Tampere University

MAIJA YLINEN

Digital Transformation in a Finnish Municipality

Tensions as Drivers of Continuous Change

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ACADEMIC DISSERTATION
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Tampere, September 2021

ABSTRACT

The world is digitalizing at an ever-increasing pace. To benefit from the potential of new digital technologies, both private and public sector organizations have begun to digitally transform. Digital transformation is a fundamental and continuous transformation whereby organizations change their business operations, products, and processes to become better equipped to benefit from digital technologies.

Research on digital transformation has largely focused on strategic perspectives, necessary activities, and new technologies. The insights of these studies provide a good overview of the different aspects of digital transformation at the organizational level, although mainly in the private sector context. What is still not properly understood is the way the transformation evolves at lower levels of the organization. The grassroots perspective of digital transformation is missing.

To provide a better understanding of digital transformation at these lower levels, this dissertation reports an interpretive single case study conducted in the IT department of a large municipality in Finland. The study focuses on this IT department's efforts to digitally transform to improve its ability to provide better services to the municipal business units and support the municipal digital transformation.

The findings show that the IT department's efforts to digitally transform improved its ability to provide IT-related services to municipal business units, revealing that many suggested approaches for supporting digital transformation in the private sector also apply in the public sector context. The findings also show that the activities with which the IT department began to advance its digital transformation were guided by an attempt to solve one tension after another instead of relying on a predefined transformation plan. While the initial transformation activities were designed to resolve tensions hindering the IT department's service provision, the following transformation efforts were targeted to resolve tensions revealed and created by the previous transformations, resulting in a continuous tension-driven transformation process.

This rich and in-depth case study of a grassroots-level digital transformation provides new insights related to the evolution of digital transformation and the role of tensions in this evolution. Consequently, the key contribution of this dissertation

is the discovery that while digital transformation is often depicted as a transformation process guided by strategy, in the lower levels of the organization, digital transformation appears as an organic transformation driven by tensions. The identified tensions, while case-specific, explain how tensions inherent in organizational operations drive change initiatives, which, in turn, reveal new tensions demanding attention, thus resulting in a continuous transformation.

Management research has long acknowledged that change creates tensions when new and old collide, and these tensions often need to be addressed again with change. The perspectives of this literature stream often see tensions as by-products of change processes, whereas the findings of this dissertation show that in continuous and iterative transformations, tensions can become the driving force behind the transformation. Consequently, this dissertation expands our understanding of digital transformation by revealing that such transformation cannot be viewed only as a strategic initiative but also as an organic, tension-driven continuum. Therefore, more attention in digital transformation research and management should be placed on managing the tensions of this transformation.

TIIVISTELMÄ

Maailma digitalisoituu kiihtyvää tahtia. Hyötyäkseen digitalisaation tuomasta potentiaalista niin julkisen- kuin yksityisen sektorin organisaatiot ovat alkaneet kiinnittää kasvavassa määrin huomiota keinoihin, joilla näitä teknologioita voitaisiin hyödyntää toiminnan tukena ja arvonluonnin pohjana.

Uusien teknologioiden ja niiden sovelluskohteiden kehittyessä jatkuvasti, tulee myös organisaatioiden sopeutua tähän jatkuvaan muutokseen. Tähän prosessiin viitataan usein digitaalisena transformaationa. Käytännössä digitaalinen transformaatio tarkoittaa muutoksia organisaatioiden liiketoiminnassa, tuotteissa ja prosesseissa. Näiden avulla organisaatio voi saavuttaa jatkuvan muutoksen tilan, jossa uusia teknologioita ja innovaatioita hyödynnetään tehokkaasti ja joustavasti.

Tällä hetkellä digitaalista transformaatiota on tutkittu pääasiassa organisaatiotasolla, keskittyen erityisesti sen johtamiseen strategisesta näkökulmasta. Lisäksi viimeaikaisissa tutkimuksissa on tunnistettu organisaatioille välttämättömiä muutostoimia sekä tutkittu muutoksen ajureina nähtyjä teknologioita. Nämä tutkimukset nostavat hyvin esille erilaisia organisaatiotason kannalta kriittisiä tekijöitä. Mihin nämä tutkimukset eivät ota riittävästi kantaa, on digitaalisen transformaation kehittyminen organisaation alemmilla tasoilla.

Tämä väitöskirja perustuu tulkitsevaan yksittäisen tapaustutkimukseen, jossa kartoitettiin digitaalisen transformaation kehittymistä ja johtamista juuri organisaation alemmilla tasoilla. Tapaustutkimus toteutettiin suuren suomalaisen kunnan tietohallinnossa.

Tutkimuksen tulosten pohjalta voidaan todeta, että huolimatta nykytutkimuksen vahvasta painottumisesta yksityiselle sektorille, monet kirjallisuudessa esille nostetut oivallukset pätevät myös julkisen sektorin kontekstissa. Toisaalta löydökset viittaavat siihen, että organisaation alemmilla tasoilla digitaalisen transformaatio ei ilmene strategisena prosessina, jossa noudatetaan ennalta määriteltyä muutossuunnitelmaa, vaan reaktiivisena, jännitekeskeisenä ja jatkuvana transformaationa.

Näin ollen, huolimatta strategian korostumisesta digitaalisen transformaation tutkimuksessa, organisaatioiden alemmilla tasoilla digitaalinen transformaatio on usein orgaaninen ja jännitteiden ajama prosessi. Nämä muutosta ajavat jännitteet itsessään ovat tapauskohtaisia, mutta niiden vaikutus muutoksen ajureina ei.

Vaikeuttaessaan organisaation toimintaa, jännitteet aikaansaavat muutostarpeen, jota seuraavat muutostoimet usein paljastavat uusia jännitteitä vaatien uusia muutosaloitteita. Yhdistettynä toimintaympäristön jatkuvaan digitaaliseen muutokseen, nämä jännitteet saavat aikaan jatkuvan muutosprosessin, digitaalisen transformaation.

Johtamistutkimus on jo pitkään tunnustanut jännitteiden roolin muutoksessa, jossa vanha ja uusi kohtaavat ja uudet toimintatavat, odotukset ja kulttuuri muuttuvat. Jännitteet nähdään kuinekin usein muutosprosessin sivutuotteena. Tässä väitöskirjassa jännitteillä on keskeinen rooli muutoksen alullepanossa, mutta myös muutoksen jatkuvuudessa. Näin ollen, tämä väitöskirja laajentaa ymmärrystämme digitaalisesta transformaatiosta osoittamalla, että digitaalinen transformaatio ei ole vain strateginen aloite vaan jännitteiden ohjaama muutosjatkumo, jossa tulisi kiinnittää erityistä huomiota jännitteiden johtamiseen.

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1 INTRODUCTION

This dissertation studies the phenomenon of digital transformation in the context of a Finnish municipality from the perspective of its centralized IT department. The dissertation is positioned at the intersection of information systems (IS) and digital government research, contributing to both. The purpose of this dissertation is to present how a municipal IT department can advance digital transformation and the ways this transformation evolves inside the IT department and impacts other parts of the municipality. The dissertation further depicts how the operational needs of a municipality created pressure on its IT department to initiate digital transformation, how the IT department began to advance this transformation, the way this transformation process evolved within the IT department, and how this transformation changed the way the IT department interacted with other parts of the municipality. Consequently, this dissertation provides a grassroots perspective on digital transformation while acknowledging two levels of transformation: inside an IT department and within a municipality.

1.1 Background

Public sector organizations, as well as individuals, organizations, industries, and countries, are increasing their use of digital technologies and are thus fundamentally changing our societies and everyday life (Hess et al. 2016; Teubner and Stockhinger 2020). This change is largely driven by the desire to benefit from the opportunities of digital technologies (Legner et al. 2017). Similarly, while consumers' expectations and behavior are changing as they become more accustomed to the use of digital technologies, organizations, industries, and even governments face pressure to become equipped to utilize the potential of current and prospective technological advances (Verhoef et al. 2021).

Interest in utilizing digital technologies, while often discussed in the context of the private sector and at the level of the individual organization (Vial 2019), is also apparent in the public sector. In the public sector context, digitalization is considered

a critical factor in enabling the public sector to carry out its tasks and serve citizens in the best possible way (Larsson and Teigland 2019). The introduction and utilization of digital technologies are expected to improve the capability of public sector organizations to cope with the demands of the changing operational environment (Janssen and van der Voort 2016; Mergel et al. 2020). Digital technologies are also seen as a way to improve operational transparency, responsiveness, accountability, and internal efficiency (Davison et al. 2005; Ebrahim and Irani 2005; Koh et al. 2006; Rana et al. 2013). Therefore, digitalization is considered one potential solution for public sector organizations to improve operations, get closer to the citizens, and create new services (Douglas et al. 2015). Simultaneously, digitalization can enable public sector organizations to respond to new types of citizen demands and expectations, such as access to electronic services (Davison et al. 2005; Douglas et al. 2015; Ebrahim and Irani 2005).

In response to these demands and motivated by the desire to reap the potential benefits, governments all over the world have introduced large-scale governmental digitalization initiatives (Anthes 2015; Yli-Huumo et al. 2018). Digitalization initiatives have also become popular among public sector organizations, such as municipalities (Bernhard et al. 2018). These initiatives include both transformations from paper-based operations to digitalized form (Carroll 2020) and the introduction of new digital solutions, such as artificial intelligence (Mikalef et al. 2019; Schaefer et al. 2020), cloud computing, and blockchain (Beck et al. 2017).

While multiple advances have been made, the pressure for constant advancement is only increasing (Mergel et al. 2019). The operational environment is becoming more turbulent, creating a demand for abilities such as sensing and seizing environmental change. In this, technology is seen to have a critical role. (Janssen and van der Voort 2016; Larsson and Teigland 2019)

Benefiting from new technologies in the increasingly turbulent operational environment does not mean a mere increase in the use of information technology (IT). For example, the introduction of electronic services does not necessarily lead to improved efficiency, as organizations are often incapable of abandoning their previous services and processes. (Senyucel 2007) On the other hand, digitalization of existing processes does not necessarily enable organizations to fully utilize the potential of new technological advancements. Consequently, organizations can not merely digitalize their existing processes but rather need to fundamentally transform their operations. (Christensen et al. 2018; Dahlberg and Helin 2017; Davison et al. 2005; Janssen and van der Voort 2016) Thus, organizations should digitally transform (Carroll 2020; Tangi et al. 2021; Verhoef et al. 2021; Vial 2019).

Digital transformation refers to the process whereby an organization's operations, products, and processes are transformed (Matt et al. 2015) through the introduction of information, computing, communication, and connectivity technologies (Vial 2019). With digital transformation, organizations aim to improve their efficiency and competitive advantage (Kahre et al. 2017; Vial 2019), as well as enhance organizational flexibility and agility (Berman 2012). Digital transformation differs from previous IT-related transformations as digital technologies are not only transforming operations but also organizational value propositions and organizational identity (Wessel et al. 2021). In the context of the public sector, this has been suggested to mean alterations in applications, processes, culture, and structure of the public sector, as well as require changes in the tasks and responsibilities of civil servants (Tangi et al. 2021).

In this dissertation, digital transformation is defined as a fundamental transformation process of an organization whereby digital technologies are not just incorporated into existing operations but the operations themselves are redesigned to achieve the best possible operational outcomes. Consequently, digital transformation is defined as a continuous transformation process aimed at improving the capabilities of an organization to utilize current and future IT to improve its operations and services.

In general, this dissertation views transformation as a change process whereby organizational processes and practices are transformed. Change is then defined as a process that considers multiple entities simultaneously, builds upon the history of the transforming entity, and often arises from contradiction. This definition positions itself within the typology process theories of organizational development and change by Van de Ven and Poole (1995) regarding the process theory of multiple entities, including evolution and dialectic change. This dissertation is also based on the belief that change can be either prescribed (evolution) or constructive (dialectic); therefore, change in this dissertation is seen as a combination of the two.

1.2 Research problem

Digital transformation research has focused especially on the strategic perspectives of digital transformation and the context of the private sector (Vial 2019). For example, these studies have introduced new strategies such as digital business strategy (Bharadwaj et al. 2013), digital strategy (Stockhinger and Teubner 2018), and digital transformation strategy (Chanias 2017; Matt et al. 2015), as well as depicted

aspects such as the formulation processes of these strategies (Chanias et al. 2019; Chanias and Hess 2016). The literature has also identified various critical factors of digital transformation. These include new competencies (Hafezieh and Pollock 2018), workforce capabilities, management capabilities, organizational values, and infrastructures (Muehlburger et al. 2019). Also, management approaches such as agility (Horlach et al. 2019; Jöhnk et al. 2017; Vejseli et al. 2018), ambidexterity (Vial 2019), and enterprise architecture (EA) have been proposed as suitable tools to manage the fast-paced change and increased complexity (Ajer and Olsen 2018).

Digital transformation studies have focused on specific aspects of digital transformation but do not shed light on the way these aspects come together at the operational level and, thus, result in organizational digital transformation. Scholars and practitioners do not yet understand what digital transformation is or how it evolves (Wessel et al. 2021). While the literature has identified various necessary aspects of digital transformation, it provides neither an understanding of the types of steps organizations should take to achieve digital transformation nor how digital transformation evolves in the long run (Bordeleau and Felden 2019).

In light of the above, we lack a proper understanding of how organizations could initiate and advance digital transformation or how such transformation evolves after its initiation. For this, we need to understand how digital transformation evolves at the lower levels of organizations, not just how it is planned at the organizational level (Kahre et al. 2017; Lanamäki et al. 2020). After all, effective IT-related transformations are often incremental and start from small-scale changes (Jarvenpaa and Ives 1996; Orlikowski 1996). This can also be assumed to concern digital transformation, although in the digital transformation literature, the observation level is often organizational (Vial 2019).

Although digital transformation research has focused on the private sector, and the empirical evidence in the way digital transformation is perceived and acted upon in daily practices of public sector organizations is inadequate, although public sector organizations could largely benefit from organizational digital transformation (Mergel et al. 2019). However, due to the lack of practical examples, how this transformation can be initiated and advanced or how it evolves after its initiation remains unknown (Muehlburger et al. 2019, 2020).

The still inadequate understanding of how digital transformation can be advanced in the lower levels of the organization, and especially in the context of the public sector, leads to the preliminary research problem of this dissertation:

How can digital transformation be initiated and advanced at a centralized IT department and how would this transformation evolve after its initiation?

This understanding is sorely needed as digital transformation of both the public and private sectors seems inevitable, and if it is to result in the desired benefits, we require a proper understanding of how this transformation can be initiated. Through a better understanding of the way digital transformation evolves after its initiation, organizations such as municipalities can be better equipped not only to take the necessary steps but also to cope with the challenges to which IT-related transformations are prone (Heeks 2003).

1.3 Research context

In this dissertation, digital transformation is studied from the perspective of a municipal IT department (see Figure 1). In Finland, municipalities are self-governing public bodies responsible for various statutory services, such as education and healthcare. Finnish municipalities have their own taxation rights, and their decision-making is centralized in a municipal council that is selected through elections every four years. The day-to-day operations are managed, with few exceptions, by a public official appointed by the municipal council, who is responsible for managing the various business units providing statutory services to the residents of the municipality. In relation to other public bodies, municipalities are a key provider of Finnish public services and public sector governance, which also includes state administration (parliament and president), local state administration, and regional administration. From the perspective of the municipalities, the state administration governs the municipalities with legislation and official recommendations, whereas the local state administration consists of official authorities such as the police and tax office. The regional administration is then responsible for monitoring the implementation of law in its appointed areas. (Suomi.fi 2021)

In recent years, many Finish municipalities have faced challenges related to the provision of services with their limited resources. For example, due to its location and small size, Finland is vulnerable to global economic forces such as the 2008 downturn, which had a great impact on municipal finances. Moreover, many Finnish municipalities are suffering from resident migration to large cities, which, when combined with the aging population, has created a multitude of socio-economical struggles for the municipalities. (Pollitt and Bouckaert 2011)

The case municipality of this dissertation had its struggles as well. The operational environment of the municipality was transforming due to the growing number of residents as well as the straitened economic situation. Consequently, the municipality and its centralized IT department were facing pressure to improve their operations. While this transformation pressure concerned the entire municipality, the main focus here is on the IT department, which was facing new operational demands as the municipality was transforming and introducing new digital technologies at an ever-increasing pace.

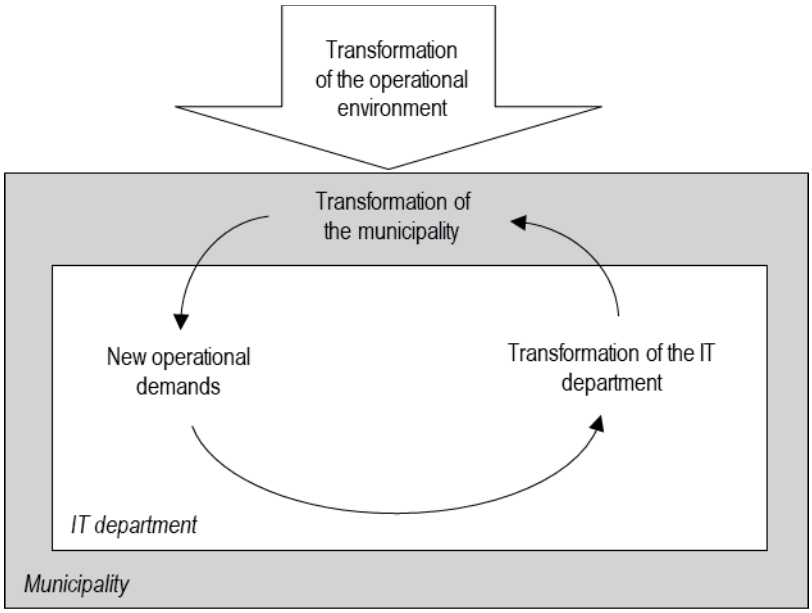

Figure 1. The research context of the dissertation.

IT departments in the public sector are traditionally considered as a support function, enabling cost-cutting and citizen participation (Davison et al. 2005). While the operational environment of municipalities has become more turbulent, IT departments are now facing pressure to improve their capabilities to respond to the needs of municipal business units in a more agile manner (Janssen and van der Voort 2016). The IT departments are struggling with the upkeep of organizational legacy systems and have limited resources to respond to these new demands (Châlons and Dufft 2016, pp. 18–19). Thus, there is a clear need for IT departments to transform.

Despite their struggles, IT departments have long been promoters of innovation and business development, especially in the context of digitalization (Matt et al.

2015). They are also seen as drivers of transformations brought about by digital technologies (Leonhardt et al. 2017; Tanriverdi et al. 2010). Consequently, IT departments, which have the potential to become drivers of digital transformation (Hansen et al. 2011), are also facing pressure to transform even while possessing the potential to start this transformation. This makes them an interesting context in which to study digital transformation.

While this dissertation focuses on digital transformation initiated and advanced by a municipal IT department, it acknowledges that the municipality, its business units, and other factors external to the municipality influence and are influenced by the transformation process. Therefore, they cannot be excluded from this dissertation, although these aspects are studied from the perspective of the IT department.

IT departments are typically responsible for a multitude of different tasks, including the administration of computers, maintaining old systems, supporting the development and acquisition of new systems, developing organizational architecture, as well as setting a strategy and identifying business requirements (McNurlin and Spraque 2006). Here the focus is on IT development, i.e., the process followed to meet increasing customer needs. This process begins when a new IT-related need is identified. This is followed by a definition of the need and identification of suitable solutions. In cases where there are viable solutions and satisfactory reasons to obtain funding for the suggested solution, funding is approved, after which a project is created that either takes responsibility for the creation of the solution or its acquisition from an outside provider. The process ends when the new IT solution is implemented. As the digital transformation in the IT department was initiated through a transformation of an IT development process, the analyzed transformation centers on the transformation of this key process. This research focus is justified as although IT departments are responsible for multiple other tasks, IT development is the process that enables the organization to discover and introduce new digitalized solutions to their operations.

This dissertation studies the phenomenon of digital transformation from a grassroots perspective, where the unit of analysis is a centralized IT department of a municipality. The study focuses on the transformation of an IT development process occurring inside the IT department and its impact within the IT department and the municipality. While the study focuses on transformation occurring at a unit level, it is also acknowledged that digital transformation is a fundamental transformation of which the influence is not limited to a unit level. Instead, the effects of the IT

department's transformation have ripple effects that are also considered in this dissertation, although they have not been studied in detail.

1.4 Original research publications

This dissertation is written in monograph format for administrative reasons. The research has also been reported in research articles. These articles and their research questions are presented in Table 1. The first publication (see publication no. 1 in Table 1) investigates public sector digital transformation through one of the tools of the transformation process, i.e., EA. The paper contributes to both digital transformation and enterprise architecture literature by showing that issues that are often blamed on EA are not necessarily the result of it. Instead, these tensions are manifestations of underlying organizational tensions that the implementation of EA can render visible.

Table 1. Original research publications.

No.	Publication	Research question
1.	Ylinen, M. & Pekkola, S. 2018. Enterprise architecture as a scapegoat for difficulties in public sector organizational transformation, Proceedings of International Conference on Information systems (ICIS 2018). San Francisco Marriott.	What tensions emerge when a public sector IT department changes its service model from a siloed to a holistic approach?
2.	Ylinen, M. & Pekkola, S. 2019. A process model for public sector IT management to answer the needs of digital transformation, Proceedings of Hawaii International Conference on System Sciences (HICSS-52). Hawaii (Maui), January 8-11, 2019, IEEE Computer.	How can a public sector organization organize its IT development process in response to digitalization?
3.	Ylinen, M. 2021. Incorporating Agile Practices in Public Sector IT Management: A Nudge Toward Adaptive Governance, *Information Polity*, March 1–21.	What are the implications of a municipal IT department adopting agile methods in its IT development process?
4.	Ylinen, M. & Pekkola, S (under review). Consultants, Public Sector Organizations, and Digital Transformation: Ambiguity, Unanticipated Ramifications, and Continuous Change.	How do consultants' roles change over time when their services are utilized in incremental change efforts, such as digital transformation?
5.	Ylinen, M. & Pekkola, S (under review). Working Through the Tensions of Digital Transformation.	How does a municipal digital transformation evolve inside its IT department?

The second publication focuses especially on transformation efforts and their results during their early stages. The paper particularly addresses the transformation of the IT development process. This process comprises all the phases of IT development from the rise of an IT-related need to the implementation of the solution for the need. The findings show that although it is easy to focus on transforming daily practices, the management processes also need to be adjusted. The paper points out that while digital transformation can be initiated from one organizational unit, the whole organization needs to be involved for this transformation to be successful.

The third paper extends the second publication by analyzing the transformation of the IT department and, in particular, the IT development process. The focus is on the nature and impacts of the new IT development process, which incorporates agile practices in process management, an approach suggested in the digital transformation literature. The findings show how bottom-up agile experiments are a potential approach to driving large-scale transformations in the context of the public sector.

