changes in specific methods and protocols to incorporate the newly learned technologies and protocols.

R1, R3 and R4 offered similar examples and explanations of the mechanisms and changes in business models, though with differing focus. Sensing and learning are encouraged and mentioned by the employee managers (R1 & R2) more often than by the value manager (R3) interviewed. The innovation portfolio manager (R4) offered the most examples about the changes in business models such as the mandatory coupling of services with applications. R2 did not mention the service-application coupling when asked about business models but did offer another example that illustrated a formalized way to organize insight in capabilities, experiences, and skills of employees to make it easier to find specific resources for problems to be solved. This should allow for more diverse composition of project teams that could then have a *"digital take on achieving the project goals, what allows a push for analytics or dashboards as part of projects"* (R2). After such a project access to the dashboards or other online results are offered as an online service. This appears to be a localized take on a digital business model because there is use of digital key resources, data, a modified value proposition and new channels, although this connection was not made by the respondent.

Finally, R4 mentioned a set of new key partners named ecosystem partners. By collaborating with other organizations ranging from start-ups to large multinationals the firm is looking for

access to the newest technologies in both hardware and software terms. These technologies can then be used for specific innovation experiments or for wider implementation allowing access for a larger group within the firm. Since approximately three years a dedicated function supports other functions in engaging in a new partnership or making use of existing partnerships. There was no mention of the ecosystem enabling function to do acquisition, but rather it is the business that identifies a potential partnership. No further details on this example of sensing were given.

Digital transformation capability

The importance given to the database and its use as example of a digital business model creates a complication. R2, in mentioning *"that knowledge accessible as data is what [clients] expect from us"* begs the question whether this is an example of a digital transformation. Another example given later in the interview with R4 used the term *"Expertise as a Service"* in describing a newer way of letting client access the database through a subscription rather than through an employee of the firm in case 1. The latter offers a new value proposition, would be accessible by numerous clients spread over the globe and is an example of a different channel being used to let a key resource create value, which is in turn captured by the subscription model. This is combined with access to other, tacit, expertise more alike the older business model. In short, not all examples given for a <u>digital</u> business model seemed to align with the understanding of such a model given in literature. Therefore, the example was invalid to illustrate a digital transformation, but rather illustrated a digitization.

There were multiple other examples of changes to business models that illustrate an integration of IT with domains, the use and scaling of data in value creation, changes in partners and new channels. This indicates a digital transformation is taking place. The examples were all dependent on a fit between a client desire that either already exists or that is created by the firm. The capability in this case is similar to the capability in cases 2 and 3 in the sense that being able to integrate digital skills in how a service is created or delivered is important, case 1 showed less maturity in the provided examples.

4.2   Case 2

4.2.1   Description

The second case also has a multinational digital transformation strategy. This firm however defines the digital business model as model that captures data and experience into processes, methods or tools that allow for new types of human-machine interaction. Whilst this carries a standardization and data-driven approach, this differs from the first and third cases as the place

where value is created is explicitly stated. Tiwana (2017) has also described the human-machine interface as the sole place where IT can create value. Another difference is the inclusion of processes and methods explicitly in what needs standardization. It is described to make knowledge better transferable as specialists that use similar methods can easier exchange data and experiences, but also because the interfaces between standardized methods can be mapped and managed.

The following quote illustrates the approach taken: *"Our core business model is modified to become more digital by coupling our tools with the services we provide. (…) Clients do not get unattended access to our tools, [but rather we] let them use and play with the tools whilst also receiving consultancy services"* (R6). Apart from this approach there are however also subscription or one-time benchmarks and insights available (R5) for customers.

In terms of the organizational structure case 2 offers a different approach than the other two cases because of a matrix-like organization but with a 'better defined' reporting responsibility. Employees report to the project teams they are part of which is overseen by an operational manager. Performance and development of the employee is managed by a separate manager. *"This approach aims to increase agility"* (R6). Two implications for the digital transformation capability were named. First, the agility allows for a process and competence driven creation of project teams. When it is sensed that an opportunity exists to apply and improve digital business models, managers can respond to this in how a team is construed. Secondly, digital skill development can be carefully managed, providing individuals with the competencies they need to add value using digital tools. R7 explained the influence of this model on the digital transformation capability: *"we have two approaches to increasing our digital ways, in how employees develop and in how we approach project and add value"*. The basis for making this approach successful is a clear understanding of processes and responsibilities. Business process management (BPM) was named in how the actors and commons are guided and used to drive the innovation portfolio. Parts of the business or capabilities that are evolving at a lower speed may however still have more characteristics of a matrix organization with employees having a line manager and then possibly multiple secondary reporting lines. The speed at which developments in the industry are taking place were named as one reason for the different approaches used, as was a decision made to support the digital growth.