The fourth paper (under review) discusses the competence and resources needed in digital transformation with a particular focus on the impacts when these needs are fulfilled with the use of consultants. Concurrently, the paper analyses the evolving role of consultants in the context of continuous transformation. The paper further describes how continuous transformation can create a gradual change in different factors of transformation. In our case, this resulted in unanticipated ramifications, emphasizing the importance of long-term planning in continuous transformations.

The fifth paper (under review) combines aspects of the previous articles. The paper analyses the transformation as an activity system for which interlinked activities such as the implementation of the EA (publication 1), the transformation of the IT development process (publications 2 and 3), and the utilization of consultants (publication 4) supply components to the digital transformation activity. These components then can either advance the activity or create contradictions hindering the transformation. The findings indicate that digital transformation is not necessarily a strategic endeavor driven by technology but rather an emergent transformation proceeding through an iterative process of solving contradictions and increasing understanding.

The division of work in these papers is as follows. The author of this dissertation collected and analyzed the data independently, while the co-author of papers 1, 2, 4, and 5 and the supervisor of this dissertation participated in some data collection occasions. The author of this dissertation also wrote the original drafts of the co-

authored papers, while the co-author participated in the iterative writing process and finalization of the papers.

1.5 The structure of the dissertation

This dissertation is organized as follows. First, in the second chapter, the related research on organizational digital transformation is discussed, after which digital transformation in the context of the public sector IT department is considered. The chapter concludes with a summary and consideration of the research gap that this dissertation seeks to fill.

Following the related research, the research design is presented in chapter 3. This chapter first defines the research objectives and the research questions derived from these objectives. The chapter then proceeds to present the research paradigm. Next, the role of theory is considered, and the two theories used (i.e., activity theory and the paradox perspective) are presented in detail. The chapter concludes with a description of the study, from the case selection and data collection to the data analysis.

In chapter 4, the findings of the conducted case study are presented. The chapter starts with a description of the initial situation in the IT department and then advances to present the studied digital transformation activities, first by considering the activities themselves and then by analyzing the related tensions and contradictions. The chapter concludes with an analysis of the positive and negative impacts of the transformation.

In chapter 5, the findings are discussed in light of the current digital transformation literature. Then the research questions are answered, and their implications are considered.

The dissertation finishes with a conclusion wherein the contributions of the dissertation are considered. After this, the conducted study is evaluated, and its generalizability is considered. Finally, some future points of interest are presented.

2 RELATED RESEARCH

This chapter proceeds as follows. First, the current literature on organizational digital transformation is presented. Both the digital transformation process and its different elements are considered. These elements include the drivers of digital transformation, the strategic responses for digital transformation, the variety of activities considered necessary in digital transformation, and the potential outcomes of this transformation. After this, digital transformation is considered in the context of public sector organizations, especially from the perspective of their IT departments.

2.1 Digital transformation

Digital transformation has attracted an increasing amount of interest in recent years as academics aspire to grasp what digital transformation is and organizations strive to benefit from it (Wessel et al. 2021). Consequently, interest in IT as a source of societal transformation is growing (Faik et al. 2020).

In organizational context, digital transformation is expected to provide performance improvements (Bekkhus 2016) both by increasing efficiency and innovation (Berghaus and Back 2016) and creating new competencies and skills (Demirkan et al. 2016), such as the ability to utilize new disruptive technologies and data analytics (Verhoef et al. 2021). Besides improving internal operations, the increased use of digital technologies can also improve interaction with customers and thereby enhance the customer experience (Haffke et al. 2016; Horlacher et al. 2016). The objective is that through digital transformation, organizations can become better equipped to compete in the increasingly digitalized world (Bharadwaj et al. 2013).

In his highly cited literature review, Vial (2019, p. 121) combined the various descriptions of digital transformation in the following definition *"[digital transformation is]a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies*." Digital transformation can also be seen as an organizational

transformation whereby an organization transforms its business operations, products, and processes to leverage new technologies (Matt et al. 2015; Wessel et al. 2021). While digital transformation studies often focus on the transformation of individual organizations, this transformation is not limited to the organizational level. Instead, it can occur within organizations but also throughout industries and societies. (Vial 2019) This dissertation follows similar logic by focusing on the transformation of an individual organization even though this transformation, its drivers, and its impacts are not bounded by the studied organization.

When compared to other IT-enabled organizational transformations, digital transformation is referred to as the next step following digitization and digitalization (Verhoef et al. 2021). In this analogy, digitization is seen as the transition from a paper-based way of operation to the use of digital IS (Carroll 2020). Digitalization then focuses more on the strategic utilization of information technologies (Bockshecker et al. 2018), with more extensive economic and societal outcomes (Legner et al. 2017; Teubner and Stockhinger 2020). Digital transformation follows digitalization as the next step, in which digital technologies do not merely support the existing value propositions of the organization but leverage their (re)definition (Wessel et al. 2021) through the integration of these technologies as part of the organizational core operations (Bockshecker et al. 2018). Digital transformation resembles and incorporates elements of previous IT-enabled organizational transformations but differs from them because of its velocity and comprehensiveness (Bharadwaj et al. 2013; Chanias et al. 2019), which have been suggested to alter not only the processes but also the value propositions of the organization (Wessel et al. 2021).

Digital transformation can be distinguished from other IT-enabled organizational transformations by its outcomes. The significant changes designed to improve organizational efficiency and competitive advantage throughout the organization (Kahre et al. 2017; Vial 2019) are expected to result in the emergence of a new organizational identity (Wessel et al. 2021). IT-enabled organizational transformations are typically connected to a strengthening of the existing organizational identity, which provides a clear distinction between them and digital transformation and strengthens the presumption that digital transformation does differ from previous IT-enabled organizational transformations (Wessel et al. 2021).

2.2 The process of digital transformation

Digital transformation can be described as a process whereby digital technologies fuel disruptions in customer behavior and the competitive landscape, which results in organizational strategic responses and eventually leads to a fundamental transformation of the organization (Vial 2019; Wessel et al. 2021). In his model depicting the building blocks of the digital transformation process, Vial (2019) presents digital transformation as a process through which the growing use of digital technologies fuels disruptions in the operational environment, such as changes in consumer behavior and expectations. These disruptions are then expected to trigger strategic responses, such as the creation of a digital transformation strategy, that rely on digital technologies. The use of digital technologies is also seen as the enabler of digital transformation activity, referred to as changing the value-creation paths of the organization and, eventually, generating positive impacts, such as operational efficiency, but also negative impacts, such as issues related to security and privacy. (Vial 2019, p. 122)

Another process model of digital transformation by Wessel et al. (2021) also acknowledges technological change as the driver of the transformation agenda, leveraging transformation activity. In their model, the transformation impacts are limited to the emergence of a new organizational identity. (Wessel et al. 2021) A simplification of these two processes is presented in Figure 2.

Figure 2. The digital transformation process (adapted from Vial 2019; Wessel et al. 2021).

This dissertation focuses especially on the transformation activity of the process, although the significant drivers and impacts of the transformation are also acknowledged. In addition, the factors preceding and following the actual transformation activity are discussed in the following subchapters.

2.2.1 Environmental change and the drivers of digital transformation

The use of digital technologies is constantly growing and enabling organizational digital transformation (see Figure 3). When the role of these technologies is discussed in the context of digital transformation, in particular, technologies such as social, mobile, analytics, cloud, and the internet of things are often brought up (Sebastian et al. 2017; Vial 2019). In addition to these, blockchain (Andersen and Bogusz 2019; Chanson et al. 2019; Chong et al. 2019; Rossi et al. 2019), big data (Wiener et al. 2020), the evolution and development of digital infrastructures (Montealegre et al. 2019; Øvrelid and Bygstad 2019), and digital platforms (Fürstenau et al. 2019; Leong et al. 2019; Törmer 2018) are becoming popular technologies mentioned as enablers and drivers of digital transformation.

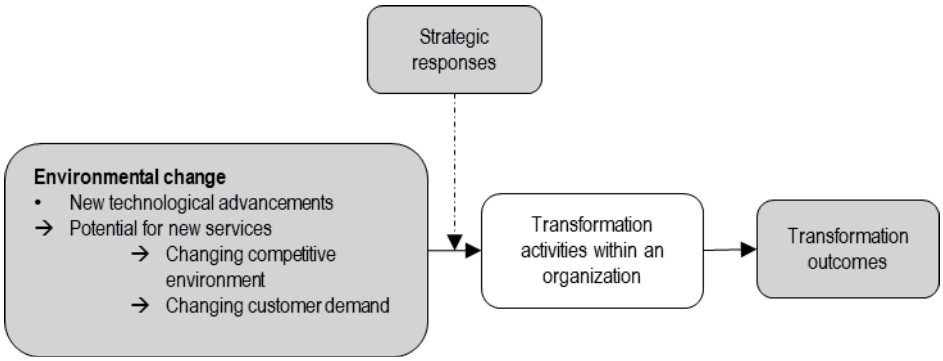

Figure 3. Environmental changes driving digital transformation.

The advances in digital technologies are expected to enable organizations to improve their efficiency (Berghaus and Back 2016) and redesign their value propositions (Wessel et al. 2021). Concurrently, these technologies alter consumer behavior and expectations as well as transform the competitive environment (Verhoef et al. 2021). While the growing number of digital technologies enables organizations to get closer to the customer and provide innovative solutions to meet their needs, customers also expect more and better digitalized services (Haffke et al. 2016; Horlacher et al. 2016). For example, consumers are now more informed, have a better understanding of offerings and prices, and have enhanced discernment, as they now have access to products anywhere in the world, which has also sensitized consumers to service breakdowns resulting in frustration if they face issues online. (Lucas et al. 2013)

Similarly, the competitive environment has become fiercer and more turbulent as digital technologies are, for example, lowering the barriers of entry (Lucas et al.

2013). New companies that are born digital (such as Google and Facebook) provide new value propositions threatening traditional industries (Sebastian et al. 2017) and their long-lasting supremacy (Reinartz et al. 2019). For example, with their new digital infrastructure-based operations, these companies have the potential to branch out into new areas easily. As an example, an international airline carrier, Norwegian, expanded its operations into an entirely new industry, banking, owing to its adaptable digital infrastructure, resulting in a new type of threat to the traditional banking industry. (Henfridsson and Bygstad 2013)

In the face of new demands from customers and the changing competitive environment, organizations are facing pressure to rely on these new technologies to stay relevant (Vial 2019). These technological changes in the operational environment but also inside the organization are assumed to drive the organization toward digital transformation by triggering strategic responses that rely on these new technologies (Wessel et al. 2021).

2.2.2 Strategic responses to digital transformation

Digital transformation has especially been studied from the strategic perspective (Vial 2019), i.e., how organizations can reach the desired state of digital transformation (Matt et al. 2015). The strategic responses have been referred to as the introduction of digital business strategy (Bharadwaj et al. 2013; Holotiuk and Beimborn 2017; Mithas et al. 2013; Oestreicher-Singer and Zalmanson 2013), digital strategy (Stockhinger and Teubner 2018), or digital transformation strategy (Chanias 2017; Matt et al. 2015) (see Figure 4.

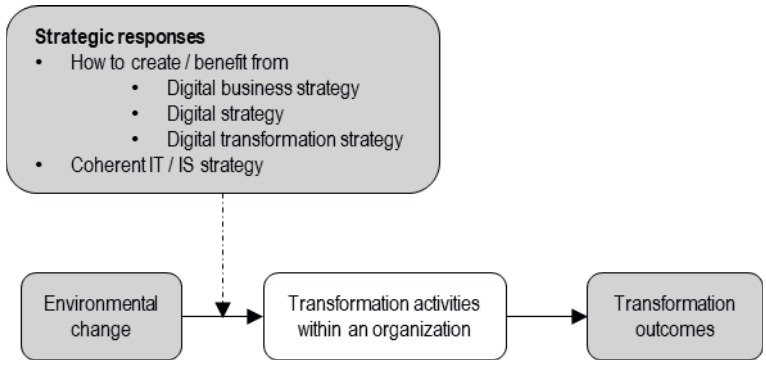

Figure 4. Strategic responses to digital transformation.

By introducing strategic responses to digital transformation, organizations are expected to improve their ability to leverage digital resources and redefine their value offerings through new products and services (Bharadwaj et al. 2013; Chanias et al. 2019; Wessel et al. 2021). These strategic responses to digital transformation differ from traditional IT strategies by their emphasis on the business perspective, the pervasiveness of digital resources (Bharadwaj et al. 2013), and the continuity of the process (Chanias et al. 2019). While all of these strategies aspire to support organizations in their digital transformation efforts, they focus on different aspects (Vial 2019). For example, digital business strategy can be defined as a fusion of IT and business strategies, encouraging organizations to move beyond business-IT alignment (Bharadwaj et al. 2013; Kahre et al. 2017). Here again, digital transformation strategy aspires to support companies in governing their transformation and the operations after this transformation (Matt et al. 2015). Despite their differences, these perspectives all acknowledge the necessity of closely connecting IT and business strategies (Yeow et al. 2018).

Besides the content and objectives of strategic responses to digital transformation, strategy formulation processes have also been discussed (Chanias et al. 2019; Chanias and Hess 2016). These studies have focused, for example, on the alignment process of digital strategy (Yeow et al. 2018), perspectives on the need for understanding by top-level managers (Onay et al. 2018) and other stakeholders (Schmidt et al. 2017), as well as the influence on digital strategy and the CEO (Rojas et al. 2016). The objective of these actions is to improve the organizational capability to leverage digital technologies (Mithas et al. 2013).

On the other hand, Teubner and Stockhinger (2020) indicated that digital transformation triggered strategic responses that were not necessarily differentiated from previous strands of strategic thinking. Concepts such as digital business strategy and the fusion of business and IT strategies have been indicated as problematic as they divert attention from comprehensive IT/IS thinking. It has also been suggested that instead of a digital business strategy, a more comprehensive and coherent IT/IS strategy will become increasingly critical for successful digital transformation. (Teubner and Stockhinger 2020) Also, the emphasis on strategy in digital transformation research and conceptualization has been questioned, first, because the objectives of strategy to enable organizations to leverage digital technologies are nothing new (Wessel et al. 2021), and second, because recent studies indicate that digital transformations can be emergent and evolve without clear strategic initiatives (Lanamäki et al. 2020).

2.2.3 Digital transformation activity

In the literature, digital transformation activity is often seen as the transformation of organizational value-creation paths (Wessel et al. 2021). In practice, this means activities such as the implementation of structural and cultural changes, including autonomous business units, agile organizational forms, and digital functional areas (Verhoef et al. 2021), as well as the introduction of new competencies, including a better business understanding of employees' role in IT function and better IT understanding of non-IT-related employees (Vial 2019; Yeow et al. 2018). Some of the key transformation activities are listed in Figure 5.

Figure 5. Digital transformation activity.

Next, these activities are discussed in detail, with a particular focus on the introduction of agile and ambidextrous approaches and the need to transform existing organizational assets.

2.2.3.1 Introducing agile and ambidextrous approaches

While strategic responses to digital transformation can be used as a guide for organizational digital transformation and the redefinition of organizational value propositions, successful digital transformation also requires changes in work practices and organizational culture (Wessel et al. 2021). According to the literature, organizations undergoing digital transformation need to become more agile and

ambidextrous to successfully advance their internal digital transformation and remain competitive (Magnusson et al. 2020).

Agile approaches are typically known for their specific uses in areas such as agile software development (Luna et al. 2014). In relation to digital transformation, agility has also received attention at the organizational level (Vial 2019). For example, features such as cross-functional collaboration, which emphasizes agile practices, have been identified as a critical aspect of digital transformation (Earley 2014). Additionally, agile practices are expected to improve the organizational capability to anticipate change before it occurs (Luna et al. 2014), especially in situations where the change is turbulent and abrupt (Folke et al. 2005), such as in digital transformation, where new opportunities arise at an ever-increasing pace (Vial 2019).

To become more agile and ambidextrous, organizations need to undergo both structural and cultural transformations. In the case of introducing agile practices, transformation efforts include, for example, emphasizing the role of individual employees, often referred to as empowerment of employees. Organizations are also encouraged to collaborate and build trust among their stakeholders instead of relying on detailed contracts. Additionally, organizations need to learn how to sense and react to change instead of defaulting to traditional reliance on official plans (Mergel et al. 2020). Consequently, agile adoptions at the organizational level require structural changes, where, for example, decision-making is decentralized and traditional siloed unit structures are removed (Janssen and van der Voort 2016; Luna et al. 2015). Cultural changes are also needed as adopting agile values often requires a transformation of organizational values. In this case, proper attention to the integration of new values is critical since without the proper incorporation of agile values into operations, organizations can face issues such as a lack of trust (Olsson et al. 2004) that can result in resistance to change and, ultimately, unsuccessful digital transformation efforts (Singh and Hess 2017).

Organizational agility studies have investigated, for example, the implementation of agile setups (Jöhnk et al. 2017), agile portfolio management (Horlach et al. 2019), and agile strategies in IT governance (Vejseli et al. 2018). Also, the implications of agile practices have been discussed (Fuchs and Hess 2018; Gerster et al. 2018), although agile methods provide little guidance on how they should be utilized in a broader context rather than in the small teams for which they were designed (Paasivaara et al. 2018).

Besides organizational agility, ambidextrous approaches have also been considered a critical aspect of organizational digital transformation (Heracleous et al. 2019; Magnusson et al. 2020; Smith and Umans 2015). By employing an

ambidextrous approach, it is expected that organizations will become better equipped to adapt to today's business demands, which require them to be simultaneously efficient and adaptive to the changing operational environment (Benner and Tushman 2003; Raisch and Birkinshaw 2008). An ambidextrous approach is expected to allow organizations to reconcile conflicts more efficiently and succeed in the long run (Gibson and Birkinshaw 2004). A further expectation is that agile and ambidextrous organizations gain the flexibility necessary to innovate while simultaneously caring for existing operations (Vial 2019).

Similar to agility, organizational ambidexterity also requires changes in organizational structure and culture (Simsek 2009). According to Andriopoulos and Lewis (2009), there are two ways organizations can achieve ambidexterity: architectural and contextual. Architectural ambidexterity refers to a structural approach wherein contradictory acts are differentiated. The contextual approach aims to utilize behaviors and social means to integrate contradictory acts (Andriopoulos and Lewis 2009). Simsek et al. (2009) have created a typology of organizational ambidextrous approaches based on temporal and structural qualities. These approaches are harmonic, cyclical, partitional, and reciprocal. In the case of harmonic ambidexterity, an organization concurrently pursues opposing acts within a single organizational unit. In the case of cyclical ambidexterity, opposing acts are temporarily separated (i.e., they are carried out in turns). Partitional ambidexterity involves the establishment of structurally independent entities. Reciprocal ambidexterity utilizes the reciprocal nature of opposing acts; the outcomes of one are used as input for another and vice versa. (Simsek et al. 2009)

Prior studies have focused mainly on the different elements of ambidexterity (Raisch and Birkinshaw 2008), such as the role of leaders in enabling organizational ambidexterity (Fossestøl et al. 2015; Trong Tuan 2017). Typically, these elements are connected with particular contradictory acts, such as agility and stability, flexibility and efficiency, and exploration and exploitation (Simsek 2009). This is the case with the discussion of ambidexterity in IS management and IS strategizing literature as well, where ambidexterity has been identified as critical in balancing exploration and exploitation (Galliers 2011). However, for now, the research focus tends to be on stable or static environments (Heracleous et al. 2019; Raisch and Birkinshaw 2008).

Because of this, the evolution of ambidexterity in digital transformation is not sufficiently understood (Luger et al. 2018), nor is the way the history of the organization or the external conditions where the organization operates shape organizational ambidexterity (Heracleous et al. 2019). Nonetheless, it has been considered critical in enabling organizations to pursue digital transformation

2.2.3.2 Changing organizational assets and capabilities

Besides implementing structural changes, digital transformation requires new digital assets, competencies, and new approaches to organizational leadership (Vial 2019). As digital transformation is intended to influence all parts of an organization, these changes influence multiple stakeholders throughout the organization and are not limited to the employees traditionally responsible for IT (Berghaus and Back 2016).

Digital transformation requires organizations to change their existing resources and assets to be capable of adapting to a changing operational environment (Yeow et al. 2018). For digital transformation, essential assets and capabilities include digital assets such as infrastructures for data storage and the capabilities necessary to utilize them, digital agility (i.e., the ability to sense and seize new opportunities created by digital technologies), and digital networking capability, which enables organizations to connect and enables the exchange of value between different stakeholders (Verhoef et al. 2021).

While many new digital assets require organizational investment and the building up of the organizational digital infrastructure, their successful utilization also demands appropriate capabilities (Vial 2019). IT capability can be defined as an organization's ability to assemble and deploy its IT-based resources and combine them with other organizational resources (Bharadwaj 2000). Organizational IT capability has been identified as one of the driving forces in establishing organizational digital transformation (Nwankpa and Roumani 2016). Certain capabilities of digital transformation have been discussed, for example, from the perspective of capabilities and competencies and their development (Hafezieh and Pollock 2018). These include business intelligence (Kulkarni et al. 2017), cross-channel or dynamic capabilities (Luo et al. 2016; Muthukannan and Gozman 2019), and digital readiness (Nguyen et al. 2019). More precise skills necessary for organizational digital transformation are, for example, artificial intelligence and nanotechnology, robotization, the internet of things, augmented realization, and digitalization in general (Sousa and Rocha 2019). New skills are also needed to enable organizations to sense and utilize new opportunities created by digital technologies. These include, for example, big data capability (Verhoef et al. 2021).

While discussing digital transformation competencies and skills, it is important to recognize that digital transformation can mean very different things for large versus small and medium-sized organizations. For example, small and medium-sized organizations rarely have similar capabilities to support organizational digital

transformation (Li et al. 2018), which can have a significant influence on their ability to initiate and advance digital transformation.

Also, workforce capabilities, organizational values, organizational infrastructure, and management capabilities have been discussed in the context of organizational digital transformation (Muehlburger et al. 2019), and new organizational roles have been suggested. In particular, the role of chief digital officer (CDO) has attracted not only the attention of researchers but also the acknowledgment of practitioners (Tumbas et al. 2018). The role of the CDO, which is considered to have arisen from the extensive digitalization demands of organizations, does not yet have an unambiguous definition as different organizational fields take different approaches to digital transformation (Haffke et al. 2016). The role of the CDO has, for now, been focused on aspects such as CDOs' activities (Horlacher et al. 2016) and investors' attitudes toward them (Drechsler and Reibenspiess 2019).

In general, strong leadership and good management have been emphasized as critical factors in digital transformation studies (Baiyere et al. 2020; Muehlburger et al. 2019; Ohain 2019; Sia et al. 2016). These include appropriate support for managers implementing digital transformation-related changes (Bordeleau and Felden 2019), as well as the identification of the necessary skills. For example, Singh and Hess (2017) identified five skills CDOs should have, namely, IT competency, change management skills, inspiration skills, digital pioneering skills, and resilience, of which IT competency and resilience are considered critical for digital transformation. (Singh and Hess 2017)

In defining the skills and competencies required for organizational digital transformation, researchers have also acknowledged that current needs can change while digital transformation advances (Vial 2019). The skills of current employees and managers differ from those that will be needed from the future digital workforce (Colbert et al. 2016). Similarly, roles such as CDO can, in time, turn out to be temporary (Singh and Hess 2017). Consequently, digital transformation assets, capabilities, and skills also evolve, demanding organizations to adapt.

2.2.4 The outcomes and impacts of digital transformation

Through digital transformation, organizations are expected to improve their efficiency and operations, for example, via the utilization of different automatization technologies (Andriole 2017). The outcomes of organizational digital transformation include radical improvements in performance (Bekkhus 2016), as well as improved

customer interaction (Haffke et al. 2016; Horlacher et al. 2016; Verhoef et al. 2021) and competitive stance (Bharadwaj et al. 2013). In practice, this means a redefinition of organizational value propositions and the emergence of a new organizational identity. While the outcomes of digital transformation include positive impacts similar to those of other IT-related transformations (i.e., becoming more efficient and more digital), the outcomes of digital transformation should also include a more fundamental transformation of the organization, its value propositions, and organizational identity. (Wessel et al. 2021) The key outcomes of digital transformation are listed in Figure 6.

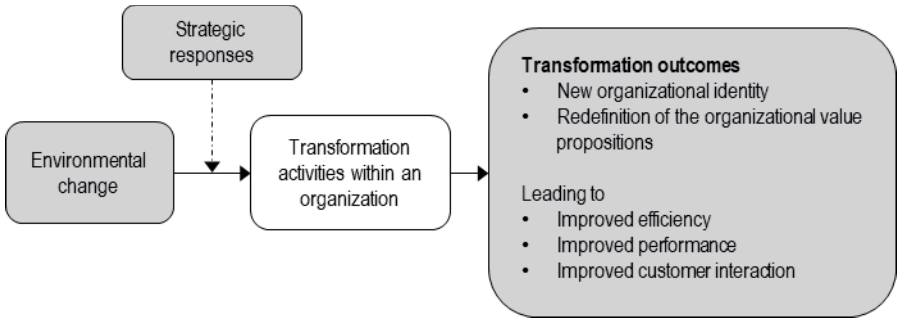

Figure 6. Digital transformation outcomes.

The outcomes of digital transformation are also dependent on the level of success of the digital transformation efforts. For example, the utilization of digital technologies is not enough to ensure organizational digital transformation, especially if their adoption is neither well-planned, properly executed, nor supported by upper management (Andriole 2017). As many old companies established before the digital era have only begun their digital transformation efforts (Sebastian et al. 2017), success measures and metrics to evaluate digital transformation are still rare (Verhoef et al. 2021).

Some frameworks have been suggested. One of these is the digital transformation success framework by Liere-Netheler et al. (2018), which suggests that to evaluate organizational digital transformation success, the following dimensions should be considered: strategy, integration, impact, stakeholder, value, skills, goals, and outcome. Besides success measures, digital transformation has also been studied from a maturity perspective (Remane et al. 2017; Rossmann 2018; Schäffer et al. 2018).

The impacts of digital transformation are not limited to the organizational level, nor are all the impacts positive. While digital transformation studies tend to focus

on organizations, the adoption of new digital technologies can also have effects on individuals, organizations, and the wider society (Newell and Marabelli 2014). This is especially the case with data privacy and security, which both have been identified as critical negative impacts of digital transformation and have been discussed from the perspectives of individuals, organizations, and of societies as a whole, which has implications from the societal to the individual level (Vial 2019).

2.3 Digital transformation in public sector IT departments

Similar to private sector organizations, public sector organizations aspire to initiate and advance their digital transformation to benefit from the potential of digital technologies and to respond to the growing citizen demand (Mergel et al. 2019). This aspiration is not a new one; it is the next stage of public sector digitalization, following e-government initiatives, which have introduced digital technologies as a way to provide more direct public services to citizens and stakeholders (Omar et al. 2020). Digital transformation is now expected to improve technology utilization by introducing cultural and large-scale organizational transformations (Mergel et al. 2019; Tangi et al. 2021). For public sector IT departments, this means that their role in providing necessary technologies and supporting their use is expanding to include the support of large-scale organizational transformation (Haffke et al. 2016).

2.3.1 Digital transformation in the public sector

Digital government transformations are typically justified with better operational performance (Ashaye and Irani 2019). By using information technology, public sector organizations can, for example, improve operational transparency, responsiveness, accountability, and internal efficiency (Davison et al. 2005; Ebrahim and Irani 2005; Koh et al. 2006; Rana et al. 2013). With these advances, public sector organizations can become more citizen-focused, responsive, and flexible (Senyucel 2007; Weerakkody et al. 2011), rendering them more equipped to carry out their tasks. Compared to previous digitalization initiatives such as e-government, digital government transformation (Tangi et al. 2021), also referred to as transformational government, goes beyond introducing digital procedures by encompassing changes in organizational structures, operations, and culture (Omar et al. 2020), as well as in

the roles and relationships of various stakeholders of the organization (Tangi et al. 2021).

The digital government transformation discussion, which emerged from the wider discussion on digital transformation, focuses on considerations of the ways digital transformation in the private sector can be adapted to the public sector context (Tangi et al. 2021). As this dissertation does not consider the effects of digital transformation at the governmental level but rather observes transformation within a public sector organization, the observed transformation is discussed as a digital transformation, although the importance and insights of these two more specific research streams are acknowledged.

Research interest in the digital transformation of the public sector has begun to grow in recent years (Omar et al. 2020). Nonetheless, there is still very limited evidence on how governments or public sector organizations approach digital transformation. This is because while many public sector organizations have transformed their processes with digitalization, the organizational and cultural changes have not occurred in a similar manner. (Mergel et al. 2019) Regardless of this, the literature has identified aspects necessary for larger-scale organizational transformation to take hold. These include, for instance, organizational flexibility, which is considered a critical aspect in all types of transformations (Gong and Janssen 2012). To improve organizational flexibility, researchers have suggested solutions such as EA, which is considered especially critical in the analysis of organizational flexibility in hierarchical and often bureaucratical environments (Gong et al. 2020). In addition to tools, flexibility has been emphasized through management approaches such as agility and ambidexterity (Mergel et al. 2020).

As many of the suggested transformation aspects originate in the private sector (Vial 2019), their utilization in the public sector context can be problematic. The public sector differs from the private sector; thus, the tools and approaches intended for one context can have unanticipated implications for the other. For instance, while the literature has emphasized the need for agility, it has also pointed out that this can challenge some of the traditional values of the public sector, such as stability. (Greve et al. 2020; Janssen and van der Voort 2016) On the other hand, traditional structures such as top-down decision-making can prevent the agile and flexible use of new digital technologies (Janssen and van der Voort 2016). Additionally, the policies, rules, and regulations that emphasize pre-planning do not support sensing and seizing approaches when it comes to rapidly changing technologies (Lappi et al. 2019; Lappi and Aaltonen 2017). Consequently, while there is a clear desire to improve organizational performance through the improved use of digital

technologies, careful consideration of how these performance improvements are to be obtained is required.

For now, case findings suggest that one possible approach is first to build up management know-how through public-private partnerships. Also, the role of IT is empathized by indicating the necessity of transforming IT governance, investing in cooperation among various stakeholders, as well as giving IT investment power to the CIO. (Pittaway and Montazemi 2020) Thus, while the digital transformation of public sector organizations and public governance, in general, requires higher-level political decision-making and clarification of the main purpose of governmental structures (Omar et al. 2020), at the local level, these transformations can also be initiated through a process of identifying how future technology-introduction projects can be improved and then spreading this know-how to other parts of the organization (Weerakkody et al. 2011).

2.3.2 Digital transformation and IT departments

Digital transformation puts special pressure on the organization's IT departments, as digital transformation expands their responsibilities, especially in the areas of promoting IT innovation and business development (Hess et al. 2016; Matt et al. 2015). This, however, is not the first transformation IT departments have experienced, as while the role of IT has evolved from data progressing to strategic information systems, the role of IT departments has also had to transform (Reichstein 2019). Especially in the era of strategic information systems, when technology itself was no longer seen as a source of competitive advantage, the role of IT departments transformed significantly as these departments could no longer focus merely on technology but rather also had to consider how they could support the ways business adapts to the use of new technological advancements (Peppard and Ward 2004). In practice, this meant that the tasks of the IT department were no longer limited to software and hardware maintenance for the organization (Reichstein 2019). Alongside tasks such as the administration of computers, maintaining old systems, supporting the development and acquisition of new systems, and developing organizational architecture (McNurlin and Spraque 2006), new tasks such as support of the strategic use of IT became the core of IT departments' operations (Reichstein 2019).

In addition to the tasks of IT departments, the role of the CIO has also transformed. This role originated in times when the focus of IT expanded from the

automation of previously manual tasks to a source of competitive advantage (Peppard et al. 2011). Thus, as the role of IT has transformed, so has the role of CIOs, who are now expected to foster the strategic use of IT, improve alignment, and create business value (Gerow et al. 2014). The role of CIOs has transformed from that of technologists to strategists (Singh and Hess 2017). Similarly, the IT department has become more of a strategic business unit than an organizational support function and is now facing greater pressure to justify its existence through the creation of strategic benefits for other parts of the organization (Reichstein 2019), for instance, through the deployment of new information systems to improve competitive stance and through fostering alignment between business and IT (Newkirk et al. 2008).

Thus, while IT has become more strategic, so have IT departments (Matt et al. 2015). This also applies to the case of digital transformation, whereby IT departments have the potential to become the organizational pacemakers (Hansen et al. 2011; Leonhardt et al. 2017; Tanriverdi et al. 2010). For IT departments, this means, yet again, pressure to adjust their traditional operational functions and transform their operations (Châlons and Dufft 2016).

In practice, this means, for example, the transformation of the existing IT service management environment by transforming existing processes, work routines, services, technologies, policies, targets, and know-how (Bekkhus 2016). This also requires changing the role of CIOs from IT manager to business innovator (Weill and Woerner 2013). CIOs need to learn how to innovate, deploy new business innovations, question existing ways of operating, and collaborate with other organizational units (Bekkhus 2016). To succeed in these new tasks, IT departments need to transform their attitudes toward IT development, introduce flexible IT infrastructure, and introduce new agile working practices (Bhatt et al. 2010; Byrd and Turner 2001; Fink and Neumann 2009).

Additionally, IT departments need new ways of holistically managing the ever-increasing complexity of organizational digital transformation. One suggested approach is the utilization of EA (Dang and Pekkola 2017; Janssen and Hjort-Madsen 2007). Here, the introduction of new values and tools can be challenging and require external help. The utilization of consultants is a potential way to cope with rapidly changing competence and resource needs (Ylönen and Kuusela 2019). Below, three of these digital transformation approaches (i.e., agile IT management, EA, and the use of consultants) are discussed in more detail.

2.3.2.1 Agile IT management

Agile approaches originate from traditional software development projects, where they were developed to help overcome various challenges of traditional software development, such as the inability to respond to emerging demands (Holgeid and Thompson 2013). In the context of digital transformation, it has been suggested that IT departments and organizations should adopt agile practices in a wider context (Vial 2019) to equip them with the capability to respond to changing customer needs and improve their potential to fully utilize the existing capabilities of individual workers by removing restricting organizational structures (Beck et al. 2001).

Research has identified multiple benefits that encourage the incorporation of agile practices, especially in relation to digital transformation (Vial 2019). Agile approaches are particularly beneficial in improving IT departments' capabilities to cope with rapid changes (Benamati and Lederer 2001). Besides its capability of improving IT departments' ability to respond quickly to IT-related needs, agility can also help IT departments to promote digital innovation and business development (Matt et al. 2015) and, in this way, drive organizational digital transformation (Hansen et al. 2011; Leonhardt et al. 2017; Tanriverdi et al. 2010). Introducing agile approaches into IT management can enhance the organizational capability to react to the changing demands of the organizational environment (Luna et al. 2014; Richardson et al. 2014; Weingarth et al. 2018). Agile approaches can also help organizations better respond to arising needs (Mergel et al. 2020) and strengthen organizational resilience (Olsson et al. 2004), which can improve the IT department's ability to cope with technological disruptions (Janssen and van der Voort 2016). Agile practices can also improve efficiency. Taken together, agile practices are a beneficial approach that IT departments can adopt to simultaneously cope with growing service demands and drive organizational digital transformation (Châlons and Dufft 2016).

While agile practices have multiple benefits, they also have their challenges. When adopting agile practices, IT departments can face issues such as misunderstandings related to these practices, unsuitable organizational structures for agile principles, and mismatches in values (Hekkala et al. 2017). Typical issues in small-scale agile adoptions also include insufficient capabilities, the lack of motivation, and the lack of an agile mindset (Fuchs and Hess 2018).

Because agile methods were designed for software development teams, it can also be challenging to incorporate them when agility is scaled up (Dikert et al. 2016; Fuchs and Hess 2018; Paasivaara et al. 2018). When incorporating agile IT management,

IT departments can also face issues such as resistance to change, technical debt, the lack of a common agile framework, problems with working in real-time, collaboration issues, challenges in defining the product owner, challenges in breaking down requirements, backlog problems, and the inability to cope with constant changes (Paasivaara et al. 2018), as well as gaining the commitment of multiple stakeholders (Gerster et al. 2018).

Implementing agile practices in the public sector context can be challenging because agility may stand in contradiction to the stability and pre-planning approaches of public sector organizations (Berger 2007; Wisitpongphan and Khampachua 2016), which tend to have inflexible, bureaucratic, and hierarchical structures (Senyucel 2007). As agile practices are inherently subject to continuous changing, meaning that adjustments to practices are conducted over long time periods, short political cycles can prevent the continuous evolution of such practices (Allen and Gunderson 2011).

Despite these challenges, agile practices hold great potential to assist IT departments in coping with the new demands of digital transformation (Vial 2019). Practical examples of how agile practices can be successfully incorporated on a larger scale than IT development projects are rare (Paasivaara et al. 2018), especially in the case of organizational digital transformation (Janssen and van der Voort 2016; Mergel et al. 2020). Only some quite general suggestions have been offered.

When agile practices are implemented in public sector organizations, changes in the processes and the organizational mentality are necessary (Luna-Reyes and Gil-Garcia 2014). For example, public sector organizations need to learn how to support top-down decision-making with bottom-up means so that not only the skills of individuals working for organizations but also those of other stakeholders can be utilized more effectively (Chaffin et al. 2014). In agile management literature, this is often referred to as the *empowerment of employees* (Olsson et al. 2004). When organizations give the people with the best understanding of the operational situation the power to self-organize and solve problems, these organizations can improve and expedite decision-making processes (Janssen and van der Voort 2016). This is because in these situations, both the competencies of the organization as well as other stakeholders, such as citizens and consultants, can be fully utilized (Mergel et al. 2020). Empowerment of employees requires that the organization have a clear vision, good leadership, and trust among the different stakeholders. The empowered individuals also need to feel that they and their decisions are supported by the organization and have a good understanding of the objective of their work (Olsson et al. 2004).

Agile practices also require that public sector organizations move from a strong reliance on contracts to collaboration (Mergel et al. 2020). In practice, this means that employees are given support to improve collaboration with different stakeholders (Fowler and Higsmith 2001) but also to let go of the traditional structures that emphasize hierarchical communication and departmentalization (Senyucel 2007). The improved collaboration will require integrating multiple stakeholders and managing uncertainty with flexibility (Cohen et al. 2004).

In addition to employee empowerment and emphasis on collaboration, organizations should shift their attention from plans to adaptive responses to change (Lappi and Aaltonen 2017). To become capable of responding to changes in the operational environment requires the capability of monitoring and then responding to environmental feedback (Olsson et al. 2004). For public sector organizations, this means changing traditional plan-based operations toward an iterative approach that emphasizes continuous value delivery, end-user involvement, and constant face-to-face communication (Cao et al. 2013; Drury et al. 2012). Such a major shift in organizational culture requires a process in which options are kept open, infrastructures are flexible, and decision-making times short (Janssen and van der Voort 2016).

2.3.2.2 Enterprise architecture and its management

Enterprise architecture (EA) refers to a management approach often carried out by an organization's IT function, intended for the management of complexity and cost of information systems, business processes, and organizational structures (Dang and Pekkola 2017; Hjort-Madsen 2006; Janssen and Hjort-Madsen 2007). EA typically refers to the collection of architectural models depicting an organization's business architecture, information architecture, information system architecture, and technology architecture, or some of these (Dang and Pekkola 2017). These models are used to depict both the as-is state of the organization and the desired to-be vision of the future (Lankhorst 2004). Consequently, EA can be defined as a management approach used to guide organizational resources toward a strategically desirable future (Schmidt and Buxmann, 2010; Weiss et al., 2013).

EA has gained in popularity, especially owing to the different benefits it is expected to help organizations realize. EA is, for example, expected to reduce complexity (Schneider et al. 2014), improve business processes, decrease costs, improve efficiency, and create a better ability to react in changing circumstances (Schmidt and Buxmann 2011). These benefits and their realization have been studied

in a variety of EA benefit-realization models (Lange et al. 2012; Niemi and Pekkola 2016). In general, the benefits of EA are connected to improved understanding of the operational situation and better alignment of business and IT (Bernard 2005; Kaidalova et al. 2018; Ross et al. 2006), which are aspects considered critical in organizational digital transformation (Bharadwaj et al. 2013).

Consequently, EA is one approach suggested important to organizational digital transformation (Bokolo 2020; Salmela et al. 2015). Digital transformation requires tools that can be used to help align business models and digital technologies to create new digital strategies and solutions (Zimmermann et al. 2018). Because digital transformation is often conducted by independent and separate programs throughout the organization, there must be an effort to bring these different programs and their outcomes together so that while digital transformation is advanced through independent experiments, these experiments direct the organization in a coordinated direction (Korhonen and Halen 2017). This integration also includes new technologies, which should be integrated into the organizational infrastructure. This is easier when there is a proper understanding of the infrastructure's current state and its planned future. (Zimmermann et al. 2015) EA can also support organizations when digital services and their architecture and value propositions are defined (Zimmermann et al. 2018). EA can support this process by evaluating and, eventually, by reconfiguring creation and value capture mechanisms (Korhonen and Halen 2017).

Despite the suggested benefits both to IT management and organizational digital transformation, the implementation and utilization of EA tend to be slow and challenging (Lemmetti and Pekkola 2012, 2014). These challenges and their root causes have already been extensively discussed in the literature (Banaeianjahromi and Smolander 2016; Hauder et al. 2013; Kaisler et al. 2005; Löhe and Legner 2014; Smolander and Rossi 2008; Ylinen and Pekkola 2018). EA-related challenges include, for example, lack of organizational acceptance, difficulty defining EA objectives, and insufficient benefit realization (Lucke et al., 2010; Dang and Pekkola, 2016). EA initiatives also include a multitude of stakeholders (Niemi and Pekkola, 2015) with contradictory objectives (Schmidt and Buxmann, 2010; Brosius, 2016), rendering its utilization challenging. EA benefits tend to accumulate quite slowly and require continuous and often laborious efforts (Niemi and Pekkola 2016; Schmidt and Buxmann 2011). Consequently, aspects such as EA acceptance in organizations are underrepresented in the EA literature (Dang and Pekkola 2017; Hjort-Madsen 2006; Janssen and Hjort-Madsen 2007). EA, nonetheless, has the potential to facilitate and support organizational digital transformation (Korhonen and Halen 2017), making

it critical to gain a more in-depth understanding of the way it can support organizational digital transformation in practice.

2.3.2.3 Use of consultants in IT transformations

Both the introduction of agile practices and the implementation of EA demand new types of skills and competencies (cf. Lappi and Aaltonen 2017; Pekkola and Ylinen 2020). These skills and competencies are not necessarily readily available within public sector organizations. One way to acquire these skills and competencies quickly is by contracting external consultants (Kalleberg et al. 2003). In public sector organizations, consultants are used especially in various transformation projects wherein existing resources are insufficient to fulfill the needs of the project (Saint-Martin 1998). As an added benefit, consultants are often seen as a good way to gain access to external expertise that can then be transferred from the consultants to the organization during their stay (Håkansson and Isidorsson 2012; Henningsson and Øhrgaard 2016; Wright et al. 2017). Because hiring civil servants is often a slow and laborious process (Rosenblum and McGillis 1979), consultants are a popular additional workforce that can provide flexibility and the ability to adapt to different needs (Kalleberg et al. 2003), especially in specified transformation projects (Lapsley and Oldfield 2001; Ylönen and Kuusela 2019).

Depending on the need, consultants can be invited into an organization to perform either supplementary or complementary roles. Supplementary roles focus on providing resources similar to existing ones in times of high demand (Sedera and Gable 2010), whereas complementary roles include the utilization of consultants to present best practices and new knowledge to the client organization (Bessant and Rush 1995). Based on the organizational need, the relationship between the organization and consultants can take different forms, which can also evolve while the consultants work with the client organization. These relationship types can be categorized as dependency, autonomy, and cooperation. *Dependency* refers to roles where the consultant exercises authority and the client plays a passive role, as in the case of outsourcing. Regarding *autonomy*, the client is more active, and the consultant acts as a trainer, which means performing a more passive role. *Cooperation* refers to a situation where the consultant and the client are considered partners, both taking on active roles in the relationship (Coelho et al. 2016).

Based on the relationship, consultants can have a significant influence on the operations of the client organization (Pollitt and Bouckaert 2004). The influence of consultants in the context of the public sector has been emphasized due to the trend

of public sector organizations cutting their personnel expenses, which has led them to fill the gap in resources with external consultants (Momani 2013). Consultants are also expected to introduce public sector organizations to best practices (Pozzebon and Pinsonneault 2005) by combining their knowledge from both public and private sectors (Lapsley and Oldfield 2001). Consequently, their utilization in different tasks and transformation projects is understandably tempting.

Besides these benefits, the use of consultants can also have a dark side. For example, consultants have been referred to as expensive and incompetent con artists (Lapsley and Oldfield 2001). Some studies have also connected the use of consultants to decreased productivity in the organization due to difficulties such as contradictions between external and internal capabilities (Nevo et al. 2007), information asymmetry, and opportunism (Dawson et al. 2010; Watson et al. 2019). In the public sector context, dependence on consultants has also been connected to the monopolization and privatization of public knowledge, erosion of tacit knowledge, and weakening of accountability (Ylönen and Kuusela 2019), although some solutions have been suggested. For example, the challenges of consultant usage can be mitigated by the proper management of consultants, avoidance of overreliance, and systematic questioning of their suggestions (Robey et al. 2002). Suggestions have been made that consultants should be managed as internal workers (Henningsson and Øhrgaard 2016), despite the fact that the oversight of consultants requires the time of internal workers, which mitigates their potential benefits (Chang et al. 2013; Perl and White 2002).

Despite the recognized challenges, the use of consultants in the context of public sector IT has not been extensively studied (Jones 2003). The role of consultants in public sector IS-related projects is often acknowledged but rarely analyzed in detail (cf. Arnott 2004; Axelsson et al. 2010; Heeks and Stanforth 2007; Koumaditis and Themistocleous 2015; Moe et al. 2017; Nielsen and Persson 2017; Teo et al. 2011). As consultants have become commonplace in different public sector transformation projects and can provide necessary assets to public sector organizations to help them digitally transform, it can be assumed that they also have a role to play in public sector digital transformation (Ylönen and Kuusela 2019).