Actors thus can operate in different contexts. The commons consist of centers of excellence and communities of practice for respectively formally accepted business standards and informal

experience exchanges. Both mechanisms for exchange are mostly virtual. Using online conferences and meetings, as well as the knowledge management systems the groups craft knowledge that is accessible to others and act as ambassadors of that knowledge to spread it. (Operational) managers champion the shares in the COP's that align with strategic or business unit goals. Other (development) managers motivate employees to actively participate in the commons. This illustrates protocols that are used to support the sensing and learning that can take place, by steering the interactions actors have.

4.2.2 Empirical observations

Root concepts actors, commons, and protocols

All three concepts are present in the data. Actor was used to refer to leading individuals and to groups. Individuals, groups and commons were described as *"almost always centered around skills or knowledge"* (R6). Protocols followed this description with the examples provided focusing on how the correct skills and knowledge are found for a specific project and how these are developed with *"strategic focus and academic rigor"* (R7). The strategic focus is later used to refer to the development value managers are striving for, for delivering value to clients but also to better understand how the firms' own business model can be adapted. *"In managing value, we look at the value propositions we have and need. And if gaps with client needs exist or can grow. (…) Digital transformation is a topic many of our clients and staff are working. It is established but also growing rapidly (…) We must also apply this to ourselves and not just develop [the field] for our clients"* (R6). Development of knowledge, based on research and client experience, is managed by senior leaders that have a certain field of expertise and that have a following of staff working in the same field. There are many funded groups and commons around these senior leaders to have a *"baseline development pace"* (R6) that is supported by protocols of *"actors writing business cases for further deep dives or even research projects for their own and [our companies] development"* (R5).

Mechanisms of dynamic capability

Case 2 is the largest firm in number of employees. The number and scale of internal and external knowledge sharing events or efforts is larger than in the other two cases, possibly as a result of the difference in size. This gives more opportunity to sense but may also increase the complexity of acting upon what is sensed. The protocols around skill and knowledge management appears to be more governed, when asked R6 and R7 both described this as a must-have for the firm to understand what is happening around them. A solid, but much smaller network of senior experts lead most of the sensing and learning. For this they are assisted by

supporting functions that help the experts maintain databases of skills, knowledge, staff, and developments, again illustrating the rigor given to sensing and learning.

Learning is further supported by the division between value and operational management. Both focus on their own 'role to play' in the organizational learning. Value managers focus on the bigger picture and match internal and external changes to ensure thought leadership is maintained in strategic areas. They also identify larger gaps as opportunities for investment in either existing staff or a possible acquisition. This feeds into the operation managers when employees need to gain knowledge or experience in a certain area. Operations feeds back what ideas and requests employees bring forth as they are part of the gap tracking done by value management. Within operations employees themselves learn and must take part in groups by contributing to the commons. Furthermore, by monitoring what projects employees participate in managers track the experience building. R5 described the role of operations as *"matching the skills and ambitions of our employees with those of the organization, helping both grow"*.

Coordinating is well represented in the data with numerous examples of protocols around this group of activities. Through large, corporate programs there is large scale coordination and driving of change towards digitally enabled services, digital business models and the use or development of data-driven tools to support service delivery or learning. Whilst coordination is initiated centrally, most decisions remain decentralized with the senior leadership, with leaders of formalized skills or knowledge groups and with operations managers that are incentivized to deliver from the 'digital portfolio'. From these efforts to drive adoption of digital in existing services and business units comes a flow of feedback that is used for sensing in the centralized programs. These programs have been set up in a way that allows for changes in program focus or scope to accommodate other experiments to learn from if a need was sensed in multiple locations or for multiple clients.

Sensing, learning and coordinating were all integrated in the examples provided and questions around integration as a concept led to data on the other concepts. The integrating mechanism itself seems integrated with the other mechanisms of dynamic capability. An example of this observation is given by the operations manager: *"if a team member has a new skill. Or wants to develop it we can use the value manager's opportunities and match this desire with a project. So, we try to put what is new is to use as soon as we can (…) Fail and learn fast."* (R5).

Digital transformation capability

The digital transformation capability within this case is illustrated in two ways.

Firstly, the change in business model to couple a digital solution with a service, either enriching that service or elongating the period of engagement with a client because they perceive a longer need for the software and thus also get the (slimmed down) service that was included in the initial implementation.

Secondly, the extension into digital skill and knowledge, as skill and knowledge management are so deeply rooted in the organizations' protocols.