Consultants are typically used as temporal workers on a project-by-project basis (Czarniawska and Mazza 2003). Digital transformation, on the other hand, is not a single project but a continuous process of change without a specific endpoint (Vial 2019). The literature has not yet discussed how this difference in the nature of the transformation influences the role of consultants or what types of potential and pitfalls it might include. We need to understand these pitfalls and the changing roles

of consultants in these situations because fundamentally transforming organizations requires new capabilities and knowledge. Consultants and consulting agencies are viable options in these circumstances, yet this is not adequately understood.

2.4 Summary of related research

Digital transformation can be defined as an organizational transformation whereby the organization transforms its business operations, products, and processes (Matt et al. 2015; Wessel et al. 2021). This transformation is often triggered by a combination of information, computing, communication, and connectivity technologies, which fuel disruptions in consumer behavior and the competitive landscape, result in organizational strategic responses, and eventually lead to a fundamental transformation of the organization (Vial 2019; Wessel et al. 2021).

In contrast to other technology-related developments, digital transformation induces more holistic and strategic change (Bharadwaj et al. 2013; Bockshecker et al. 2018; Chanias et al. 2019). This means that not only technologies but also an organization's structures as well as business and IT management at numerous organizational levels need to be transformed (Muehlburger et al. 2019). Different organizational structures, new management practices (Kahre et al. 2017), new attitudes, new competencies, and new ways of thinking are needed (Sousa and Rocha 2019).

Digital transformation of an organization is typically depicted as a process in which environmental changes trigger strategic responses resulting in a multitude of transformation activities and, eventually, the fundamental transformation of the organizational identity and value propositions (Wessel et al. 2021). A simplification of this process and the different aspects investigated concerning the different steps in the process are depicted in Figure 7.

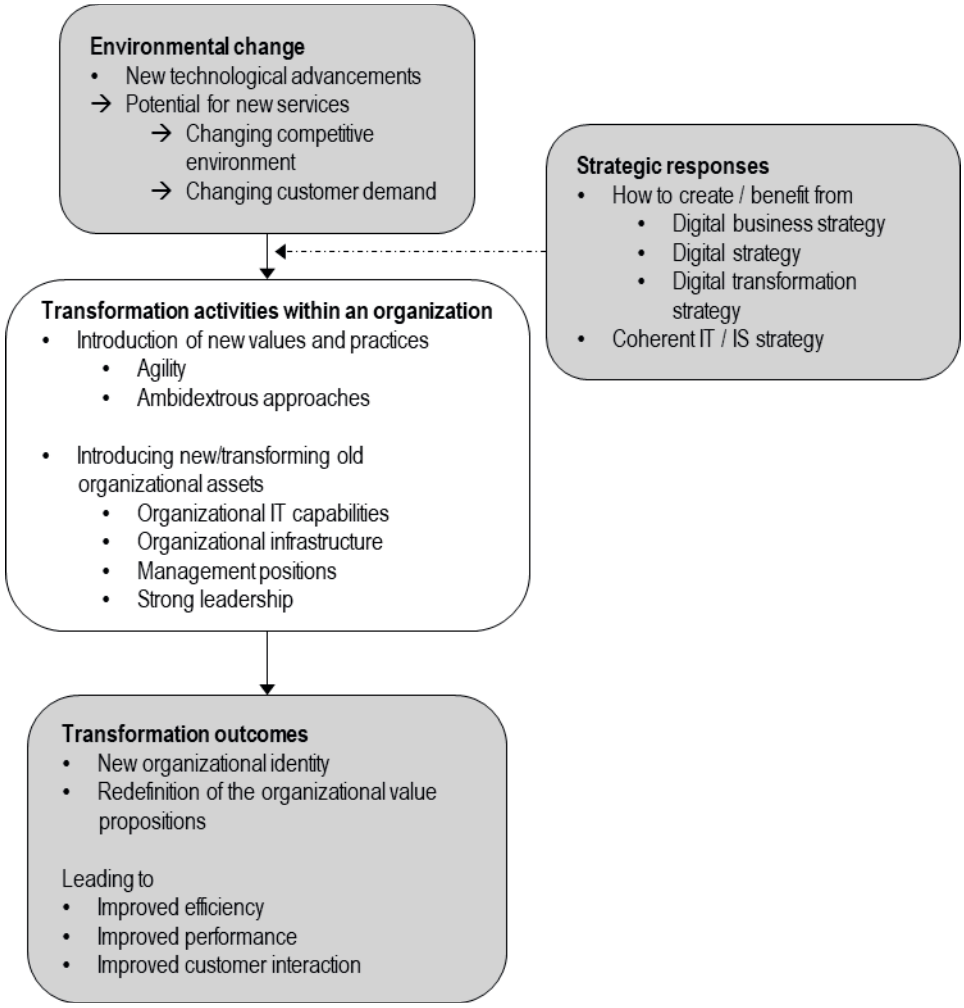

Figure 7. The process of digital transformation.

When combined, these different perspectives of digital transformation can be used to gain an overview of the way digital transformation proceeds. However, while these different perspectives can be used for a process of digital transformation, they provide an insufficient understanding of how these different aspects of digital transformation intertwine in practice. As the current literature tends to focus on specific aspects of digital transformation, such as the creation of digital transformation strategies (Chanias et al. 2019; Chanias and Hess 2016), the introduction of agile practices (Mergel et al. 2019), or transformation outcomes (Wessel et al. 2021), the way the digital transformation process evolves through these individual aspects is not yet properly understood.

Digital transformation studies often focus on the organizational level (Vial 2019). This means that understanding of how this transformation occurs at the lower levels of the organization is still largely missing. This is especially the case concerning the way the digital transformation process evolves over the course of the various digital transformation activities.

Additionally, most of the digital transformation literature has focused on the private sector, although public sector organizations also need to digitally transform (Mergel et al. 2019). By using information technology, public sector organizations are expected, for example, to improve operational transparency, responsiveness, accountability, and internal efficiency (Davison et al. 2005; Ebrahim and Irani 2005; Koh et al. 2006; Rana et al. 2013). In the context of public sector organizations, it is suggested that digital transformation should require the adoption of agile practices and new organizational assets (Janssen et al. 2014). In the literature, these include, for example, internalization of approaches such as agile IT management (Hansen et al. 2011; Leonhardt et al. 2017; Tanriverdi et al. 2010) and the utilization of EA (Ajer and Olsen 2018). How the tools designed for the private sector context apply to the public sector context is still insufficiently understood. For example, agile methods have been used in public sector software projects but have rarely been extended to wider management approaches (Lappi and Aaltonen 2017; Virili and Sorrentino 2009). In the context of the public sector, agile approaches can even challenge core organizational values, such as stability and accountability, the implications of which are still poorly understood (Nograšek and Vintar 2014). Consequently, our understanding of digital transformation in the context of public sector organizations needs to be deepened.

Finally, many digital transformation activities can fall to IT departments, which have long been the promoters of IT-related innovation and business development (Matt et al. 2015). For now, the way IT departments in public sector organizations can advance organizational digital transformation is not properly understood. Studies of digital transformation do not provide enough examples of the ways IT departments or IT specialists can contribute to this transformation (Fuchs and Hess 2018; Paavola et al. 2017). Neither do they shed light on the conflicting tensions in digital transformations where the IT department obtains its IT-related objectives, creates foundations for IT-enabled business transformation (Gregory et al. 2015), and, at the same time, introduces new IT governance approaches (Magnusson et al. 2020).

Consequently, while the current digital transformation literature provides an in-depth understanding of individual aspects of digital transformation, our

understanding of the way the digital transformation process unfolds, especially at the lower levels of the organization, such as in the IT department, is missing (Bemgal and Haggerty 2019). Our current understanding of the different aspects of digital transformation is largely derived from the private sector context. This indicates a clear need for further research on the evolution of digital transformation at the grassroots level and in the public sector context.

3 RESEARCH DESIGN

This chapter will first present the objectives of this dissertation and the research questions derived from them. It will then provide a description of the research paradigm employed, the role of theories (i.e., the role of activity theory and the paradox perspective), and the use of interpretive case study as the research method.

3.1 Research objectives and research questions

This dissertation aspires to improve our understanding of the way organizational digital transformation, in the context of the public sector, can be initiated and advanced in the lower levels of the organization and to further our understanding of how digital transformation evolves after its initiation. Research on digital transformation has largely focused on strategic perspectives, necessary activities, and the utilization of new technologies (Teubner and Stockhinger 2020; Verhoef et al. 2021; Vial 2019). These studies provide a somewhat scattered and incomplete overview of how these different aspects of digital transformation come together and bring about digital transformation, especially at the lower levels of the organization. The literature provides little guidance or examples as to the manner digital transformation supporting activities should be undertaken in conjunction or how these activities and the transformations related to them can be spread throughout organizations (Bemgal and Haggerty 2019; Wessel et al. 2021). On occasions when digital transformation is viewed as a process, such as in the case of Wessel et al. (2021), attention is not focused on the process itself but instead, for example, on the outcomes of the transformation.

Many of the studies discussing digital transformation also focus on the private sector (Vial 2019). While public sector scholars do discuss digital transformation-related phenomena such as transformational government and digital government transformation (Tangi et al. 2021), their focus is rarely on the grassroots level. While these studies yield valuable insights about the public sector transformation, they provide an insufficient understanding of the transformation occurring at the lower levels of organizations. These studies also tend to discuss public sector organizations

in general, while all public sector organizations are not the same (Pollitt and Bouckaert 2011). Because of this, the current research, as well as public sector organizations such as municipalities, could benefit from examples of how individual organizations have approached digital transformation. While individual examples cannot provide systematic guidelines on how digital transformation can be advanced, they can furnish insights applicable to other contexts. This leads to the first research question:

1. How can the digital transformation of a public sector organization be initiated and advanced by its centralized IT department?

Besides obtaining a better understanding of how digital transformation can be advanced, its proper management requires that the nature of the transformation and the challenges related to it be well understood. For now, the different activities of digital transformation are typically studied as individual entities, and their mutual relationships and influence are not clear, even though it is possible that these interlinked transformation activities can either support or hinder each other. Additionally, we need to gain a better understanding of the challenges and pitfalls related to digital transformation activities and the ways these challenges can be approached so that the transformation continues to move successfully forward. This leads to the second main research question:

2. What kinds of tensions can be identified in a process of organizational digital transformation?

The mere identification of the tensions does not provide us with a proper understanding of their role either in different digital transformation-related activities or in digital transformation as a whole. This leads to the following sub-questions:

2.1. What is the role of these tensions in the evolution of digital transformation?

2.2. What kinds of pitfalls might these tensions generate?

By answering these research questions, the dissertation aims to improve IS management in public sector organizations. This objective will be achieved by providing a grassroots example of how an IT department can adapt to the new requirements of digital transformation and how it can continue this transformation after its initiation.

3.2 The research paradigm

A research paradigm defines the set of beliefs within which a researcher situates their work. It defines the way problems are understood and addressed. (Maxwell 2008) This includes both ontological and epistemological assumptions, i.e., assumptions about the nature of the world and the way we can understand it (Orlikowski and Baroudi 1991). Ontological questions concern the nature of reality: for example, whether a social reality can exist independently from human conception. Epistemology then concerns the nature of knowledge and guides the selection of suitable methods to consider when data is gathered and analyzed (Myers 2009, pp. 35–36). Together, these create a basis for the design and execution of the research (Maxwell 2008).

In the context of the social sciences, three general ontological positions have been suggested by Snape and Spencer (2003), namely, realism, materialism, and idealism. Both realism and materialism see social reality as independent of humans who interpret it. Materialism also acknowledges that values, beliefs, and experiences arise from the social reality, but this position does not acknowledge their power to shape the material world. Idealism then claims that reality is understood via the human mind and through socially constructed meanings. (Snape and Spencer 2003, p. 11) The ontological position of this dissertation resembles one of idealism, i.e., it is assumed that the social reality studied in this research does not exist independently from the people operating within it nor independently from the researcher conducting the research. Similar to subtle idealism, it is also acknowledged that while reality is constructed in the human mind, there can be shared meaning among individuals creating social constructions (Snape and Spencer 2003, p. 16).

When this reality is studied, defining the epistemological stance becomes crucial. The epistemological stance of the researcher defines the assumptions of how we can understand the world (Maxwell 2008, p. 224). It considers the relationship between the researcher and the object of research, the ways in which knowledge can be obtained, and the validity and scope of this knowledge (Myers 2009, pp. 35–36). Typical epistemological stances in the IS field include positivism, interpretive, and critical approaches (Orlikowski and Baroudi 1991). Of these, positivism has been the dominant approach, although interpretive and critical approaches are gaining in popularity (Walsham 2006).

The positivist approach assumes that the world exists independently of the researcher, while the social world is seen as easily characterizable and measurable. The interpretive approach again aspires to understand situations and phenomena

through the meanings of people experiencing them. (Orlikowski and Baroudi 1991) In interpretive research, reality is seen as a social construction of the people experiencing reality (Klein and Myers 1999). When using the interpretive approach, the researcher adopts a nondeterministic approach, meaning that phenomena are studied in their natural setting and prior assumptions related to them are avoided (Orlikowski and Baroudi 1991). The critical approach then assumes that people can influence and change their conditions through their actions, which are constrained by social, cultural, and political forces, as well as resource limitations (Klein and Myers 1999). Critical studies aspire to reveal structural problems and critique the status quo (Orlikowski and Baroudi 1991).

The epistemological approach applied herein is interpretive. This dissertation presents a study of a transformation and analyses its evolution. Consequently, the interpretive approach, which acknowledges that organizations are not static but in a state of constant change in which people are producing history and then interpreting it (Klein and Myers 1999), is compatible with this dissertation.

Digital transformation, especially in the public sector context, is not yet a sufficiently understood phenomenon (Mergel et al. 2019); therefore, the interpretive approach, of which the aim is to generate new insights (Klein and Myers 1999; Walsham 1995), is in line with the objective of this dissertation. The interpretive approach is also suitable when the goal is to reveal underlying connections between different elements of social reality (Orlikowski and Baroudi 1991). Digital transformation is a fundamental socio-technical transformation process that is complex in nature (Vial 2019). An approach that allows the researcher to reveal underlying connections and, for example, drivers of change is well-suited to the phenomena under study.

This dissertation focuses on an organizational transformation implemented collaboratively by a group of individuals. Here, the interpretive approach is once more suitable as it enables the researcher to comprehend how individuals, through their participation in social processes and interactions, give meaning to the social world (Orlikowski and Baroudi 1991). Gaining an understanding of the meanings of actors is vital as they correlate with external behavior and are constituents of the behaviors (Orlikowski and Baroudi 1991) this dissertation is trying to understand.

Additionally, interpretive research recognizes the existence of shared norms and interests that enable orderly interaction (Orlikowski and Baroudi 1991). This means that the approach is compatible with the main analytical lens of this dissertation, i.e., activity theory, at the core of which is the assumption of the community working toward a shared objective (Engeström 1987).

Because interpretive research has been criticized concerning its inability to address structural conflicts and contradictions that can exist between actions, rules, and shared meanings (Orlikowski and Baroudi 1991), a similar approach to Walsham (2006) is taken here, namely that the critical approach is considered a supporting position for interpretive research. This is especially the case concerning the view on contradictions, which, in the critical approach, are assumed to lead to conflict and change (Orlikowski and Baroudi 1991). However, the objective of this research is not to bring the restrictive contradictions to consciousness and initiate change but rather to understand the contradictions arising during change processes and enhance our understanding of why people act the way they do in these situations. Therefore, the main epistemological stance of this dissertation is interpretivism, although the critical approach does provide a valuable addition to it.

3.3 The role of theory

Theories have a significant role to play in interpretive research as they help the researcher to move beyond anecdotes and see the world through a focused lens (Klein and Myers 1999). Theory can play multiple different roles in research: for example, it can guide the design of the study or the data collection and analysis, or it can be confirmed or informed by the result of the study (Walsham 1995). Positivist approaches tend to view theory as a framework to generate propositions that are then validated or invalidated by the study. In interpretive studies, it is common to use theories to interpret social processes. (Sarker et al. 2018)

In this dissertation, the role of theory is to guide the data analysis process by providing an analytical lens. The interpretive approach in this dissertation refers to the construction of a theory-informed narrative using theoretical lenses (Walsham 1995). The attempt is not to prove or falsify the theories used but utilize them to create abstractions and generalizations of the data (Klein and Myers 1999).

While this approach can help gain in-depth insights about the phenomena under study, it also entails the risk that the theory could guide the approach and prevent modifications suggested by the data (Walsham 1995). To avoid this, the data analysis was initiated with inductive analysis without a theoretical lens (Walsham 2006); only then was the selected theoretical lens used. This approach led to the realization that one theory would not enable the researcher to gain an in-depth and comprehensive understanding of the data. Consequently, two theories were used during the research process. The theories used to guide the data analysis were activity theory (Engeström

1987) and the paradox perspective (Smith and Lewis 2011). The role of these theories in the data analysis is presented in Figure 8.

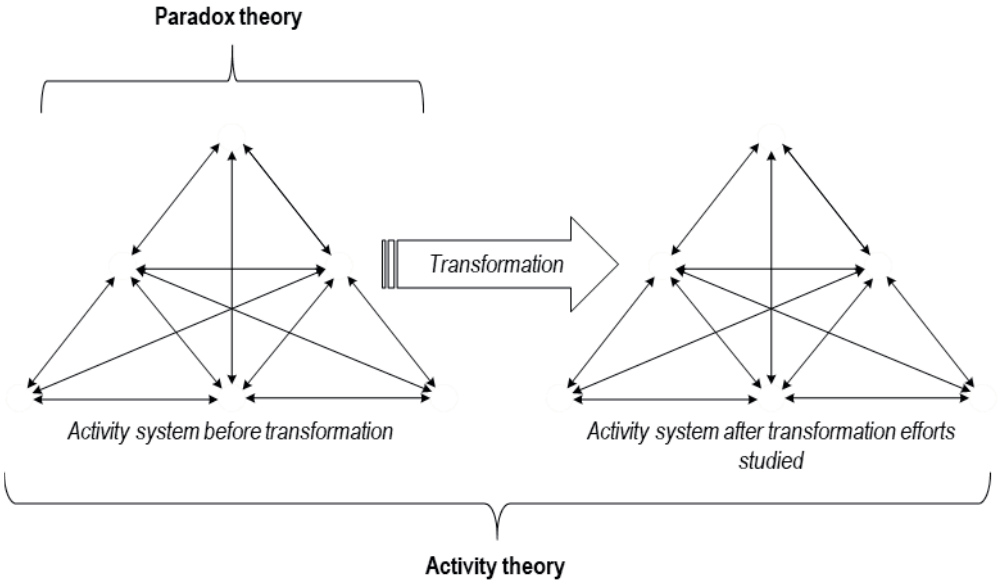

Figure 8. The role of theories in the data analysis process.

The primary theoretical lens of this dissertation is activity theory (Bertelsen and Bødker 2003). Activity theory is a theoretical framework that can be used to depict, for example, the development of social activities (Shaanika and Iyamu 2015) or the way people work together in complex and dynamic environments (Crawford and Hasan 2006). It is a useful approach to analyze and model organizational change (Bakhurst 2009), especially constant change, as it acknowledges that activities are dynamic in nature (Karanasios and Allen 2013). Activity theory also provides an effective way to analyze transformations and their different aspects by providing a systemic approach combining individual, organizational, and technological perspectives (Nyvang 2006).

In addition to activity theory, this dissertation utilizes a secondary theory: the paradox perspective (Smith and Lewis 2011). The paradox perspective is used as an analytical lens to gain a more profound understanding of the initial situation of the transformation. The paradox perspective can be used to gain insights into situations where the organization is struggling with change, for example, due to opposing forces of different interest groups (Robey and Boudreau, 1999). The paradox lens can also be employed to identify and address tensions behind these challenges while

acknowledging the organizational context and management of change (Lüscher et al., 2006; Smith and Lewis, 2011). In the present study, the paradox perspective provides additional insights into the challenges of the continuous transformation in the IT department (Lüscher et al., 2006; Nasim and Sushil, 2011).

Our objective is to utilize both activity theory and the paradox perspective to gain a better understanding of the evolving digital transformation and different aspects related to it. For now, digital transformation is depicted as holistic and strategic change (Bharadwaj et al. 2013; Bockshecker et al. 2018; Chanias et al. 2019) that is a source of continuous modifications and disruptions (Vial 2019). These disruptions are faced throughout organizations and include a multitude of relevant transformation activities that should be taken into consideration when the evolution of digital transformation is studied in detail.

To better understand the phenomenon of digital transformation through an analytical lens, the selected approach must be able to consider the holistic and continuous nature of digital transformation. The reasons why activity theory is a suitable approach for this purpose are presented below.

First, activity theory is a suitable approach to improve our understanding of digital transformation as holistic organizational change because it enables analysis of the transformation as a system consisting of a network of activities, not just as a single transformation process, which digital transformation is typically depicted as (Vial 2019; Wessel et al. 2021). By presenting digital transformation as a network of interlinked activities producing aspects such as tools and rules for other activities that, in turn, contribute to other activities (Bertelsen and Bødker 2003), we can obtain a more realistic view of different transformation activities and their roles in organizational digital transformation. This is because, from this perspective, we are not limited to viewing the transformation as a process in which one activity follows another but can instead view it as a simultaneously evolving network of activities.

Second, by redirecting attention from one activity or transformation process to a network of activities (Bertelsen and Bødker 2003) and by emphasizing the role of contradictions as an inherent part of activities (Engeström 2001), activity theory can be used to gain an in-depth understanding of the inherent challenges and their role in digital transformation. Many activities suggested as necessary for digital transformation, such as the incorporation of agile practices (Vial 2019) and EA (Ajer and Olsen 2018), are not easy transformations in themselves. Owing to the network perspective, activity theory provides an approach to consider, for example, how the challenges of introducing agility into the organization can influence the digital transformation as a whole. Activity theory can also provide insights into how

challenges in some of the digital transformation activities can create imbalances in these activities.

Third, as digital transformation activities are socio-technical (Bockshecker et al. 2018; Hartl and Hess 2019), i.e., the transformation is not only technical but social as well, the stakeholders of this transformation also need to be considered. By viewing activities as collective and owing to the integration of the community into the core model of activity (Engeström 1987), activity theory enables proper consideration of the social component of digital transformation. Activity theory can be used, for example, to depict the development of social activities (Shaanika and Iyamu 2015) and how people work together in complex and dynamic environments (Crawford and Hasan 2006). In the study of digital transformation, activity theory provides a systematic approach that combines individual, organizational, and technological perspectives (Nyvang 2006).

Finally, in addition to facilitating consideration of the holistic nature of digital transformation, activity theory also supports the view of the continuity of transformation. In activity theory, activities are seen as constantly evolving. When different factors (such as the tools used in the activity) change, the whole system needs to be rebalanced, i.e., transformed. (Engeström 1987) Activity theory is a useful approach to analyze and model organizational change (Bakhurst 2009), especially constant change such as digital transformation, as it acknowledges that activities are dynamic in nature (Karanasios and Allen 2013).

To support the activity theory perspective of digital transformation, a secondary theory, i.e., the paradox perspective, was used. While the objective of this dissertation in using activity theory is to gain a holistic understanding of the way organizational digital transformation evolves, the role of the paradox perspective is to enable in-depth analysis of the contradictions arising from the digital transformation.

In the literature, the paradox perspective has been suggested as a tool to gain insights into situations wherein the organization is struggling with change, for example, due to opposing forces of different interest groups (Robey and Boudreau, 1999). The paradox perspective can also be used to identify and manage these tensions while acknowledging the organizational context and management of change (Lüscher et al., 2006; Smith and Lewis, 2011). Because of this, the paradox perspective is seen as a useful tool to gain more in-depth insights into the contradictions identified when digital transformation is analyzed as an activity network.

The paradox perspective can help interpret why the existence of paradoxical tensions in digital transformation activities can create virtuous or vicious cycles of

transformation, depending on the way the paradoxes are managed. The role of the paradox perspective in this dissertation is to support activity theory; thus, perspectives such as the dynamic equilibrium of organizing are not used in the analysis of the transformation. Next, more extensive descriptions of the history and concepts of activity theory are discussed, after which the paradox perspective is presented.

3.3.1 Activity theory

Activity theory is a conceptual framework that can be used to interpret development through the concept of activity (Engeström 1987). Activity theory has traditionally been used in fields such as psychology, learning, and education (Engeström 2000, 2001). Nonetheless, it is becoming ever more multidisciplinary (Mursu 2002). Lately, activity theory has become one of the fundamental theories for understanding change and development in the context of learning and work (Engeström 2000). It has also been applied in organizational, management, social psychology, education, human-computer interaction, and systems design studies (Karanasios and Allen 2018).

Activity theory can be considered to have three origins, the writings of Kant and Hegel, those of Marx and Engels, and the works of Vygotsky, Leont'ev, and Luria (Engeström et al. 1999). The approach of this dissertation is closest to the cultural-historical tradition originating from the writings of Vygotsky, which were then further developed by Leont'ev and recently by Engeström.

The original objective of the cultural-historical activity theory (from now on activity theory) was to improve our understanding of the mental capacities of individuals (Engeström 1987). These individuals were not seen as isolated actors; the unit of analysis also included technical artifacts and cultural organization. (Bertelsen and Bødker 2003) In activity theory, human activity is seen as culturally and historically formed, mediated by factors surrounding it, and defined by its object (Korpela, Mursu, Soriyan et al. 2002).

Activity theory, which originated in the study of individual development, has since been extended to collective human activity (Allen et al. 2011). Owing to this extension, activity theory can be used to study the development of social activities (Shaanika and Iyamu 2015) and how people work together in complex and dynamic environments (Crawford and Hasan 2006). It acknowledges that activities are dynamic (Karanasios and Allen 2013) and evolve over time (Nehemia-Maletzky,

Iyamu, Shaanika et al. 2018). This makes activity theory suitable for analyzing and modeling organizational change (Bakhurst 2009) and transformation through the transformation of interconnected work practices (Jarzabkowski 2003). While activity theory has been traditionally used in fields such as psychology, learning, and education (Engeström 2000, 2001), particular interest concerning its application to the utilization of technology has been on the rise as activity theory can be used to explain how technology is transforming human activity and vice versa (Leonardi 2011). Studies using activity theory in relation to technology have focused on different aspects of system development (Barthelmess and Anderson 2002; Korpela et al. 2000; Korpela, Mursu, Soriyan et al. 2002; Mursu et al. 2007; Valecha et al. 2019). For example, activity theory has been applied to identifying different details related to IS use, development (Allen et al. 2013), and design (Fjeld et al. 2002).

Activity theory has been utilized in studies analyzing system development, design environments, and the design work itself, for example, how systems are collaboratively constructed (Barthelmess and Anderson 2002), as well as how innovations can be seen as developmental activities (Igira 2008; Kietzmann 2008). Activity theory has also been utilized in the study of requirement specifications (Lauche 2005), system development, IS implementation (Nyvang 2006), and systems integration (Häkkinen and Korpela 2007).

Besides individual system development and implementation studies, activity theory has been used to understand changes related to technology and how it can affect work, organizations, and society. These studies include, for example, mobile technologies (Wiredu and Sørensen 2006) and social media (Forsgren and Byström 2018; Karanasios et al. 2013). In addition to larger-scale transformations, transformations at the institutional (Slavova and Karanasios 2018) as well as organizational level have been considered (Jensen et al. 2018) in different contexts, such as the public sector (Allen et al. 2013).

Additions to activity theory have also been suggested. For example, Chen et al. (2013) suggest that in addition to factors in the structure of human activity, the environmental context and the timeline of activities should be considered. In an earlier study, Korpela et al. (2002) developed an IS development framework that presents activity as collective and systemic work activity, in which work processes guide the realization of the outcomes of the work. Another addition was suggested by Nehemia-Maletzky et al. (2018), who merged activity theory with actor-network theory, suggesting that these two theories could complement each other in providing new insights.

3.3.1.1 Core concepts of activity theory

As mentioned above, one origin of activity theory can be traced to the works of Russian psychologist L. S. Vygotsky, whose studies centered on the concept of human consciousness (Engeström 1987, p. 58; Roth and Lee 2007). In his works, Vygotsky focused especially on the significance of mediation, meaning that while one can observe a direct connection between stimulus and response, in many cases, there is also a second-order stimulus (for example, language) that acts as a mediator between the stimulus and response (Engeström 1987, p. 58). In activity theory, these mediators are considered culturally constituted, which then interlinks the activity with the culture and history of the activity. The mediators can be either technical (tools) or psychological instruments (signs). (Bertelsen and Bødker 2003)

The Vygotskyan approach of studying the cultural mediation of actions is often referred to as the first generation of activity theory (Engeström, 2001). It introduced three fundamental characteristics that have been inherited by later approaches. These characteristics are as follows: first, an activity is defined by its objective; second, activities are mediated by artifacts; and third, activities are socially constituted within a culture (Bertelsen and Bødker 2003).

Vygotsky's work was then further developed by his student and colleague A. N. Leont'ev, who expanded the Vygotskian individual perspective to collective activity (Allen et al. 2011). He both introduced the concept of collective activity and divided human activity into a three-level hierarchy: activity, action, and operation (see Figure 9). This division demonstrates how individual operations can create actions, which, when analyzed as collective, form activities. Owing to the significance of the introduction of the collective activity, the approach introduced by Leont'ev is referred to as the second generation of activity theory (Engeström, 2001).

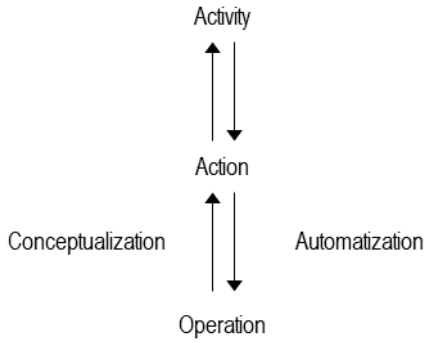

Figure 9. The dynamic relationship among levels of human activity (Bertelsen and Bødker 2003).

In Leont'ev's hierarchy of human activity, an activity is a constituent of actions carried out by the participants of the activity (Engeström 1987, p. 144). The participants of the activity share a motive, which drives their individual actions to contribute to the activity (Bertelsen and Bødker 2003). This motive is not necessarily given conscious attention, but it is critical for the actions creating the activity to take the activity in the desired direction (Engeström 1987, p. 144). While activities are guided by shared motives, their constituents (i.e., actions) are organized toward a conscious goal (Nyvang 2006). Actions are typically performed by individuals who, through these actions, contribute to the collective activity (Häkkinen and Korpela 2007). The actions are then carried out by means of the operations. These operations are the concrete ways in which individuals execute the actions. While activities are guided by motives and actions by goals, operations are guided but also limited by conditions, i.e., the factors enabling or limiting the individual's ability to achieve the goal of the activity. (Bertelsen and Bødker 2003; Mursu et al. 2007)

To demonstrate this division between the different levels of the hierarchy of human activity, Leont'ev used the example of a group of hunters. The hunters can have different tasks related to the hunt: some frighten a herd of animals; some kill the game. These are actions guided by a variety of goals. Only by analyzing these actions as constituents of a shared activity does the bigger picture and underlying motivation to stay alive appear. (Leont'ev, 1978, pp. 62–63, cited in Sannino 2011) The hierarchy emphasizes that actions can only be understood within the collective activity they construct (Korpela et al. 2000). Consequently, Leont'ev provided an approach to distinguishing short-lived and goal-directed actions from more durable and object-oriented activities (Engeström 2000).

When these different levels are analyzed, it is important to acknowledge that they are not fixed. Instead, actions can become operations through automatization, whereas operations can become actions through conceptualization. While activities evolve, transformation at different levels can also occur. (Bertelsen and Bødker 2003) Furthermore, the context of the analysis can influence the way different levels are interpreted. An activity in one context can be interpreted as an operation in another. (Engeström 1987, p. 144)

The second generation of activity theory was then further developed by Engeström (1987) to the third generation of activity theory. The main addition to the Leontevian model was the realization that a shared motive was not necessarily enough to coordinate the activity (Korpela et al. 2000). Therefore, Engeström introduced the concepts of rules and division of labor (Engeström 1987, p. 190). Additionally, Engeström (1987) pointed out that activities do not occur in a vacuum

but should comprise part of a larger network of activities that influence and are influenced by their connective activities (Bertelsen and Bødker 2003). This dissertation relies on the third generation of activity theory.

The third generation of activity theory can be summarized in terms of its five core principles. These are as follows: (1) Activities are artifact-mediated and object-oriented systems that create networks through their connection to other activities. (2) The activity system is always part of a community. For this reason, there are always multiple points of view, which can be a source of trouble but also create the potential for innovation. (3) Activity systems build upon historicity, i.e., all the factors in the activity system have their history, and this should be acknowledged when activities are analyzed. (4) Contradictions play a central role in activity systems and can be recognized as the source of the evolution of these systems. (5) While activity systems can have long development cycles, it is also possible for these systems to go through extensive transformations in situations where the object and motive of the activity are reconceptualized. (Engeström 2001)

The third generation of activity theory is typically presented via Engeström's structure of human activity (Engeström 1987, p. 78). This is depicted in Figure 10.

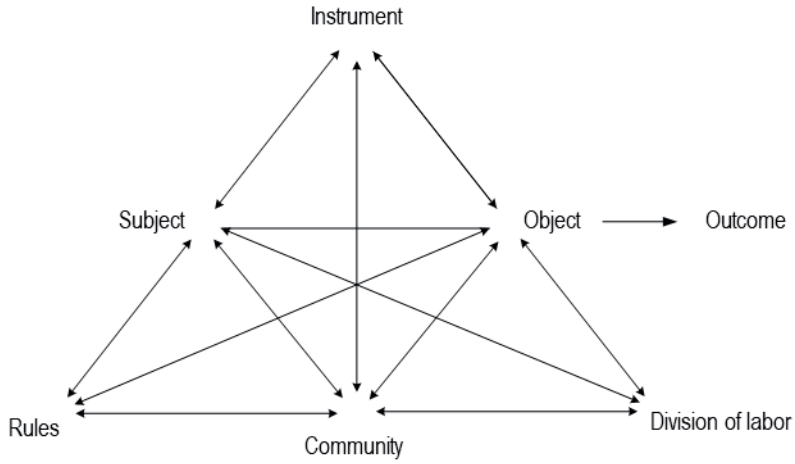

Figure 10. The structure of human activity (Engeström 1987, p. 78).

The triangle of human activity is a combination of Vygotsky's presentation of the subject, object, and mediator (the upper triangle) and Leont'ev's addition of community as part of the model (middle triangle). The role of community in the activity is then clarified with the subject and community mediators, i.e., the tools and

the community, along with object mediators, i.e., the division of labor. (Engeström 1987, p. 78)

In the structure of human activity, the key factor is the object of the activity. This object is sometimes also referred to as the motive, and it is the separator that distinguishes different activities from one another. (Kuutti 1995) This object can be tangible or intangible, like an idea that is expected to result in an outcome that is the motive for the existence of the activity (Engeström 2000). While the process of transforming the object into the outcome is the core motivator for the existence of the activity, the object and the motivation for it can transform over time and should not be considered static (Kuutti 1995). Instead, the motive and the desired outcome can evolve while the subject continuously reinterprets the object and adjusts it during the activity (Crawford and Hasan 2006).

In activity theory, the object is in a dialectic relationship with the subject of the activity (individual or group of people). In this relationship, the subject utilizes tools in order to work on the object and achieve the desired outcome (Nehemia-Maletzky, Iyamu, Shaanika et al. 2018). Tools or instruments are the mediators between the subject and object (Miettinen 2009). These include both technical and psychological tools (Engeström 1987, p. 66), including constructs such as technologies and processes (Nehemia-Maletzky, Iyamu, Shaanika et al. 2018). The tools enable the manipulation and transformation of the objective to achieve the outcome. While they can be seen as enablers of the activity, they can also limit it. (Kuutti 1995) Like the activity itself, the tools also have a history and the ability to evolve (Crawford and Hasan 2006).

As activities are constructs of the actions of individuals, the structure of human activity also acknowledges the community as a critical part of the structure (Engeström 1987, p. 78). Here, community refers to the environment in which the activity occurs and the people who understand the objective of the activity (Kuutti 1995). In an organizational context and within work activities, the motive that unites the community often comes from the organizational objectives, which then define the community (Mursu et al. 2007). This does not mean that everyone engaged in the activity is conscious of the collective motive but that through their participation in the production of the outcome, they are part of the activity (Korpela, Mursu, and Soriyan 2002).

The role of community in the realization of the outcome is mediated via rules and division of labor (Crawford and Hasan 2006). While the tools mediate the relationship between the subject and object, the rules mediate the relationship between the subject and community. These rules include both explicit and implicit

norms, conventions, and social relations in the community. (Kuutti 1995) The division of labor then mediates the relationship between the community and the objective of the activity (Nehemia-Maletzky, Iyamu, Shaanika et al. 2018). It deduces the way individuals participate in the activity even if the community is not fully conscious of the objectives of the activity (Engeström 1987, p. 66).

3.3.1.2 Activity network and its contradictions

While analysis in the context of activity theory often focuses on individual activities, the third generation of activity theory sees that a minimal unit of analysis should be at least two interlinked activities (Engeström 2001). Activities are not isolated entities but form a network of activities (Mursu et al. 2007). For example, the components of the activity, such as the tools and rules, are typically produced in other activities from which they are acquired (Korpela et al. 2001). Together, these interlinked activities create an activity network (see Fiugre 11).

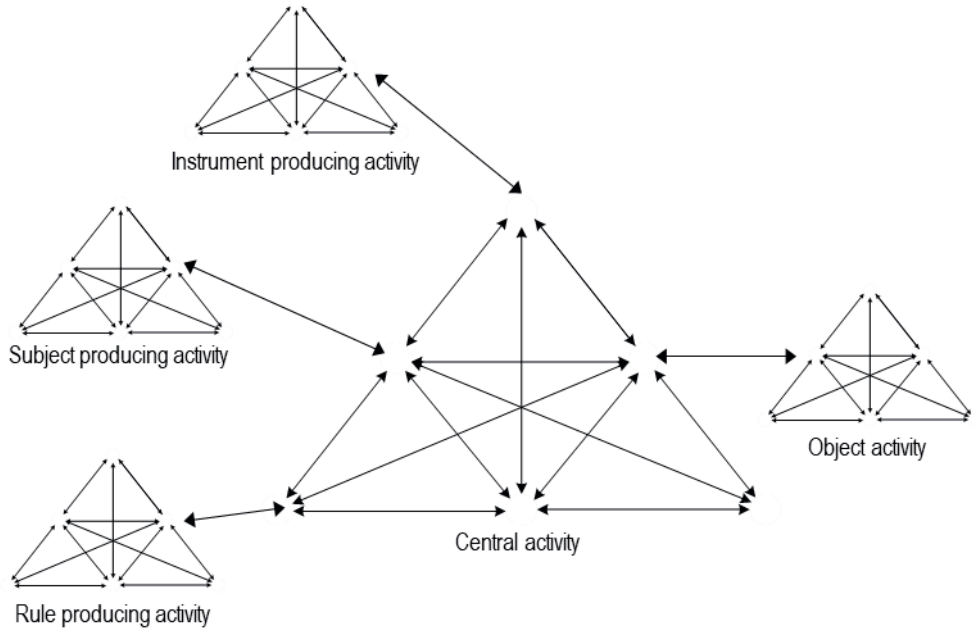

Figure 11. Activity network (Bertelsen and Bødker 2003).

For an activity to achieve its outcome, it is often necessary for different supporting activities to be successful. When activities are analyzed, it is important to

acknowledge that these supporting activities play an important role in the evolution of the activity under study. For example, legislation processes, which can, in practice, be very distant from the central activity, can still affect it. (Mursu et al. 2007) These supporting activities also do not have to be bound to individual central activities but can produce, for example, rules for a multitude of activities. In an organizational context, for example, it is typical that a variety of activities are managed by one management activity. (Korpela et al. 2000)

As the central activity is determined by the observer, these activities are typically producers of other activities as well, which also influence the activity (Korpela et al. 2000). Most activities are part of a variety of networks, and the extent to which the network is considered when individual activities are analyzed depends on the researcher (Häkkinen and Korpela 2007). These interlinked activities need to be at least acknowledged as activities that do not evolve in isolation but through constant balancing acts within the activity network. When activities are analyzed, it is necessary to see both the independent activities and their role in the network, where the analysis moves from the central activity to the interlinked activities and then again back to the central activity under investigation. (Engeström 1987, p. 325)

Besides the activities having the characteristic of being part of a network of other activities, activities and the networks they form are also fundamentally marked by contradictions (Bertelsen and Bødker 2003; Engeström 1987; Hasan et al. 2017). These contradictions explain the dynamic nature of activity systems (Mursu et al. 2007) as they create pressure for the activity system to transform (Hasan et al. 2017). When an activity system faces contradictions, the system is typically altered to resolve the situation. These alterations, for example, in one corner of the activity, can again create new imbalances in the activity system and demand changes in other parts of the activity (Bertelsen and Bødker 2003).

In activity theory, contradictions can persist in multiple levels of the activity system or activity network (see Figure 12). The primary contradictions refer to the contradictions persisting within the corners of the activity. The secondary contradictions again exist between the factors of the activity. The tertiary contradictions exist between the central activity and the culturally more advanced central activity. Quaternary contradictions exist between the activity studied and activities that are related to this activity. (Bertelsen and Bødker 2003)

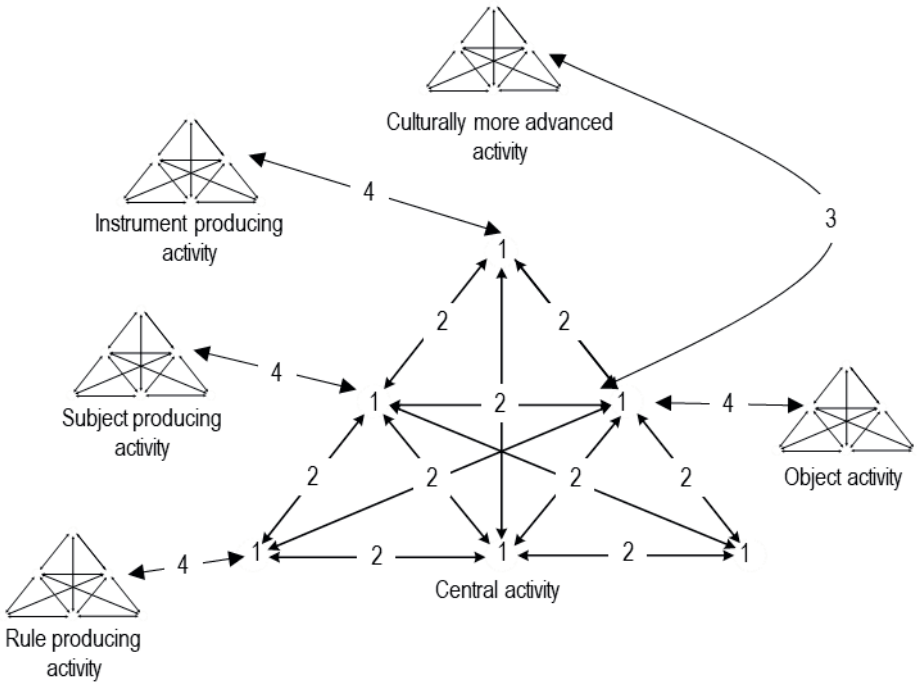

Figure 12. Activity system and its contradictions (Engeström 1987, p. 89).

Through the constant balancing of the activity system, the activity system itself is constantly developing (Mursu et al. 2007). Consequently, activities cannot be studied as stable entities (Bertelsen and Bødker 2003). Moreover, as this evolution occurs through specific cultural processes, the activities and their relationship with the interlinked activities need to be analyzed on a case-by-case basis (Mursu et al. 2007).

3.3.2 Paradox perspective

The paradox perspective has been attracting increased attention from management scholars in recent years as they try to understand contradictions rising in the fast-changing organization environment (Cunha and Putnam 2017). The paradox perspective has deep roots in philosophy and psychology (Schad et al. 2016) that have inspired management scientists to introduce the concept in management studies to assist in understanding the contradictions arising from organizational change (Smith and Lewis 2011).

While the operational environment of organizations has become more turbulent, global, and competitive, the possibilities and demands have intensified, resulting in growing numbers of contradictions (Smith and Lewis 2011). Simultaneously, the emphasis in the face of these contradictions has turned from either-or decisions to a more ambidextrous approach demanding paradoxical thinking (Lewis 2000; Lewis and Smith 2014; Nasim and Sushil 2011). For example, organizational theories are used to emphasize either stability or change (Poole and Van De Ven 1989). Currently, the focus is shifting from trade-offs to more ambidextrous approaches, such as balancing change with continuity, which is considered a suitable approach to balancing contradictions stemming from the ever-changing organizational environment (Nasim and Sushil 2011).

Management studies have especially turned to the paradox perspective when addressing *both/and* challenges in which organizations should, for example, attend to both short- and long-term goals, which can be at cross purposes or require mutual compromises (Smith and Lewis 2011). Furthermore, the paradox perspective can aid organizations and management researchers in changing their fundamental assumptions of rational and logical approaches to solving organizational issues to more counterintuitive approaches. The paradox perspective emphasizes that understanding only emerges over time in situations where actors must juxtapose contradictory demands (Lewis and Smith 2014) related to, for example, leadership, organizational conflicts, decision-making, power, and individual coping (Waldman et al. 2019).