Overall, there was a limited focus on detailing the components of a business model. Terms like key resources or value proposition were hardly used, although similar terms were used. When asked R5 described that the firms' current business models are not described in terms of the business model canvas that is used as a basis in this research. *"It is a useful tool, but too abstract for what we want to communicate. Our key resource would be our knowledge and brand and the trust clients have in that brand. (...) We solve problems and drive problem solving within client firms and we tailor our approach for each project, but also use our experience and expertise. A digital transformation is using digital in this and using digital channels, but what we do does not change significantly, only how we do it and how we deliver it"* (R5).

4.3 Case 3

4.3.1 Description

Case 3 introduced a new global corporate strategy that explicitly includes digital transformation ambitions. To implement this strategy the firm introduced a centralized program management office that drives the broader transformation (as this also includes non-digital changes). In the transformation portfolio there are multiple programs that aim to develop digital solutions, harmonize processes and data and create a cultural shift. The programs in the portfolio interact using both formal and informal protocols, so these and other programs that are part of the transformation portfolio share goals, actors, commons, and protocols.

Before the introduction of the new strategy and the transformation that is used to describe the coordination of activities that should implement that strategy, the firm was already engaged in a digital transformation. An exploratory business unit was created to combine a number of acquisitions with existing expertise. This unit focusses solely on a subscription-based digital solutions business model. There is however limited connection between the existing and the new business. Respondents were all from the existing business. As that existing business is more dependent on a transformation than the new business that was created with a digital business model at its core this case further describes the existing business.

The business primarily has a functional structure, but within the operational function where project-based services are delivered to clients there is a multidivisional structure. This is of relevance because over three quarters of the firms' resources are placed in those divisions. Divisions are based on areas of business and type of service. Within a division there is a hierarchy of subunits. There are multiple of these subunits that have a data analytics or other digital orientation. Apart from managers interacting within their personal network and mostly within the divisions there is no centralized coordination of those digital units. Next, the firm also provides project-based services. Following Ford & Randolph (1992, p. 271) this leads to a dual authority where the functional (or divisional) organization coordinates, but where projects coordinate as well. The transformation portfolio targets most change in the functional organization and aims to *"embed change in business as usual so it then becomes part of our projects (…) although innovation in projects also feeds back into the transformation"* (R10).

Individual employees may additionally choose to become part of an informal Community of Practice (CoP). CoP in this case are groups based on a certain technology such as machine learning or robotic process automation for Digital COP, but domain CoP also exist aligned with

common services the firm provides. Interdependencies between those groups are covered by the idea that individual employees can be part of both groups if they apply technologies in their service delivery. The CoP are used to create connections, share knowledge and experience and to inspire others. Coordination of the CoP is done by the innovation function of the firm. The innovation function also includes the IT function, this decision was made in an effort to close the gap between digital innovations and the required IT support to build those innovations with R7 stating: *"trust in employees to keep up with developments in their fields by giving everyone freedom to connect to these networks".*

The IT function requires additional attention in describing this case as this function is part of the larger innovation function. Coordination of the CoP, management of the innovation portfolio and related investment is also the responsibility of the innovation function. This change was made to bridge the gap between business (innovation) and IT what is expected to result in faster collaboration, experimentation, and learning.

These innovations are not necessarily new business models, but in the protocols for innovation a strong process and data focus is combined with 'design thinking' principles. Most called out was the user centric approach innovation teams must take in designing their processes and the implementation of those processes in digital tools. Another key point made was a focus on reusability of data. As projects tend to be tailored for and by clients a full standardization is perceived difficult. Instead, a focus on creating reusable and connected modules of functionality is used. These 'building blocks' then should allow for the tailoring required whilst also interacting and thus creating a complex and difficult to replicate suite of digital solutions. This is where the digital business model starts becoming more visible. The firm is capturing processes and required data in reusable modules that can be fed with data from other projects. These modules and the intellectual property within them form a new key resource in the business model that uses standardization, data, and scalability. This enables the as-a-service models as some modules are 'client-facing' allowing for the creation of new channels and revenue streams. The experience to do this, the expertise captured in the models and the coordination of this approach are regarded as foundational for the firms' digital transformation.

4.3.2   Empirical observations

Root concepts actors, commons, and protocols

The three root concepts were all present in the data. Actors referred to were either individuals or groups. The groups mentioned were all formally governed with a single actor being accountable for the *benefits* each group could show. Benefits management is named by Lin & Pervan (2003) and Ashurst (2015) and as a best practice according to information technology or system design and implementation as a way to ensure that a system reaches a valuable state. *"The benefits come from* using *the technology to enable* people *to do things differently"* (Ashurst, 2015, p. 32). *"We are used to managing projects so to find successful [CoP] leaders it makes sense to organize the groups [i.e. CoP] as projects with a benefits mindset. And those projects only as projects with a longer lifecycle so maybe programs. Next we found overlaps in especially our digital groups so we used a programmatic approach. All shifted their mindsets to benefit thinking. Benefits management is now regarded as a best practice"* (R10). Research shows that the combination of project and benefits management increases the probability of project success (Badewi, 2016).