Besides being addressed as a new perspective to improve traditional organizational theory thinking, the paradox perspective has been considered in the following ways: as a lens to be used to gain in-depth understanding of organizational contradictions (Lüscher and Lewis 2008); as a theoretical framework for exploring organizational tensions (Lewis and Smith 2014); as a theoretical tool to build management and organization theories (Poole and Van De Ven 1989); and as a metatheory guiding how other theories can ask questions (Lewis and Smith 2014) that can be used to demonstrate how paradoxes may serve to gain a competitive advantage (Jules and Good 2014). Here, a similar approach to Lüscher and Lewis (2008) is followed, whereby paradoxes are not used as labels to identify contradictions but as lenses to aid sensemaking related to organizational change.

In the IS field, the use of the paradox perspective has been limited as it is typically used within the organizational management literature and especially with relation to change (Cunha and Putnam 2017). It has also been employed as a vague label to describe identified challenging situations: for example, the productivity paradox, i.e.,

the phenomenon wherein the organization invests in IT with the desire to increase productivity but in which IT has not provided the intended productivity gains (Pinsonneault and Rivard 1998; Stratopoulos and Dehning 2000). The productivity paradox has, in some cases, also been referred to as the Icarus paradox. By analogy with Icarus, whose wax-and-feather wings—the wings which allowed him to fly in the first place—disintegrated when he flew too close to the sun, information systems can enable an increase in productivity in the short run but hinder this productivity in the long run by increasing costs and lowering customer satisfaction (Drummond 2008).

Other paradoxes identified in the use of IT include tensions such as the personalization-privacy paradox, in which consumers need to strike a balance between the desire for improved services and their privacy. The more data consumers provide to electronic marketers, the more personalized services they gain but, simultaneously, the greater their risk of being exploited (Sutanto et al. 2013). The Internet itself has also been classified as paradoxical because as it enables social interaction, it simultaneously results in a reduction in social involvement (Kraut et al. 1998). Technology and well-being-related studies have also focused, for example, on employee well-being, which communication technologies can improve by increasing efficiency but simultaneously decrease because of increased interruptions and unpredictability (Ter Hoeven et al. 2016).

Some rare studies have also attempted to use the paradox perspective to comprehend the tensions rising from IT- and IS-related change. These studies include the interpretation of tensions regarding IS development (Salmimaa 2018; Salmimaa et al. 2015a, 2015b) and master data management (Vilminko-Heikkinen et al. 2016; Vilminko-Heikkinen and Pekkola 2019). Stratopoulos and Dehning (2000) have also suggested that the productivity paradox related to IT use can be explained by improper IT implementation. Avison et al. (1999) have attempted to explain this phenomenon, for example, with an attitude paradox, wherein information systems are considered secondary to organizational operations even in a situation where they are strategically significant.

In the research of public sector IT use, the paradox perspective has been used to explain the challenges of IT use in the context of e-democracy. While e-democracy initiatives such as e-voting have gained some success, other initiatives, such as e-participation, have faced challenges (Davis 2010; Toots et al. 2011). With the help of the paradox perspective, contradictions such as the "middleman paradox" have been used to explain not only how contradictions among the stakeholders of these

initiatives render these types of initiatives challenging but also how to cope with them (Mahrer and Krimmer 2005).

The utilization of the paradox perspective tends to focus on change as well as the tensions that arise from change and potentially result in new transformations (Jay 2013). As these studies show, the paradox perspective has the potential to increase our understanding of (IS-related) organizational challenges, as well as suggest new management strategies for them (Lewis and Smith 2014).

The paradox perspective has also gained in popularity in the study of management of innovation (Andriopoulos and Lewis 2009; Jay 2013), especially in open innovation enabled by the rise of information technology. Paradoxes and their management concerning innovation and open innovation have been linked to, for example, complex systems (Jarvenpaa and Lanham 2013), open innovation consortiums (Paananen et al. 2013), and open innovation networks (Jarvenpaa and Wernick 2011). These studies have highlighted tensions between aspects such as novelty and usefulness, idea generation and implementation, cooperation versus competition, and exploration and exploitation (Smith et al. 2017). Besides the identification of paradoxes, open innovation research has also suggested that with the paradox perspective (i.e., through a combination of, for example, control and openness), organizations can properly leverage the potential of open innovation (Dragsdahl Lauritzen and Karafyllia 2019).

While still rarely used, the paradox perspective in the field of IS has improved our understanding of the tensions arising from IS-related organizational change. It has also served as a coping approach in relation to these changes and as a tool or a label to explain and describe tension. Studies in this area, as well as management studies in general, still tend to focus on organizational or higher levels of analysis, ignoring the perspectives of individuals and their interaction with each other. Consequently, it has been suggested that more attention be paid to individual- and team-level analysis (Waldman et al. 2019).

3.3.2.1 Core concepts of paradox perspective

Along with the growing popularity of paradox research, terms related to it, such as tensions, contradictions, dualism, duality, dialectics (Putnam et al. 2016), and dilemmas have become more dominant in organizational research (Smith and Lewis 2011). Of these, tensions are typically considered the most widespread and seen to underlie the other concepts (Putnam et al. 2016).

Tensions can be defined as incompatibilities that make it difficult for organizational actors to make choices and move forward (Lewis 2000). Contradictions again refer to interdependent and mutually exclusive opposites that are bound together but can negate each other (Putnam et al. 2016). Dualism and *duality* refer to opposing concepts similar to contradictions. While they create tensions, they are not mutually exclusive but can either be separated (dualism) or considered interdependent (duality). (Farjoun 2010) Dialectics are contradictory elements as well, which can be resolved through integration. This integration can be short-lived in situations where integrated elements are interrelated. The dilemma is typically described as competing choices, which too can become problematic if the options are contradictory and interrelated. (Smith and Lewis 2011)

Paradoxes are "*contradictions that persist over time, impose and reflect back on each other, and develop into seemingly irrational or absurd situations because their continuity creates situations in which options appear mutually exclusive, making choices among them difficult*" (Putnam et al. 2016, p. 72). In this and other definitions of paradox, two characteristics are emphasized: mutually exclusive contradiction and interdependence, which are seen as core qualifiers of paradoxes (Lewis 2000; Schad et al. 2016). Consequently, not all inconsistencies can be defined as paradoxes even though the term is sometimes used as an umbrella for organizational contradictions (Poole and Van De Ven 1989).

In philosophy, paradoxes are typically seen as brainteasers challenging logical thinking (Luscher et al. 2006). One of the popular examples is the liar's paradox, i.e., the statement, "I always lie," which seems simultaneously true and false (Poole and Van De Ven 1989, pp. 563–564). On the other hand, in organizational contexts, paradoxes are typically discussed as inherent organizational features, i.e., features existing within the organization either as social constructs or created by the actor's cognition or both (Smith and Lewis 2011). In the worst case, these contradictions can result in organizational paralysis as organizations and their actors attempt to resolve underlying tensions (Luscher et al. 2006). The paradoxes of the social context cannot necessarily be classified as logical paradoxes as the opposing factors can be vague (Poole and Van De Ven 1989) and the interpreter dependent. That which is a paradox in one's view might not be a paradox for others (Luscher et al. 2006).

Besides engaging in discussion on the definition of paradoxes, research has also identified specific contradictions that each result in paradoxes, such as the contradiction between stability and change. This paradox has emerged from the realization that while organizations are inherently stable, they are in constant change (Nasim and Sushil 2011; Poole and Van De Ven 1989). Besides discussions on

individual paradoxes, typologies of the different paradox types have also been created. One of these is presented in Figure 13.

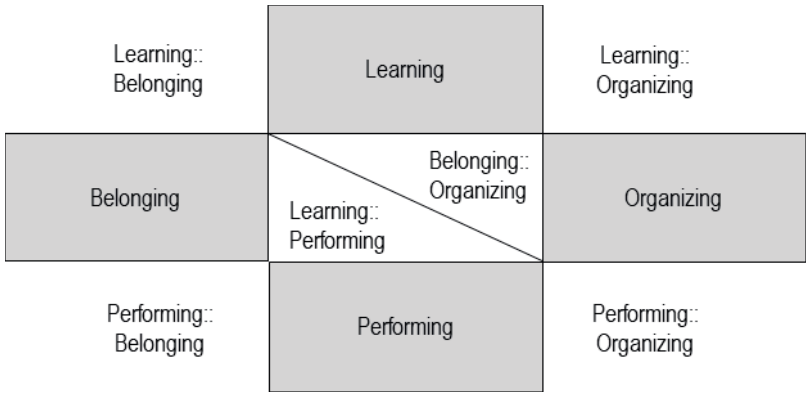

Figure 13. Categorization of organizational tensions (Smith and Lewis 2011).

The categorization of organizational tensions by Smith and Lewis (2011) is based on the division of paradoxes into four categories: paradoxes of belonging, learning, organizing, and performing. Paradoxes of belonging refer to tensions between the individual and the collective. Paradoxes of learning again emerge from the tensions between building the new and destroying the old. Paradoxes of organizing are linked to organizational processes and competing ways of achieving the desired outcome, whereas paradoxes of performing stem from conflicting demands and goals. Similarly, tensions can be identified between these categories. For example, when actors in the organization face the need to adapt to changing demands while simultaneously hoping to retain an ordered sense of self, tensions between learning and belonging can be revealed. (Smith and Lewis 2011)

While these typologies can ease our understanding of how paradoxes can emerge, they have also been criticized as having been employed as all-inclusive tools to interpret research findings without proper problematization of the four types (Cunha and Putnam 2017). While the utility of this categorization in comprehending how organizational operations can result in the emergence of paradoxes is acknowledged, this dissertation does not rely on this type of categorization.

3.3.2.2 Working through paradoxes

Organizations are especially prone to face paradoxes in change settings (Luscher et al. 2006). This includes both planned and unplanned change (Stoltzfus et al. 2011) and positive and negative transformations (Cameron 2008). While organizational change can create new contradictions, underlying institutional contradictions can also result in the emergence of paradoxes during change processes (Stoltzfus et al. 2011). Management of organizational change should also involve the act of balancing the paradoxes emerging from organizational change (Nasim and Sushil 2011).

As paradoxes emerging from organizational change can be difficult to detect, Lüscher and Lewis (2008) have suggested a five-step process to identify and work through organizational paradoxes. The process begins with organizational managers identifying personal concerns, which are classified as "messy issues." These issues are then analyzed to enable the identification of the problems behind these issues. Those issues that demand a choice between two contradictory options can be defined as dilemmas. In the case that such situations cannot be solved by choosing between two options, paradoxes are formulated. This process enables the development of workable certainty, meaning that instead of facing vague challenges and messy issues, managers can use strategic questioning and experimentation to comprehend the root causes of the identified issues. (Lüscher and Lewis 2008)

The literature has also suggested multiple approaches with which organizations can cope with paradoxes once they have been identified. These include, for example, splitting the tensions to reinforce their distinctiveness, projecting the conflicting attributes to another, repressing or ignoring the experience, regressing to a prior state when the tensions were not salient, reaction formation to reinforce the feeling opposing the tensions, and ambivalence to create distance from the tensions (Lewis 2000). In addition to these, strategies such as acceptance of the paradox and its constructive use, clarification of levels of analysis, temporal separation of the contradicting factors, and introduction of new terms to resolve the paradox have been suggested (Poole and Van De Ven 1989). These approaches are similar to ambidextrous management approaches, which aspire to consideration of opposing factors simultaneously (Raisch and Birkinshaw 2008). While these approaches are typically presented as separate strategies, they can also be combined in practice (Poole and Van De Ven 1989).

Paradoxically, these coping mechanisms can often become paradoxical themselves. For example, Stoltzfus et al. (2011) found that leaders' strategic responses to institutional contradictions on some occasions maintained the

paradoxical situation and, in others, established a new paradoxical situation rooted in the initial contradiction (Stoltzfus et al. 2011). Sometimes, paradoxes are also seen as problems to be solved, which can result in ignoring the nature of a paradox to persist over time, which then can result in long-lasting challenges (Cunha and Putnam 2017). Working through paradoxes requires a more circular approach, where the paradoxes are not dealt with as problems but possibilities (Luscher et al. 2006).

This type of approach has been adapted, for example, in the dynamic equilibrium model of organizing by Smith and Lewis (2011). This model attempts to demonstrate how paradoxical tensions transform from latent tensions to salient ones via environmental factors such as plurality, change, and scarcity or actors' paradoxical cognition. Based on the way these tensions are managed, they can either result in vicious or virtuous cycles. When organizational and individual factors enable the initiation of virtuous cycles, we can talk about the process of working through paradoxes, which tends to result in acceptance and paradoxical resolution resulting in sustainability. This sustainability can be obtained by enabling learning and creativity, fostering flexibility and resilience, or unleashing human potential. By giving proper attention to the paradoxes revealed by change, organizations can manage these paradoxes appropriately and avoid the vicious cycle of insufficient tension management leading to failure (Smith and Lewis 2011).

3.4 The research method

This dissertation follows a qualitative research approach (Sarker et al. 2018). Traditionally, IS research has been conducted with quantitative methods and a positivistic research approach (Klein and Myers 1999), while qualitative research has become more acknowledged in recent years (Sarker et al. 2018). The qualitative research approach is typically used in situations where the objective is to understand the motivations and actions of people and, for example, to explain why people act the way they do. Qualitative research considers both the individuals under study and the context in which they operate, which can be a critical viewpoint when the objective is to gain reliable insights into human behavior in complex situations. (Myers 2009, pp. 5–6)

In the qualitative research tradition, there are multiple genres (i.e., methodological approaches) that can be mapped based on their emphasis on either interpretation or data centricity. The type of reasoning utilized in these approaches may be either deductive or inductive (Sarker et al. 2018). This dissertation emphasizes an

interpretation-centric focus and inductive reasoning; thus, it follows a qualitative interpretive case study approach (cf. Walsham 1995). More precisely, this study is an interpretive single case study.

The phenomenon studied in this dissertation is an organizational digital transformation and its outcomes, particularly from the perspective of facing and solving challenges. The objective is thus to understand how individual actors lead and cope with transformation as well as to identify the motivations and beliefs behind these actions. The interpretive single case study approach fits this objective well as interpretive case studies are typically used when the objective is to understand phenomena through the meanings that people give to them (Myers 2009, pp. 76–78).

The interpretative single case study approach is an especially suitable method when the objective of the research is to produce insights into a still poorly understood phenomenon (Klein and Myers 1999), for example, digital transformation. The single case study approach is particularly appropriate for creating holistic and rich descriptions of the studied phenomena that enable the identification of new theoretical relationships. Although a multiple case study approach could have provided comparative insights, it would have diminished the deep understanding of the nature of the process of organizational digital transformation (cf. Dyer and Wilkins 1991). Consequently, as digital transformation literature has acknowledged that there is no single solution regarding how organizations can achieve digital transformation (Verhoef et al. 2021; Vial 2019), focusing on gathering in-depth insights into the nature of the phenomenon through a single case study instead of providing shallow comparisons on different types of approaches (cf. Dyer and Wilkins 1991) is well suited to this dissertation.

3.4.1 Case selection and overview

The case organization of this dissertation is one of the largest municipalities in Finland and has approximately 210,000 inhabitants and 10,600 employees. The municipality is among the few fast-growing cities in the country and is under constant pressure to improve its operations and services to properly serve its growing number of residents. To respond to the increasing service demand, the municipality has introduced strategic initiatives related to increasing electronic services and digitalizing the operations.

The case study of this dissertation centers on the municipality's centralized IT department, serving a variety of municipal business units from healthcare to education and land use. The IT department is led by a CIO who, with a municipal IT steering group, is responsible for strategic but sometimes also operational decision-making. Since decisions related to the IT department are guided by political interest, one of the deputy mayors is mainly responsible for the higher-level management of the IT department.

The IT department is responsible for the digitalization of the municipality and the creation of these electronic services. The case was selected because the municipality's attempt to digitalize its services and its struggles in doing so were publicly known at the beginning of the case study; therefore, the case was seen a suitable one to study public sector digital transformation. As the information related to the upcoming transformation was available before its inception, it was possible to initiate the study while the IT department was still planning the transformation. There was an excellent opportunity to follow the initiation of public sector digital transformation right from the start. Additionally, as the case municipality is one of the largest municipalities in Finland, it had sufficient IT resources and a centralized internal IT department that made observation of the role of the public sector IT department involved in organizational digital transformation possible in the first place.

At the time of the data collection (2017–2018), the IT department's responsibilities included the provision of IT development and acquisition services and the maintenance of the existing IT infrastructure. The basic IT services, such as the help desk, had been outsourced in 2007. In the spring of 2017, when the case study was initiated, the IT department had approximately 50 internal employees. At the time of the last interviews (2018), the number of internal employees had decreased dramatically and most of the work was done by external consultants.

3.4.2 Data collection

In case studies, data can be collected either by the researcher as an outside observer or involved participant (Walsham 1995). In this dissertation, the role of the researcher was mainly that of an outside observer who was not involved in the activities of the IT department during the case study, although the findings of data analysis were reported to key individuals involved in the activities during the study and might have influenced actions taken after the findings were reported.

Three types of data were collected and used during the study (see Table 2). The data included semi-structured interviews conducted in the case municipality, meeting observations, planning and strategy documents, and EA models. The interviews and their transcriptions were the main data source, while the meeting notes, documents, and EA models were used to support the interview data. The data was collected between January 2017 and September 2018.

Table 2. Data sources used.

Interview data notes and transcriptions	43 interviews (29 interviewees) o 15 interviews (spring 2017) o 9 interviews (winter 2017) o 19 interviews (autumn 2018)	Average length: 47 min (45 min, 48, and min 47 min in consecutive rounds)
Meeting observations	7 meetings related to the initiation of the transformation project (spring and winter 2017)	Average length: 66 min (longest 94 min, shortest 42 min)
Documents	PowerPoint presentation o EA planning documents, 2017 o Lean EA planning documents, 2017 Municipality strategy documents for the years 2013–2017 and 2018–2021	
EA models	o Strategy descriptions (autumn 2018) o Digitalization plan models (autumn 2018) o IT development process description (autumn 2018)	

The interview data for the study were collected in three rounds: spring 2017, winter 2017, and autumn 2018. Most interviews were conducted independently by the author of this dissertation, but for four of them, another researcher was in attendance. The interviews were divided into three rounds to enable a better view of the developing situation in the IT department: first, before the transformation; second, while the extensive transformation efforts were going on; and third, when the IT department was adjusting to the new processes and the pace of transformation had slowed down.

The first round of interviews focused on the issues regarding the way of operation before the transformation and the reasons that the IT department saw this way of operation as unsustainable. During the first round, special attention was paid to EA and the processes in which EA was or was supposed to be involved. While many of the initial interviewees were very closely involved in the IT department's EA operations, as the interviews proceeded, individuals who were supposed to benefit from the EA were also involved, and the perspective of the study moved from EA

to more holistic IT development operations in the IT department toward which the transformation operations in the IT department were also transitioning.

The second round of interviews was conducted approximately six months after the IT department had initiated a larger-scale transformation of its operations. As the transformation being studied was still ongoing at this point, the second round of interviews primarily focused on identifying implemented and ongoing change efforts and the interviewee's views on whether these changes would improve the situation in the IT department.

At the time of the third round of interviews, the IT department had undergone the most significant transformation efforts and was focused on improving the existing process based on identified needs. The third round of interviews thus focused on this new way of operation and the ways it enabled the IT department to carry out its tasks.

For the interviews, a semi-structured interview approach was selected because of the objectives and nature of the case study. As the objective of the study was to gain an in-depth understanding of the case, a more structured approach might have prevented in-depth discussions with the interviewees. On the other hand, more open interviews would have made it challenging to stay on topic. Examples of the themes discussed and more specific questions asked in different rounds of interviews are presented in Appendix A.

The first round of interviews began with interviews with the key individuals involved in the transformation of the IT department. These included the CIO, the head of account managers, the head of architecture, and the two consultants who were tasked with designing and leading the transformation. One of the consultants and the head of architecture were interviewed twice as the first interview did not allow discussion of all the relevant topics. The following interviewees were then selected by asking for suggestions for potential interviewees. The interviewees were asked to suggest other individuals involved in the transformation or individuals who could provide more in-depth information about the topics discussed during the interview. For example, the account manager was asked to suggest potential IT development customers from the business units. The interviewee selection process employed a snowballing tactic (Myers and Newman 2007).

The second and third rounds of interviews were initiated by contacting the key individuals identified during the previous interview rounds. Besides the head of account managers, all individuals still working in the IT department and involved during the first interview round agreed to be interviewed again. Similar to the first

round of interviews, the subsequent interviewees were selected using a snowballing tactic (Myers and Newman 2007).

Altogether, 43 interviews with 29 individuals were conducted (16 in the first, 10 in the second, and 18 in the third round). The interviews lasted, on average, 47 minutes. The longest interview lasted 81 minutes, while the shortest was 16 minutes. The shorter interviews were conducted with interviewees located outside the IT department (i.e., in the business units). These interviews averaged only 21 minutes as the interviews focused on specific IT development projects and the interviewee's perception of how the project had gone. While most of the interviewees were conducted on the municipality's premises, two were conducted via videoconference, three via phone, and one consultant interview was conducted on the consultant's premises. All interviews were audio-recorded and transcribed. A list of interviewees and their participation in the different rounds of interviews are presented in Table 3.

Table 3. List of interviewees.

Title of the interviewee	Interview round	Title of the interviewee	Interview round
CIO	1, 2, 3	Consultant F, Main architect (Agency A)	1
Consultant A, Development manager (Agency A)	1, 2, 3	Business unit customer 1A, nursing resource management	2
Consultant C (Agency B)	1, 2, 3	Business unit customer 1B, nursing resource management	2
Enterprise architect	1, 2, 3	The head of continuous services	3
Consultant G, Main architect (Agency A, 2017–2018)	1, 2	Account manager C	3
Account manager A	1, 3	Consultant D, Enterprise architect (Agency C)	3
Account manager B	2, 3	Consultant E, Enterprise architect (Agency C)	3
Development service manager	2, 3	Consultant H, Technology project manager (Agency B)	3
Consultant B (Agency A)	1 (twice)	Consultant J, Customer development manager (Independent)	3
Head of architecture	1 (twice)	Department head of the digital agency	3
Head of account managers	1	Project manager	3
Project manager	1	Web designer	3
Specialist in social and health services (business unit)	1	Business unit customer 2A, electronic appointment booking	3
Development manager (for Office 365)	1	Business unit customer 2B, electronic appointment booking	3
Consultant I, (Agency B)	1		

In addition to the individual interviews, seven meetings were held during the spring of 2017. The meetings lasted approximately 66 minutes and focused on various aspects of the transformation. More precisely, the meeting topics included a general overview meeting of the upcoming transformation for the employees, introduction of the new IT management process and, in particular, the solution office, integration of EA into the new IT development process, project meeting of an individual IT development project, and two situation analysis meetings. The meetings were audio-recorded but not transcribed. Instead, extensive notes during the meetings were kept.

3.4.3 Data analysis

The data analysis process followed in this dissertation is inductive, although theories are used to support the data analysis. The objective of the data analysis is not to validate these theories but to use them as scaffolding for the data analysis (Sarker et al. 2018; Walsham 1995). A general overview of the data analysis process is presented in Figure 14. As this figure shows, the data analysis process was closely connected to the data collection and was iteratively updated after each round of interviews. The analysis was conducted by the author, although extensive discussions about the analysis process and its findings were regularly held with the supervisor of this dissertation. The tool used in the analysis process was Atlas.ti.