This benefits-driven approach is a coordination and in part integration protocol in itself, but it determines many of the actors, their power or authority, and the other protocols deployed by the actors to shape commons. Furthermore, benefits in this context are a measurable financial or non-financial business outcomes. To reach meaningful benefits what was learned by a small group, such as a CoP, needs to be adopted by a larger group.

In the CoP examples, experiences and developed models are shared. There is also a protocol for sharing problems through a centralized tool so others can react if they have an element of the solution. Different metrics are used to track problems solved, collaborations initiated and other performance indicators. These metrics are part of management reporting and accountability. A change made in the past six months is to add mandatory values shares at the beginning of each (virtual) meeting. In these shares corporate values or policy is made accessible by mapping the value on a relatable example for the 'average' CoP member.

Mechanisms of dynamic capability

Each of the four mechanisms were about equally present in the data. This differs from the other two cases where integrating was notable less present in the data. Integrating *'in business as usual'* is an important part of benefits management (R10). Another form of integrating is present in the data, the integration of the existing digital CoP program with the new business

transformation program. The larger business transformation program uses the digital CoP program as a channel to IT savvy resources and as a way to reach this group for change initiatives. Information is flowing the other way, from the digital CoP program to the transformation program as a way of sensing and learning for the larger program. This creates a dynamic interplay where changes to the program should result in changes to the information and thus the following changes that are regarded beneficial. There is an overlap in the actors, commons and protocols used by both programs but they are not identical. Where everyone can join and participate in the (governed) CoP's, only selected employees contribute to driving the transformation program. Sensing what happens outside of the firm and experimentation thus learning occurs mostly by the actors and in the CoP's and their commons.

Two main types of commons are used. Examples of the passive type are intranet pages, but there is also an inhouse online training system where CoP can distribute material to a group of over 25% of all employees worldwide. Within these passive commons there are references to the interactive commons that usually take the form of webinars or workshops. *"Pointing as often as possible to the networks increases the network of the network, after introducing a new learning module attendance of [CoP meetings] increases a lot"* (R9).

Digital transformation capability

There are two main observations around the business models or changes to them.

First, the use of data in the way a service is delivered. A protocol is in place to deploy a data-driven value creation mechanism. Clients are informed using a model, improvements are made to the model based on feedback and project specifics and the next client is informed using the adapted model. Capturing the experiences in ever advancing models and organizing the data around this approach offers a digitalized model. By using digitally oriented teams, starting to delivery the outcomes of that model as a service (changing the channel) and by allow clients to upload their own data this approach is maturing into a (localized) digital transformation. The capability here is found in the teams that get experience in how to work with the model and who to work with to capture expertise in the model and data. This is a gradual change towards a digital business model that started as a digitalization of an existing service.

Secondly, a newly introduced approach is the coupling of service and solution as was also seen in case 2. A software solution that was developed by the organization is in part being implemented in the client organization and in part used by consultants for their services. The solution is not available without the coupled services. Again, the capability here is the sales and deployment of this coupled model and the supporting expertise and IT infrastructure (key resources) to enable this delivery.

In both examples integration of IT takes place, although the IT function was initially already supporting the initiatives, by the way IT resource is included in these initiatives and can independently from the rest of the organization develop the digital components of the value proposition the integration goes beyond a supporting function. Both are however also localized approaches and not illustrative for the overall business model of the organization. They can therefore also be seen as a very successful collaboration on projects rather than a true digital transformation that has influenced the entire organization.

What does influence the entire organization globally is the updated innovation protocol and the accompanying creation of new commons and supporting protocols. By lowering the barrier for all employees to develop their ideas with support from the business, innovation is supported. By selecting only ideas that are digitally oriented and scalable, the firm has created an internal incubator for digital innovation. The capability that is being developed is that of managers to select and deploy digital business models. The preference that is given to these innovations by fast-tracking them through an innovation protocol, and the offering of managed, additional resource illustrates a capability to organize and govern integration of IT and the capability to focus more on innovations contribute to the digital transformation than to other initiatives.

The overall observation is the modest maturity of the digital transformation and the required capabilities within this firm with the given examples or implementations mostly being younger than 2 years and none being older than 4 years.

4.4 Summary of results

Based on the observations two summarizing tables are created. The following table summarizes the observed influence of architecture on the clusters of activity in dynamic capabilities.

	Sensing	**Learning**	**Integrating**
Actors	· Diversity, frequency and freedom of interactions of actors improves sensing opportunities.	· Actors learn by experimenting and collaborating	· Actors from IT and non-IT need to learn how to integrate IT, a liaison actor – *such as an information manager* (Abcouwer et al., 2020) – supports this integration
Commons	· Structuring commons around (strategic) targets steers where sensing takes place. · Combining new insights with existing expertise (in actors) helps filtering and sensemaking.	· Structuring commons around (strategic) targets steers where learning takes place.	· Actors learning collaboratively (i.e. experimenting in temporary constellations of people through the use of commons) lead to a more widespread integration of new protocols in existing protocols.
Protocols	· Governing how often and what actors interact steer where sensing takes place. · Protocols for promoting sensing can be used to direct where sensing takes place.	· Protocols for experimenting or doing research positively influence learning effectiveness	· Governing actors relate to how well learning is spread across and integrated in the organization and its protocols. · Replacing protocols or introducing a new protocol is supported by the temporary constellation (i.e. project team) when the team is formed, changes after forming were not observed.

table 3 the observed key influences of architecture on the clusters of activity in dynamic capabilities.

As in the theory the table does not include the influence of actors, commons, or protocols on coordinating. The data confirms the assumption that formalizing actors, commons, protocols and the three other mechanisms has a positive influence on the effectiveness of the sensing, learning and integrating mechanisms. Within each case, multiple interviewees described coordination in line with this assumption, for example R6: *"Coordinating [the mechanisms] is important to understand what is working and what is not, and to make sure it is done in the first place. (…) Actors and commons need a form of coordination as well, although I would call it motivating. With this I try to understand if we are effective in reaching goals and coordinate to bring us on track and aligned".*

The following table summarizes the observed influence of the clusters of activity in dynamic capability on architecture.

	Actors	Commons	Protocols
Sensing	· Actors as part of groups sense within common areas, reaching a deeper view of those areas. · Actors as individuals more often sense in new areas, introducing new views.	· Commons support collaborative sensemaking and translating what was observed into actionable ideas.	· Sensing can lead to the questioning of existing protocols.
Learning	· What was learned can remain tacit knowledge within an actor (group or individual), changing their behavior and skill. · Collaborative experimentation helps in sharing this tacit knowledge.	· Based on what is learned by groups of actors, commons are created, adapted, or ended. · Commons structured around a specific skill or method adapt themselves over time. · Commons help in spreading the codified knowledge. · Commons help in bringing actors into contact to share tacit knowledge.	· What was learned can be codified in standard operating procedures or methods. · Protocols help spreading this codified knowledge.
Integrating	· *No observations*	· *No observations*	· A small group of actors can drive the integration of a new or updated protocol in the initiation of a temporary constellation. · Integrating can include forgetting
Coordinating	· Coordination influences actors, commons and protocols alike. Coordinating steers what experiments will take place and thus where most learning or integrating can occur. · Coordination focusses on the human-computer interface, how actors create and capture value either themselves or with clients. · Coordination as part of a digital transformation capability appears to require a layered approach where a shared vision is imposed top-down and where bottom-up feedback is gathered effectively as to determine where further experimentation takes place. · But, the way coordinating takes place was unique for each case.		

table 4 the observed influence of the clusters of activity in dynamic capability on architecture

Another observation follows from counting the total number of codes per mechanism and root concept. Integrating was notably less present in the data.
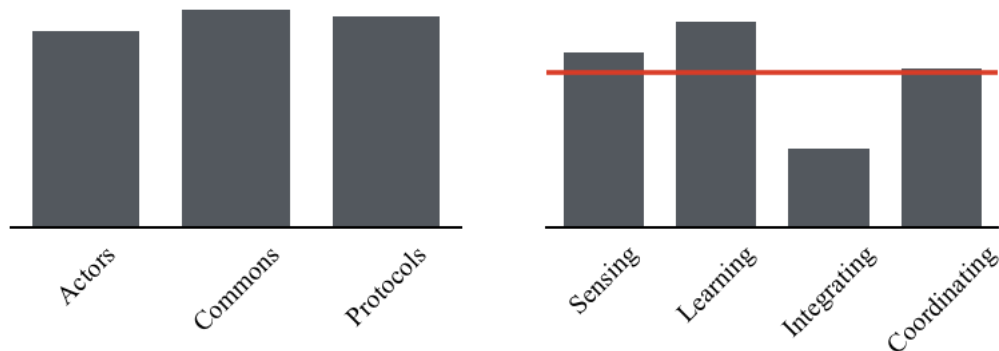

Figure 3 count of codes per key theme to illustrate

Within each case there was mention of the concept of integrating to be in part or in full the responsibility of more senior management, especially when integrating means replacing activities. Whilst sensing, learning and coordinating take place, there may be an integration barrier, especially as within two cases respondents described their efforts to champion and promote an innovation as ineffective because they were not picked up by more senior management. This hindered scaling innovation up into existing, wider accepted protocols. Introduction of new protocols or methods was also hindered as *"endorsement to make an improvement a new standard is not often given"* (R5) making it difficult to appoint ownership or responsibility of the change.