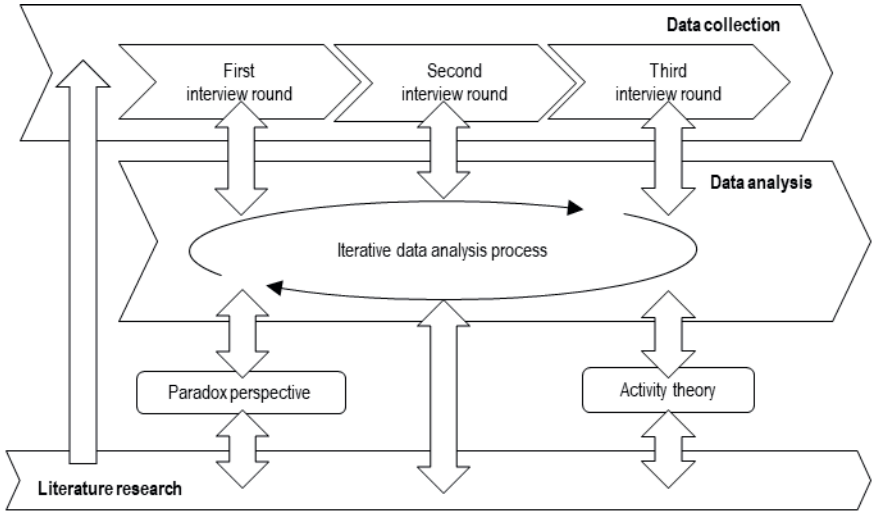

Figure 14. The data analysis process.

After the first round of interviews, the data analysis was initiated using an inductive approach (i.e., without any lens or presuppositions). First, a general overview of the situation in the IT department at the beginning of the case study was generated. This analysis focused mainly on identifying the challenges that had led to the decision to transform the operations in the IT department. These challenges were identified inductively, using a data-driven approach (Walsham 2006). The process started with the identification of the parts of the interview data discussing challenges faced by the IT department. From these, quotations specifying the challenges were extracted. Based on these quotations, general challenge themes were iteratively created, under which the different quotations were grouped. In situations where the created theme did not provide an adequate description of the actual challenges, subcategories under the general themes were created. The initial categories of the challenges included, for example, the lack of shared practices, issues with collaboration, and the lack of resources. For instance, the category for the lack of shared practices was formed of quotations such as the following, *"[T]here was nothing; things just came from here and there"* (Consultant A) and, *"[M]ost often, we made exceptions"* (Account manager A). Finally, the identified categories were presented to the individuals responsible for designing and executing the transformation in the IT department to validate the findings.

After the second round of interviews, a similar data analysis approach was adopted. First, a general description of the situation in the IT department at the time of the second round of interviews was created. Also, available EA models of the current processes were used. The description of the situation then moved toward a more detailed analysis of persisting challenges and the identification of new challenges. When viable, the categories created in previous phases were used. In situations where the existing categories were not applicable, a new category was created. For example, categories such as "Reluctance to change and a negative attitude toward constant change" and "Issues with following the new process" were added to the existing categories.

Following the analysis of challenges, the analysis moved toward identifying advantages that the new way of operation had created. In this, a similar approach to the identification and analysis of the challenges was followed. As many advantages pointed out by the interviewees were related to solving previous challenges, the analysis of the positive effects of the transformation was iteratively compared to previously identified challenges.

After the third interview round, the data analysis process was largely based on the previous iterations. Both challenges and positive effects of the transformation were analyzed and iteratively compared to the previous findings. The analysis also

included whether the previously identified advantages were still relevant, i.e., whether the IT department had managed to continue the behavior providing positive outcomes. If not, a new challenge theme was created. Some examples of identified impacts (themes) of the transformation and quotations supporting the formulation of the particular category are presented in Table 4.

Table 4. Examples of positive and negative impacts (Ylinen 2021).

Impact	Supporting quotations
Improved understanding of the operational situation	"While we have started to think [about] the future, we have quickly learned that first, we should get the existing things to work" (Account manager C).
Improved visibility of undertaken actions	"[In the past,] we have not been able to show the advancement. Now, the change is approved by the business unit managers [through a commitment to the digitalization plans]" (CIO).
Improved customer service	"This model enables us to make better investments. [Owing to this process,] investment suggestions will be added to the investment plan with a bigger probability [of success] than before" (CIO).
Reluctance to change and negative attitude toward constant changes	"I think that [it is bothering] many of the long-standing employees, and me as well, that there are changes after changes. Is there any sense in these constant renewals?" (Web designer). "Also, [the business units] need to make changes and re-organize things. So actually, [this transformation] does not measure the change capability of the IT department but [of] the whole organization" (Consultant H).
Unsustainable dependence on consultants	"Well, quite a lot of people are leaving, and they are replaced by consultants. So that hinders the operations, and the work time is increased" (Enterprise architect). "This has resulted in uncontrolled growth of the number of consultants. Every time a new development project is started, a new consulting agency is brought in. [The IT department] is on this endless tendering treadmill" (Consultant A).

To support the analysis of the organizational situation, publicly available municipal strategy documents and PowerPoint presentations provided by the interviewees were also used. The role of these documents in the analysis was not only to confirm statements of the interviewees but also to provide an overview of the operational and strategic objectives of the municipality and the IT department. These objectives were then compared to the interviews to gain insights into whether there were discrepancies between the desired and actual situation in the municipal IT department.

Besides the situation analysis of different phases of the transformation, in phase 3, the data were also analyzed by identifying series of events (Myers 2009, pp. 168–169). This process was initiated with the creation of a narrative of the transformation conducted in the IT department. Then, the critical events of the digital transformation were identified by iterating between the narrative and all the

interview data collected. This enabled the identification of critical events from the narrative and events considered critical by the interviewees. From these events, a digital transformation timeline of the IT department was created. This was followed by the creation of more detailed narratives of the identified transformation activities. In the depiction of the outcomes of these transformation activities, for example, in the presentation of the new IT development process, municipal EA models were used to obtain an overview of the designed process. These models were also compared to the descriptions of the process by the interviewees for an overview of whether the designed process resembled the reality.

3.4.3.1 Data analysis—Paradox perspective

At the beginning of the case study, many issues brought up by the interviewees were related to the EA. While the series-of-events analysis showed that EA was closely connected with the transformation, discovering the root causes of the issues called for a more in-depth analysis approach. Accordingly, it was decided that this tool of digital transformation would be best analyzed with a paradox lens. This utilization of the paradox lens closely followed the process suggested by Lüscher and Lewis (2008; see Figure 15).

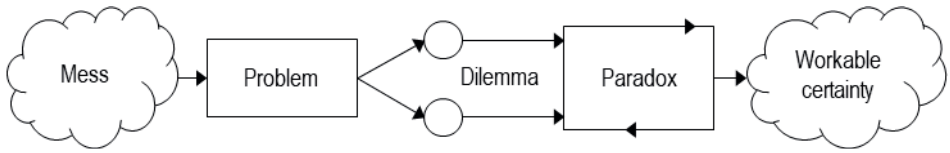

Figure 15. The process model of working through paradox (Lüscher and Lewis 2008).

First, the interview data were iteratively analyzed to identify the interviewees' concerns related to different areas in which the EA team of the IT department was involved. Second, these concerns—referred to as messy issues in Lüscher and Lewis (2008)—were categorized via the paradox process model. Then, the potential explanations for the mess (i.e., problems) and the respondents' perceptions of them (i.e., the dilemmas) were analyzed. After the identification of the dilemmas, they were analyzed more closely. In cases where the dilemma could not be resolved with a self-evident solution as two contradictory alternatives seemed to persist, a paradox statement was formulated. An example of the way the interview data was used in this process is presented in Table 5.

Table 5. An example of the data analysis process and quotes (Ylinen and Pekkola 2018).

Mess	Problem	Dilemma	Paradox
"The role of architecture was messy; when you don't have it, you don't need it" (Consultant D).	"EA team does something which is not connected to others' work" (Consultant D). "[Each business unit] collected different business needs. And the EA team never completed their tasks. The two never met. Everyone had their own vision of what the needs were" (Consultant A).	"We have too many concurrent projects. And then you feel that nothing is progressing" (Enterprise architect). "We have reference architectures. They are indeed references, not concrete enough. EA work remains isolated from our projects" (Consultant C). This resulted in a dilemma: Should EA focus on serving IT projects or managing enterprise-wide development?	"If [the EA team] said that this could not be done, so what could we have done? Leave the business with the system? It was packaged software; what could the EA team have done?" (Manager C). The paradox is that the EA team is spending a lot of time defining enterprise-level requirements for the projects, but every project considers itself an exception because of its customers.

Table 6 presents examples of the logic used in formulating the paradoxical tensions.

Table 6. Examples of the formulation of paradoxical tensions, previously used in Ylinen and Pekkola (2018).

Mess	Problem	Dilemma	Paradox	Abridgment
The focus of EA is unclear.	What is the main task of EA?	Should EA focus on serving IT projects or on managing enterprise-wide development?	EA is spending a lot of time defining enterprise-level requirements for the projects, but every project considers itself an exception because of its customers.	EA work vs. customer needs.
The EA unit is prolonging critical infrastructure decisions.	Industries are suffering from bad infrastructure choices.	Should EA guidelines be defined now or later, when there is a better understanding of the future?	Enterprise architects are prolonging critical decisions to avoid making bad choices, but the indecision is causing problems with current projects.	Small problems now vs. possible big problems in the future.
The usage of EA tools is insufficient.	There are no shared practices for how to use EA tools.	Should all EA-related tasks be done with the same tool no matter how well it supports the task, or should the tool be chosen according to the prevailing need?	The enterprise architects are trying to maximize their efficiency by selecting suitable tools for their prevailing needs, but earlier work cannot be used because of interoperability and accessibility considerations.	Tool efficiency now vs. usability later.

These paradoxes were further analyzed to find out why they had not been addressed or solved. Then, similar paradoxes were grouped together, after which the analysis proceeded to consider both individual paradoxes and groups for relationships and whether they influenced each other. In this analysis, the Smith and Lewis (2011) categorization was used to differentiate paradoxes from general problems. Finally, potential reasons for these paradoxes were considered. The highly iterative analysis resulted in a model of paradoxical situations and their relationships, illustrating underlying problems in the organizational transformation.

3.4.3.2 Data analysis—Activity theory

Data analysis from an activity theory perspective was conducted based on the series-of-events analyses, which guided the selection of activities analyzed. The analysis itself began with a depiction of the digital transformation activity. First, the different elements of the activity (i.e., the subject, object, tools, rules and norms, community, and division of labor) were identified by following the process presented by Crawford and Hasan (2006). As the elements of the activity varied as the studied transformation proceeded, multiple versions of the activity were created. Of these, two activity system presentations were selected, one presenting the initial situation and the other the situation after the transformation. These were then iteratively developed.

Then, the analysis advanced to consider activities connected to the main activity (i.e., the activities identified in the series of events analysis). In the process of analyzing interlinked activities, the created narratives of the identified series of events were used as the first step. Then, the activities were defined by iteratively defining components from the interview data. First, the interview data were analyzed from the perspective of the initial activity system. Then, the analysis proceeded to consider activities conducted during the case study and their role in the digital transformation activity system. The versions of the digital transformation activity system were iteratively updated as the analysis of the interlinked activities proceeded. Table 7 presents an example of one analyzed activity.

Table 7. Enterprise architecture activity analysis 2017 (Ylinen and Pekkola 2021a).

AT concept	Quotations
Subject: EA team	"The EA team is doing something that has no connection to [our actual operations]" (Consultant I, CTO).
Object: Improved management of the IT resources and consequently improved service offering	"[The objective is] customer-centricity.... When the ecosystems and architecture are considered comprehensively enough, we can offer fast services" (CIO).
Tools: Kartturi framework and modeling tools selected by enterprise architects based on their personal preferences	"[The municipality] chose the Kartturi framework as the frame of reference. Of course, we did not forget the JHS-179 either" (Architecture team manager). "As we did not have a specific way to document [things], we used this and that [depending on the work]" (Enterprise architecture).
Rules and Norms: ICT-law and JHS 179 regulation	"[The governmental officials] are bustling along without considering us" (CIO).
Community: IT department, business units, and IT projects	"The objective is to get the enterprise architecture and IT projects to work more closely together" (Project manager). "[Business units] do not understand what the role of enterprise architecture is" (CIO). "The architecture team has no communication connections to others, even inside the IT department" (Consultant B).
Division of labor: EA team overlooks EA utilization while the IT projects do the work	"The EA team does something which is not connected to others' work" (Consultant D). "We made reference architectures and architectural documents ..., then these documents were presented to the projects.... After this, we left them to manage the documents by themselves" (Architecture team manager).
Outcome: EA is considered a waste of resources	"Experienced experts create models for themselves …. [T]hese are not used in the holistic development" (Architecture team manager).

After identifying the different components of the main activity of digital transformation and its supporting activities, the connections between these activities were analyzed. The focus of this analysis was to identify how individual activities influence the main activity of digital transformation. Based on this analysis, an activity network was formulated that presents the way the different activities in the IT department contributed to the activity of digital transformation and also resulted in other activities.

The analysis then proceeded to consider whether contradictions existed in the depicted activity network. This included the identification of contradictions within the identified elements, between the identified elements, or between the interlinked activities. This division to three levels of contradictions was adapted from Bertelsen and Bødker (2003), although one level of contradiction was excluded as no culturally more advanced central activity was identified; therefore, contradictions between the main activity and this more advanced activity could not be analyzed.

In the contradiction analysis, special attention was given to two time points: the spring of 2017 and the endpoint of the case study (i.e., autumn 2018). The analysis followed an iterative process whereby the individual elements were first analyzed to see whether the interviewees saw them as supporting or hindering the operations in the IT department. Second, the analysis advanced to consider whether they were in contradiction with the objective of the activity. Both steps were conducted for all the analyzed activities. Third, the role of the supporting activities was analyzed to determine whether they supported the digital transformation activity.

4 FINDINGS

This chapter will first present the initial situation in the municipal IT department, focusing especially on the challenges that eventually drove this department to a large-scale transformation. To provide an in-depth view of the contradictions persisting in the department, the paradox perspective is utilized to depict tensions of the EA function. Then, the key transformation activities the IT department conducted to improve the operational situation are presented. These activities are then analyzed in more detail from the perspective of activity theory, first by analyzing the initial situation at the beginning of the data collection (spring 2017), then by considering how the contradictions drove transformation activities in the IT department, and finally by considering the situation at the end of data collection (autumn 2018). The Findings section concludes with consideration of the outcomes of the transformation.

4.1 The initial situation

The starting point of the municipal transformation can be traced to 2007 when the municipality made a strategic decision to centralize its IT operations within a single IT department. This decision was followed by the decision to outsource some of the IT operations, to introduce a new EA approach, and, eventually, to introduce a number of other activities aimed at improving the IT department's ability to support the digital transformation of the municipality. Significant IT-related management activities conducted in the municipality are presented in Figure 16.

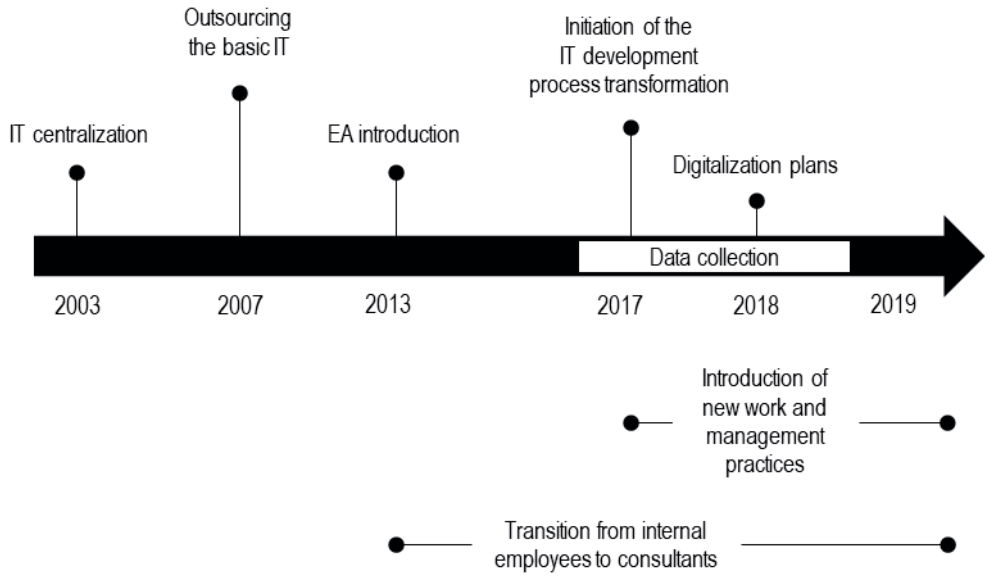

Figure 16. Timeline of the digital transformation activities (Ylinen and Pekkola 2021a).

Of the activities presented in Figure 16. , the IT centralization, outsourcing basic IT, and EA introduction were conducted before this case study, whereas the IT development process transformation, introduction of a new EA approach, introduction of agile practices and digitalization plans, as well as the transition from internal employees to consultants occurred during the case study.

The transition to centralized IT operations was motivated by the desire to improve IT efficiency. The main objective was to improve the municipality's ability to provide electronic services and serve the rapidly growing number of residents, which exceeded other IT-related benefits, for example, in cost savings. As the CIO pointed out: *"[The IT department] is facing significant pressure for efficiency and speed; savings are not emphasized."* The centralized IT operations were expected to result in standardized IT development throughout the municipality and improve the municipality's ability to utilize the same IT resources throughout the municipality. Until then, the IT resources, as well as their maintenance and development, had been located within individual business units, siloed from each other.

Despite good intentions, this transition did not result in the desired outcomes. Although the IT department was centralized, the traditional business unit-led operations continued. "*For example, in health care, they are accustomed to buying whole systems from IT suppliers; they say nothing and just buy by themselves*" (CIO). The business units were not used to asking for support from an outsider such as the IT department.

Instead, they continued to advance their IS acquisitions independently. The internal rules and division of labor in the municipality were not adequately adapted to the new way of operation.

The centralization of the IT department was followed by the decision to outsource some of the IT department's tasks such as IT support and the maintenance of hardware. While this was supposed to free up IT department resources for IT development operations and improve collaboration with the business units, this was not the case. Instead, the outsourcing complicated the operational environment. As the IT department's employees were unfamiliar with their new tasks and responsibilities, they could not simply be transferred to work on tasks requiring different competencies. As pointed out by one of the consultants: *"[Some of the IT personnel] are completely incapable of completing their tasks"* (Consultant A). And, as the CIO noted: *"[Employees] are struggling with the fact that their tasks require a variety of different skills …. [T]hey have probably drifted into the wrong job."* Consequently, the IT department was struggling. The benefits of centralization and outsourcing were not realized. Instead, complexity, siloed IT use, and lack of needed resources persisted.

To cope with the challenging situation, the IT department introduced a new EA approach in hopes it providing a holistic overview of the organizational situation and putting an end to the siloed IT management. The EA introduction was also motivated by the new ICT law, which demanded the utilization of EA in public sector organizations. Similar to the centralization and outsourcing efforts, the EA introduction did not have the desired outcomes. Instead, the team responsible for the EA became an isolated unit, which was considered more of a hindrance than a help: *"The architecture unit has become a silo that has no forum for discussion with other parts of the IT department …. [They] are just doing their own thing*" (Consultant B). Thus, the solution became part of the problem, making the operations in the IT department even more challenging. The need for larger-scale transformation was becoming evident.

4.1.1 Challenges suggesting a need for a larger-scale transformation

There were multiple challenges indicating the need for a larger-scale transformation in the IT department. This subchapter will explore the following challenges identified in the IT department. First, the operational situation was very problematic. The internal operations of the IT department were slow and inflexible. There was a

lack of resources, siloed structures, inadequate use of existing resources, and slow flow of information. Second, the IT department did not have a clear role in the municipality. While the IT department had been centralized for over ten years, it had not gained a legitimate role in the municipality. Third, there was no holistic understanding of the operational situation inside the IT department. There was no view of the way existing operations should be conducted, responsibilities were insufficiently defined, and IT portfolio management was lacking. The lack of a holistic overview also worsened the operational situation, for example, by slowing down processes. Together, these three challenges resulted in the IT department's struggles to respond to the growing service demand, which again caused dissatisfaction among the business units and inside the IT department.

4.1.1.1 The challenging operational situation

The slowness of the IT department's processes was one of the key issues with which the IT department was struggling. Even in smaller projects for which the IT department estimated a resolution in weeks, the processes often took months. This slowness was such a critical issue that the CIO stated: *"We are facing speed pressure, not necessarily saving pressure [from the business units]."* The slow operations were caused by a multitude of challenges persisting in the IT department. For example, due to inflexibility, many operational matters had to be discussed at the level of the IT steering group. This prevented this group from focusing on its main tasks, which again delayed critical financial decisions and slowed down IT projects. This indecisive and inefficient process slowed the IT department's development operations significantly.

The IT department's internal operations were also slowed down due to the siloed operational structure, which made it difficult for the employees responsible for different tasks to collaborate, even in situations where it was critically needed. Collaboration was also hindered due to word-relationship problems among different siloes: *"The [problem] is the interpersonal relationships, so collaboration is not working. There is no forum for discussion nor trust, so no collaboration has been established"* (Consultant B). This resulted in situations where the relevant people were not necessarily invited to meetings. This again slowed down IT development projects because successful execution was not possible without the required contributions from people excluded from critical meetings. In many cases, it was also unclear who the necessary people were. IT development projects suffered from a lack of knowledge related to the

skills, competencies, and knowledge of employees. Significant amounts of time were lost since people had to search for individuals with the appropriate knowledge.

Because of the issues with collaboration and siloed organizational structures, the IT department also suffered from a poor flow of information. IT department employees did not have a clear view of what the other employees were working on. As many employees had been assigned to work for individual business units of the municipality, such as education or culture services, they had little understanding of the work done in other business units.

The IT department also faced issues regarding communications among the business units. On the one hand, the needs of the business units did not always reach the IT department. On the other, the business units often felt that they were left out of the loop after they had contacted the IT department. Issues regarding the poor flow of information not only caused dissatisfaction both in the IT department and among the business units but also slowed down operations significantly as necessary information was rarely readily available.

Because of the slow and inflexible operations, the IT department was struggling to use its full IT development budget. *"Let me say that we have saved a lot as we have not been able to use [the budget] the way we wanted [and planned]"* (Development manager). While the slow operations tied up resources for extended periods, the inflexibility prevented the reallocation of funds when projects were halted. In most cases, the IT development of the IT department was about procuring IT. Due to the inflexible organizational structures, funds and resources allocated to projects facing issues could not be used elsewhere, which resulted in poor utilization of the budget.

The IT department was very unproductive and struggled to respond to the growing service demand of the municipality. This caused dissatisfaction but also seemed to indicate that with the current processes and structures, the IT department could not fulfill its role and help the municipality to become a pioneers in the public sector digital transformation in Finland.