Most examples of digital transformation capabilities related to having a recurring revenue model that is added onto the existing or new services. This is in line with one of the two main digital strategies Sebastian et al. described (2017, p. 198). Another component that was theorized and observed is the capability to introduce new business models, morph existing models and to bring teams delivering using these models in contact with the existing 'operational backbone' as to not create a silo of digital initiatives but truly making the digital initiatives part of the *business as usual*.

5 Conclusion and discussion

This study has shown that digital transformation capability includes the dynamic management of temporary constellations of people. Based on ten interviews across three cases, four key findings have been given that together build towards a theory for structuring people in temporary constellations as a way to achieve digital transformation. Using these four principles an improved understanding of digital transformation in people-based-service organizations is reached, addressing the gap where extant literature has focused more on a manufacturing context. When an organization is already focused on delivering services the people in teams that deliver those services and in groups that manage and organize knowledge are the resources in play for achieving a digital transformation. The key findings show that temporary constellations, such a project teams and communities of practice, are a powerful instrument to improve a digital transformation capability. This requires coordination of how these constellations form and interact and it requires the rest of the organization to be able to integrate what is learned and successful in those isolated constellations.

The digital transformation capability requires agility and coordination. Coordinating a digital transformation is a dynamic capability. By steering where sensing, learning, and integrating takes place, organizations can gradually transform the way they work. Each shift can be seen as an experiment that in turn should guide the following initiatives. Creating groups of people that are created and at some point, superseded and disbanded (temporary constellations) increased agility is achieved. Coordinating this is part of successful knowledge management (Kulkarni et al., 2007). In integrating IT capacity and capability in these groups in a constellation where IT is integrated with the domain expertise. It is not a given that teams reach this success. It requires agility and coordination of how teams are created and within the teams, supporting the findings from Abcouwer et al. (2020) that having liaisons on multiple levels between the domain and IT teams is required for these fields to integrate. Managers embarking on a digital transformation should therefore consider how integration will take place and dare to adapt winning teams to spread learning and integration similar to how focus on integration is shown to support innovativeness (Chen et al. 2010). Future research can be aimed at further applying insights from social capital and social network theories to better understand the complexity in play in building successful digital transformation teams.

Integrating is at the center of the second key finding. From the four mechanisms used to understand a digital transformation, integrating was underrepresented in the data and where present the sentiment around integration was more negative. **Integrating mechanisms are a potential barrier for digital transformation as organizations have difficulty to integrate successfully seized digital opportunities in their business as usual.** Two cases showed that as more managers become engaged with an initiative, it becomes increasingly difficult to assign responsibility and ownership of change that is required to integrate what was learned. This is supported by different angles on the integrating mechanisms that share the view that a less hierarchical organization is better positioned to integrate (e.g. Chen et al. 2010, Gold et al. 2001). If there are fewer layers of managers to question a proposal, a situation where there is always more to learn or uncertainty to reduce is avoided. The potential imbalance in the integrating mechanism – what to integrate and what not – should be made part of coordinating a digital transformation to counteract the risk-averse mindset with a considered approach (Orlikowski, 1996, p. 89).

The variety of processes and services in people-based service organizations enlarged this effect. Ownership of assets, products or features in a manufacturing industry relates to something tangible. In people-based-service organizations ownership of processes or methods is a lot less tangible if at all, because it describes ownership of for example a best practice. The valid examples of digital transformation all shared a clear owner with clearly defined responsibilities. This owner was shown be a function within the organization or a group of actors in a center of excellence. Actors that own a commons or procedure with authority to make changes foster the digital transformation capability by being closer to a domain, so successful integration of IT is easier sensed, learned and integrated. This again is supported by the shown importance for a more decentralized organization for successful knowledge management (Chen et al. 2010). **Clear actor ownership of services, processes and methods fosters the digital transformation capability if the owners have authority to make changes and if the changes are mainly supported by the coordination mechanism.** Ownership and governance are beyond the initial scope of this research, nevertheless it is now shown as a key contributor. The matter of who owns a digital transformation, who coordinates it and who assures integration is addressed. In terms of paradox and ambidexterity: who manages the conflict?. This is an interesting area for future research as this in turn inform decisions on who organizations can best organize for a digital transformation in greater detail than what was achieved in this research.

Deploying a digital business model requires the appropriate infrastructure, but this technological side cannot be a source of competitive advantage as it is not rare and relatively easy to replicate (Barney & Wright, 1998; Tiwana, 2017, p. 68). Combining existing domain-expertise with IT-expertise into temporary constellations is effective if these experts know how to collaborate. As suggested in literature (i.e. Abcouwer et al., 2020; Dougherty & Dunne, 2012; Tabrizi et al., 2019) a liaison between these experts was found to be used in most examples, leading to conclude that such a role cannot be omitted for integration to take place. **Being able to consistently deploy the correct temporary constellation of people for projects, knowledge management, research and development and other temporary settings is a key component of the digital transformation capability, identifying the correct liaisons is promising to manage conflicts.** Temporary constellations of people can be focused on delivering a solution to a specific problem (i.e. project teams) or on developing knowledge and solutions ready for problems that still need to become apparent (i.e. communities of practice). Many other temporary constellations can be imagined (i.e. conferences, some business units, people in a meeting) but shared characteristics are the inception where individuals meet and exchange ideas, a constellation starts forming defining norms and procedures, and creates experiences that are captured in the members' minds. Team formation is a well-researched field, how to form teams for a digital transformation, taking the four key findings of this research into account, will inform managers further in how to build a successful, integrated team. In people-based-service organizations it is the agility in capturing in the creativity, knowledge and skills of people with IT and domain expertise that has a great impact on the digital transformation capability. Building constellations around individuals that are able to bridge the gaps on different levels of the organization is what it takes to structure for an effective digital transformation.

Taking this into consideration in the architecture of an organization completes the final model in Figure 4. Each key finding is mapped on the architectural model used in this research.

1. **The digital transformation capability requires agility and coordination.**
2. **Integrating mechanisms are a potential barrier for digital transformation as organizations have difficulty to integrate successfully seized digital opportunities in their business as usual.**
3. **Clear actor ownership of services, processes and methods fosters the digital transformation capability if the owners have authority to make changes and if the changes are mainly supported by the coordination mechanism.**
4. **Being able to consistently deploy the correct temporary constellation of people for projects, knowledge management, research and development and other temporary settings is a key component of the digital transformation capability, identifying the correct liaisons is promising to manage conflicts.**
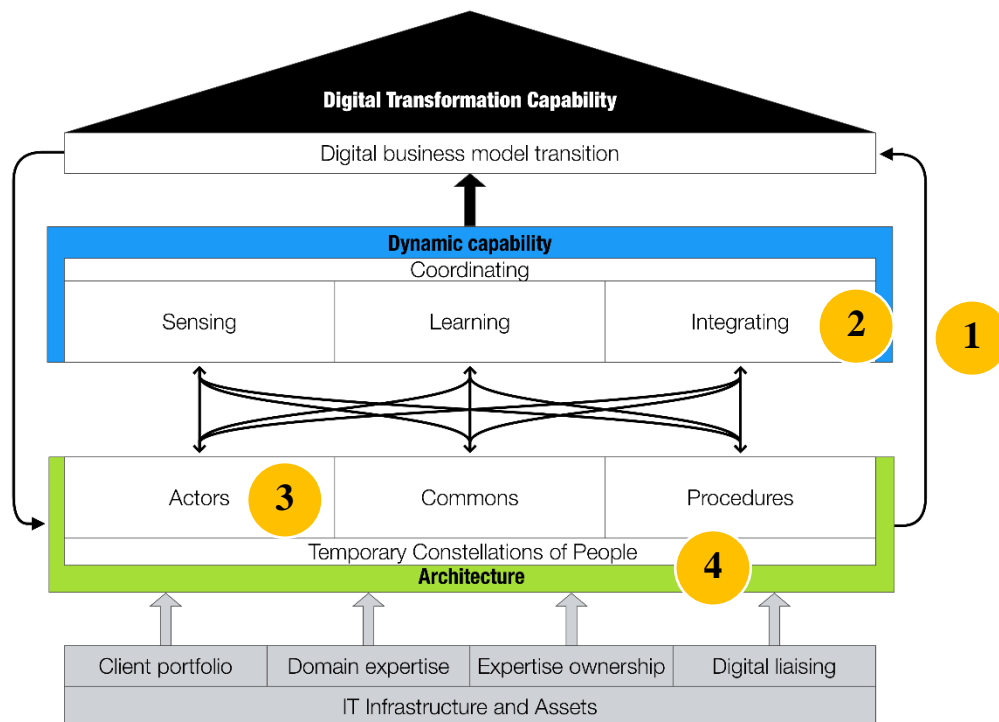

Figure 4 architectural view on digital transformation capability with the position of four key findings of this research

5.1   Limitations

Exploring the relationship between the architecture of an organization, how teams are formed within that architecture and how this relates to the digital transformation capability was carried out in the context of people-based-service oriented organizations. A specific context, although still a large one. As described by Zheng, Yang, & McLean (2010) future research can view organizational structure, culture and strategy as a interdependent system and place digital transformation capability or other capabilities and mechanisms in this network to gain a better understanding of the complexity and look for more generalizable rules of a successful digital transformation. This current research is limited in generalizability by the nature of the methods and volume of data collected in three cases

Other areas where future research can contribute to improved understanding of the complexity of organizing for digital transformation are found amidst the assumptions in this research.

The assumption that a digital transformation means shifting the existing business and not creating a new business unit. Whilst the view that for a transformation instead of a turn-around organizations should gradually change, separating exploration and exploitation in business units is an approach to innovation that is well researched in the area of ambidexterity. Being able to create (or assimilate) many digital businesses, creates a shift towards a digital business model as well and could therefore also be a digital transformation capability as well. Future research can take a similar dynamic capability or knowledge management view to understand this other approach to digital transformation.

Finally, the decision to describe a digital transformation as a shift towards digital business models. Whilst widely adopted in literature (e.g. Andal-Ancion et al., 2003; Sebastian et al., 2017; Hinings et al., 2018; Sklyar et al., 2019), a business model is a tool to describe an organization and its value creation logic with some focus on resources. Other views of the firm may result in different ways of understanding what a digital transformation is. For example, a knowledge-based view may assert that a digital transformation is successful if the organization is highly efficient in organizing knowledge to deploy digital assets and capture the value that comes from people interacting with those assets. Whilst the digital business model is often found in extant research on digital transformations, it may prove valuable to adopt other views to improve the understanding of what makes digital transformation complicated and what is required to perform one successfully or efficiently.

Annex 1 – Interview Guide

The interview is divided in three concepts. Per concept the interviewee will first share their own understanding of the concept. Next, follow-up questions are used to collect the information that is relevant for the research. To support this semi-structured approach, the following guide is used as a guide.

Concept 1 – Digital Transformation Capability

- What is a digital transformation?
- Is digital transformation being pursued in your organization? How is this visible in your (new) business model(s)?
- Can you explain what digital transformation capability means for you and your organization?

Concept 2 – Organizational Structures

- Can you explain your organization's form? How do individuals relate and interact?
- Within that space, how are your organization's digital transformation initiatives coordinated?
- Is this part of your organization's form the result of a decision that was made to support your digital transformation capability?
    - *If yes, what changes were made to support the digital transformation capability?*
- What, in terms of organizational form and how actors interact, can foster or hinder your digital transformation capability?

Concept 3 – Dynamic Capability

At this point there is an understanding of a part of the organizational form and the digital transformation capability. The interviewee has had the opportunity to relate the two concepts. In this final part of the interview, the interviewee will be guided to relate the two previous concepts with the dynamic capability mechanism as suggested by previous research. The following questions are used to steer a natural conversation flow, and to prompt the interviewee to provide information on the four groups of activities. If needed some examples are provided to help understanding of the groups of activities.

Sensing – (Teece, 2007, pp. 1322–1324)
- How does your organization scan, search and explore technologies and markets?
- How does your organization stay in tune with those changes?
- **How are people in communities helping you understand threats and opportunities coming from the world around it?**

Learning – (Shu et al., 2012)
- How does your organization ensure that new knowledge around digital transformation is being collected or created?
- In those exchanges, can you describe what is being exchanged?
    - *For example, sources of information, experiences and know-how, routines or technology*
- After a number of those exchanges, can you describe if individuals' way of working changes? (Feldman, 2000, p. 626)
- How does management in your organization encourage that individuals meet and that knowledge is being exchanged?
- **How do communities and (in)formal protocols foster or hinder this learning?**

Integrating – (Chesbrough, 2003)
- What happens next, with what was learned?
- Does the business-as-usual change? How?
- How does management align all assets to promote this incorporating?
    - *For example, communities of practice, active encouragement of applying new capabilities, letting go of capabilities that are superseded or substituted.*
- **How do employees, communities and protocols foster or hinder the integration of what was learned into business as usual?**

Coordinating – (Porter, 1996; Teece, 2007)
- The previous ways of sensing, learning and integrating can be repeated endlessly. How does your organization orchestrate this (potential) transformation path?
- Is a roadmap or a way to keep track of a strategic goal or fit used? And if so, how?
- **How do employees, communities and existing protocols foster or hinder the orchestration of what changes?**

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