4.1.1.2 Unclear role of the IT department in the municipality

In addition to its internal inefficiency issues, the IT department suffered from having an unclear role in the municipality. After the IT centralization, the IT department had not been able to provide the level of services sought via the centralization and had not gained a legitimized position as the provider of IT services.

When IT needs arose in the municipality, the IT department was not necessarily contacted. Instead, the business units tended to avoid involving the IT department

in their IT development ideas whenever possible. *"We found out that the client had had discussions with the supplier for a significant period"* (Account manager A). As the business units often learned of new system ideas from service providers, who did not understand the municipality's IT infrastructure, the IT-related issues were often underrated in the business unit leading the IT development proposals. *"The business unit might not have even been able to guess that [the hardware] needs to be considered as well, and now the project has gotten on the wrong track; they should have come to us when the need arose"* (Account manager A). Consequently, these projects were not necessarily in line with the existing IT infrastructure as the IT department had little to no influence on the requirements specification or a chance to evaluate how well the system would fit with the existing IT infrastructure. Because of this, when the IT department was finally involved in the project, their role was mainly pointing out problems, which decreased the business units' desire to involve them in the first place.

4.1.1.3 Lack of holistic understanding of the operational situation

The IT department was also suffering from a lack of holistic understanding of the operational situation. This lack of understanding encompassed both the IT department's processes and the IT infrastructure for which the IT department was responsible. For example, there was no sufficient understanding of the way IT operations, especially the IT development operations, were run. As one of the consultants pointed out: *"[Earlier,] there was nothing; things just came from here and there"* (Consultant A). Shared practices were missing, and responsibilities were not properly defined. There was also no explicitly assigned decision-making power. Even lower-level issues were often brought to the IT steering group, which, as previously mentioned, slowed down the decision-making but also resulted in the steering group making decisions about practical matters they were not familiar with.

The IT department was also struggling with a poor understanding of their existing IT infrastructure and resources. For example, the IT department suffered from a tendency to acquire new IT systems even when existing ones providing similar functionalities were already in use in other parts of the municipality. The CIO was also struggling with project portfolio management as there was no holistic overview of what IT projects were ongoing in the different sections of the municipality.

EA was implemented with a desire to improve the holistic understanding of the operational situation and to enable the IT department to take a more proactive approach in the management of future IT development projects. With a more holistic understanding of the operational situation, the IT department was expected

to make more informed decisions when it came to IT development. However, despite the introduction of EA, the operational challenges remained. In the spring of 2017, EA was not contributing to a holistic understanding of the operational situation.

4.1.2 Enterprise architecture—An example of the IT department's challenges

In the spring of 2017, many of the challenges persisting in the IT department were blamed on EA. While EA was initially introduced into the IT department to solve challenges such as the lack of holistic understanding of the operational situation, it seemed to have resulted in even more challenges.

4.1.2.1 Challenges in EA utilization

The IT centralization and outsourcing revealed that the municipality and the IT department were not good at change management. This was also the case with the EA introduction. EA was first introduced in the IT department in 2013. However, at the beginning of 2017, the EA team had still not properly integrated it as a part of the IT department. Instead, it was suffering from isolation from other operations. The siloed structure of the IT department also hindered collaboration between the EA team and IT development projects. These challenges with collaboration were increased due to the poor flow of information in the IT department.

As with other operations, the EA team was suffering from a lack of standardization. For example, instead of having shared guidelines on how EA models were to be created, each enterprise architect was free to use whichever tool they preferred or thought suitable for the particular need. This increased the efficiency of individual enterprise architects as none of the tools available were satisfactory in all situations; however, it also prevented the proper utilization of their work on other occasions. Most of the models created were either inaccessible or unusable by others. While the architects tried to maximize efficiency by selecting a suitable tool for prevailing needs, they simultaneously wasted their time as they could not use earlier models and descriptions. EA was supposed to provide a holistic overview of the situation in the municipality but only provided a scattered and inaccessible view of the projects that enterprise architects were involved in: *"We have*

several reference architectures. They are indeed references, not concrete. The EA work remains isolated from our projects" (Consultant C).

As EA was not providing the desired overview of the operational situation, it was not able to earn the legitimization it would have needed to function as a guide to decision-making. Indeed, EA was considered a hindrance that made decision-making more difficult. This was partly because of the way the EA work was organized. IT projects were required to go through EA checkpoints at specific stages of the project. This meant that the project managers had to prepare presentations for an appointed EA board where the projects were then evaluated from the perspective of municipal EA. As the EA work, in general, provided a holistic understanding neither of the existing situation nor of the different development projects, the EA board provided no benefit to the IT projects. Thus, the IT department and the IT projects were dissatisfied with the EA. It required an extensive amount of resources without providing any clear benefits. As account manager C stated: "*They [the EA team] have announced that they'll insist on certain checkpoints when they evaluate [the project] and [that's that].*"

Owing to the siloed structure and the conflicts between employees, the EA team and IT projects rarely met. While the EA team worked on their reference architectures, it was not visible in the actual projects: *"The EA team is doing something that has no connection to [our actual operations]"* (Consultant D). The IT project managers felt that the EA team was not interested in their problems. They rarely answered EA-related questions adequately, and the architecture-related tasks were left to projects without proper support or supervision: "*The architecture team has been somewhat passive section of our organization …. It is kind of a treadmill—I ask for information from the architecture unit, they forward the query to my supervisor, and he asks me, because … apparently, the architectural descriptions should be obtained from us*" (Consultant I). Similarly, the CIO felt that the "*enterprise architects are just sitting in the seminars. There is no EA specialist available for the IT projects*" (CIO).

EA was supposed to be involved in all aspects of IT development, from mapping the current situation in the municipality to planning the future, and because there were multiple issues related to EA, it was quite easy to presume that the IT development challenges originated from EA. However, when the IT department took the initiative to resolve the EA-related issues at the beginning of 2017, it became clear that EA was not the cause but an indicator. The operational situation where the EA had been introduced resulted in the revelation of multiple paradoxical tensions in the EA operations. These paradoxical tensions again made the successful utilization of EA difficult despite good intentions.

4.1.2.2 The underlying factors hindering EA utilization

The paradoxical tensions of both the EA utilization and the underlying factors that resulted in the occurrence of these paradoxes are depicted in Figure 17.

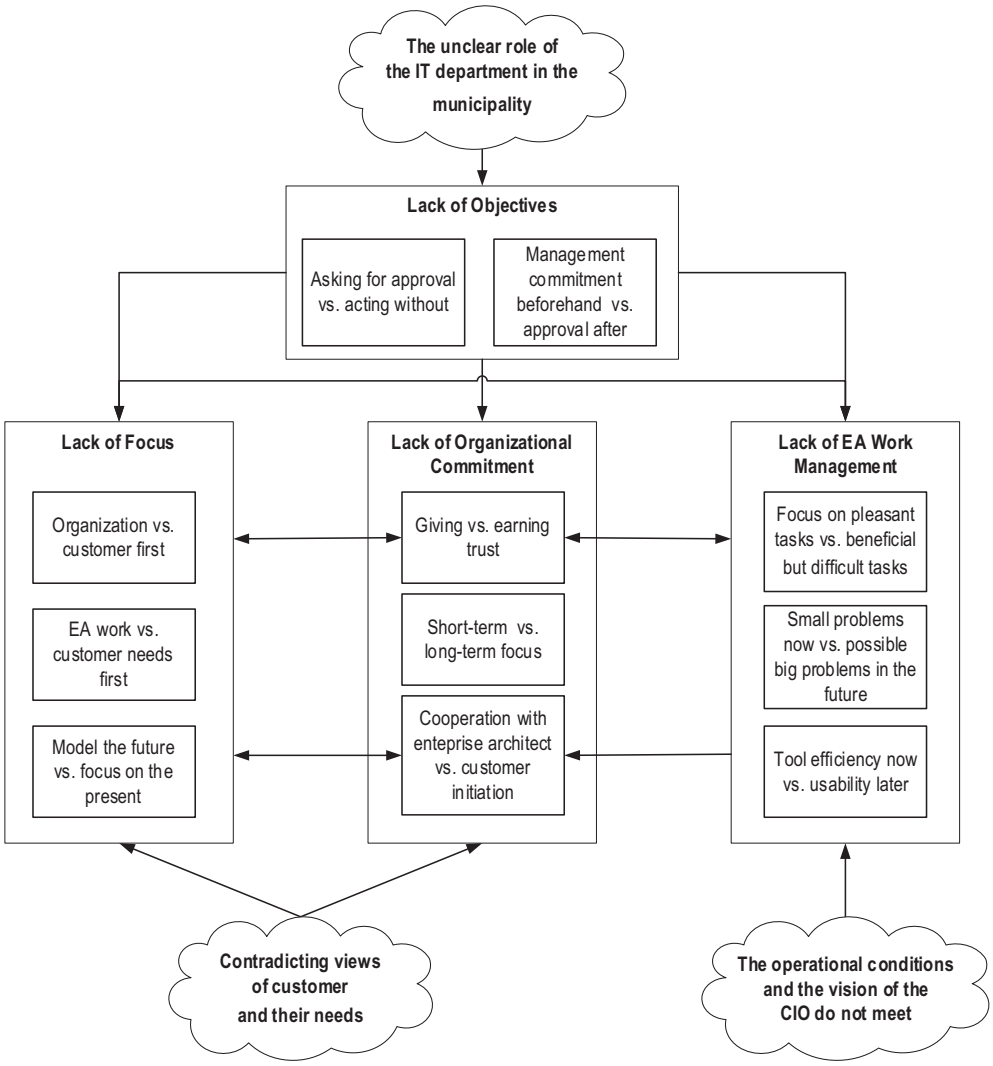

Figure 17. Paradoxical tensions of EA work and their relations (Ylinen and Pekkola 2018).

The EA function was suffering from a lack of focus, objectives, and organizational commitment, as well as poor EA work management, which resulted in a multitude of tensions persisting in the operations. These tensions also influenced each other,

thus creating an operational situation where the IT department struggled to identify the actual problems of EA utilization and the IT department's transition to a more holistic way of acting and thinking. Among the higher-level issues creating a challenging situation were the unclear role of the IT department in the municipality, contradictory views of customers and their needs, and a mismatch between the operational conditions and the vision of the CIO.

While the municipality desired to become digitalized and exemplary in the provision of electronic services, it did not have a clear view of the role of the IT department in this transition. Because the IT department had been struggling with its service provision, giving the department legitimate power to influence the direction of the municipality's development seemed counterintuitive. For EA work but also for the IT department, this meant a lack of objectives. For example, there was no proper decision made related to the organization's infrastructure. Although there had been several attempts to make infrastructure-related decisions, they were prolonged indefinitely. For EA, this meant that IT projects could not make informed decisions concerning, for example, suitable technologies, which again resulted in bad choices. For instance, the development manager described the situation: *"Now we have a big challenge. The managers in education would like to cooperate with teachers …, but these groups have completely separated and disconnected IT environments …. If there had been an architecture planned, we wouldn't be here."* Although the problem was a lack of higher-level decisions about the organizational infrastructure, the blame was placed on the EA team, who were prolonging critical decisions to avoid making bad choices without authorization while simultaneously causing problems in current development projects due to their indecisiveness.

As there were no clear objectives or priorities for the EA work, the enterprise architects were also suffering from a lack of focus in their work. While EA was supposed to help the IT department introduce a more holistic approach to IT management, the focus was on individual projects, not on the big picture. As EA was expected to support IT projects, the operational issues distracted from the construction of a comprehensive view of the municipality's situation. One of the consultants summarized the situation as follows: *"Everyone was looking at their stuff, but no one was looking at the big picture"* (Consultant C). EA was supposed to enable holistic management of the IT infrastructure, but the enterprise architects were seen as unproductive support personnel of the IT projects. As a result, the enterprise architects did not know whom they were supposed to serve and where to focus their work efforts. In most cases, they chose the IT projects, as modeling reference architectures for projects had more short-term impact than creating EA models that

would enable holistic management of the IT infrastructure. Without a holistic understanding of the organizational situation, supporting the IT projects was nonetheless easier said than done.

The lack of focus in EA work also made it difficult for the EA to gain organizational commitment. Because the enterprise architects focused on creating reference architectures for the IT projects, these projects did not get what they needed, namely, instructions on how to ensure compliance throughout the IT infrastructure. This rendered the reference architectures useless and even redundant. Because of the reference architecture work, the enterprise architects also began to see the IT projects as their primary customers to serve and to please. This led to a situation where enterprise architects put the needs of the IT projects ahead of the municipality to gain the commitment of the project managers. When the IT projects did not follow their reference architectures, enterprise architects accepted the situation without any objections. For example, account manager A stated, "*During the inspections, when we realized that the [project] was not advancing as expected, we wondered what we should do …. Most often, we made exceptions.*" This resulted in a paradoxical situation where the EA team spent time defining enterprise-level requirements for projects that rarely followed them.

The EA team was in a difficult situation where they were supposed to serve multiple masters without clear objectives. As the operational environment in the IT department was, in general, challenging and no proper attention was given to EA work management, the enterprise architects approached the situation with a focus on situational convenience. This was visible not only in the EA tool selection but also in the prioritization of work. Although the initial objective was to provide a more comprehensive view of IT resources, the focus remained on individual segments of operations. This resulted in paradoxical situations hindering any fundamental changes in the IT department's practices and ways of thinking.

Due to the tensions and, in general, the attempt to blame EA for the challenges instead of attempting to solve them, the IT department did not treat these tensions as paradoxes, and they resulted in vicious cycles (cf. Smith and Lewis, 2011), which made the situation in the IT department unsustainable. When the IT department then finally tried to resolve EA-related contradictions, it became clear that the issue was not the EA but the current IT development process. The realization that the process was incompatible with the use of EA shifted the focus from EA to improving the IT development process and initiated a larger-scale transformation.

4.2 Activities of the transformation

To resolve the unsustainable situation in the IT department, the CIO initiated a larger-scale transformation in the IT department. This transformation centered around the redesign of the IT development process, to which other transformation activities were closely related, such as the introduction of agile practices and a new approach to EA.

4.2.1 Transformation of the IT development process

To address the challenging situation in the IT department, the CIO, under pressure from the municipality's deputy mayor, decided to initiate a process transformation in that department. Consequently, the transformation was driven both by a desire to ease the internal situation in the IT department and a need to respond to external demand. As the CIO pointed out, the IT department would benefit from an improved manner of operation; however, on the other hand, if the IT department continued to underperform, it could also become obsolete and be outsourced: "*The IT budget is about 30 million; if we do not create value through that, we can be bought as [an external] service"* (CIO).

To aid the transformation, the CIO called in a group of consultants to design and then implement the transformation of the IT development process. As even the consultants had not done similar transformations before, the design and implementation were conducted iteratively in the IT department based on arising needs.

The redesign process began with the intention to better integrate EA as part of the IT development process. As EA was intended to play a critical part in each step of the transformation process, the focus on its better utilization in the process also revealed many other issues with the IT development process, and the redesign efforts were extended from EA to encompass the entire IT development process. A simplified IT development process model is presented in Figure 18. This model depicts the key parts of the process at the end of the case study and is the result of multiple iterations. The core idea behind the process and its interlinked activities was that it would never be finished but should be continuously developed: *"This is only the version 0.3 …; now we have something to work with"* (Consultant A).

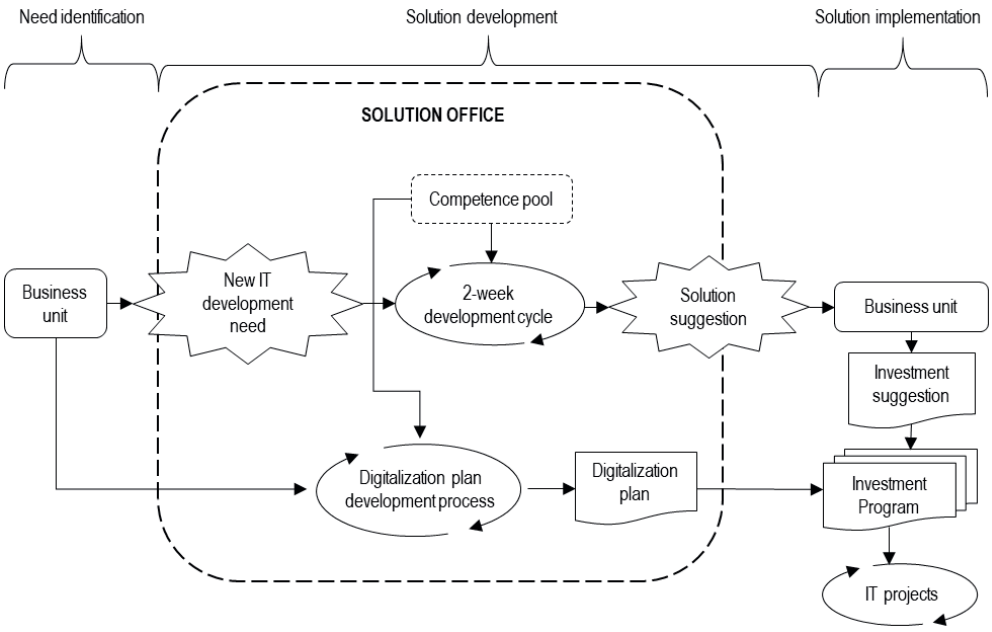

Figure 18. The new agile IT development process (Ylinen 2021; Ylinen and Pekkola 2019).

The new IT development process can be divided into three general phases: need identification, solution development, and solution implementation. As many challenges with EA and the IT development, in general, originated from the business units' tendency to advance new IT development projects independently, special attention was focused on the front end of the process (i.e., need identification and solution development). The solution implementation phase was improved mainly by means of better front-end management of the IT development process and experienced only minor changes. *"Well, the end part of the development has not been considered even a bit. It was supposed to be considered, but it was left undone. The consultants that run the solution office only focus on the solution office …. Now they focus only on the development …, not the whole process"* (Head of continuous services).

The new IT development process was initiated when a new IT-related need arises in one of the business units. To ensure that the business unit contacts the IT department instead of developing an idea independently, each business unit had a dedicated contact person (account manager), who was responsible for facilitating communication between the business unit and the IT department. Under the guidance of this account manager, a new IT need of the business unit was then developed in the IT department in collaboration with the business unit. This development work was conducted in the newly established team known as the

"solution office." *"The solution office is this work supervision forum that sits on top of a Kanban board and collaboratively prioritizes their backlog, divides their labor, and meets to solve problems, etc."* (Consultant B).

The solution office was a virtual team in which both the IT department's employees and external consultants participated based on the current needs of the solution office. At the time of the data collection, one of the consultants responsible for the redesign efforts was appointed head of the team, while other resources were viewed as a competence pool from which suitable people, both internal employees and consultants, were selected based on the different solution-development projects. The solution office team was virtual because the public sector human resource management regulations did not allow the CIO to modify the existing structures of the IT department easily. To cope with the complex organizational structures, the solution office was built on top of the existing structures. The objective of the solution office was both to enable the IT department to utilize the existing resources and competencies more flexibly and to encourage the business units to collaborate with the IT department. Now the business units had a dedicated place where they could bring up their IT development proposals: "*When [one of the business units] has a need, an interprofessional working group meets to consider whether the need has a viable solution"* (CIO).

The first step in solution development was brainstorming, during which the virtual team, in collaboration with the business unit representative, conducted an in-depth analysis of the particular need and the context where the need had surfaced. This included both informal discussions about the situation and an official "solution day," during which the selected virtual team and the business unit representatives met and discussed needs and expectations related to the solution. Also, factors such as the business unit's yearly clock were discussed lest it prevent implementation during certain times of the year. Subsequent to the brainstorming, the solution development advanced to evaluate whether the problem could be solved with existing resources either inside the involved business unit or within other business units. This was then followed by an idea dialogue, during which different alternatives for the solution were discussed. Typically, three alternative solutions would eventually be presented to the business unit to choose from.

During the idea analysis and solution development phases, the solution office used a two-week sprint approach in which the solution was divided into steps that could be completed within two weeks. In these sprints, the enterprise architects were also closely involved to ensure that the developed solution would fit within the organizational EA. This approach was incorporated as part of the solution

development to ensure an agile but systematic approach, which enabled the IT department to take the lead in IT development projects from their earliest stages.

After the solution office had a prioritized list of presentable solutions for the business units, it was presented to the business unit representatives and then to the steering group of the business unit. Depending on the solutions developed, the options presented might be: for example, a list of potential systems to acquire or a suggestion to extend the use of an existing system already in use in other parts of the municipality. "*When we have created a viable solution suggestion, we actually discuss what is going to happen next before moving the solution to production …. Previously, the situation, in the worst-case scenario, was that the client that was the loudest got what they wanted, and no one was thinking about the big picture* (Consultant A).

In rare cases, the solution office could also suggest rejecting the case. This especially the case when upcoming changes to the municipal IT infrastructure could either solve the issue or permit its development. Of course, the IT department could only suggest a rejection as the municipal business units were independent operators and IT development projects were guided by political interest: *"Well, political governance is different from corporate governance"* (Consultant A).

After the solution was presented to the business unit representatives, they could suggest adding it to the IT department's investment list. In cases where the business unit wanted to implement the solution using their own financial resources, they could also do so immediately, as long as the IT department had the needed resources available to support the project.

After the solution had been accepted by the steering group and funds allocated to it, the actual implementation followed a similar process as before. The IT department established a development project, acquired a suitable team and budget for the project, and then followed the advancement of the project as before. The most significant difference was that now EA was more closely integrated into the operations even though the EA checkpoints and observation groups had been dissolved. When the project was finalized, the responsibility was transferred to the operations center, which was in charge of the upkeep of the existing IT infrastructure of the municipality.

4.2.2 Introduction of digitalization plans

One of the weakest links in the new IT development scheme was that while it aspired to improve the commitment of the business units with better service provision, it

still strongly relied on the relationship between the business unit and account manager and the business unit's willingness to contact the IT department when new IT-related needs arose. As pointed out by Consultant C: *"[The service provided to business units] is very dependent on the account managers and how they bring needs forward …, and there are clear differences in the enthusiasm to bring forward ideas."* During the iterative transformation process, the IT department continued to struggle with cases where business units had not involved the IT department at an early enough phase of their IT development projects. While there was now a better process to manage arising IT needs, the IT department was suffering from a poor vision of the future related to the IT development programs and projects.

To solve these challenges, the consultants suggested a new activity: the creation of digitalization plans for the business units. Digitalization plans were four-year plans that depicted the main development needs of business units and a timeline for their development. They were intended to 1) provide the IT department and the business units with a holistic overview of the current IT situation in the municipality, 2) gain an understanding of areas in which new needs were most likely to rise, 3) create a development plan whereby these potential IT needs were prioritized, as well as 4) facilitate a shared understanding with the business units of when the different development initiatives would be executed.

The creation of the digitalization plans was carried out in collaboration with the business units. For the creation of each digitalization plan, a group of IT department representatives from the solution office's virtual team met with a group of business unit representatives in a series of workshops, where they first focused on identifying current IT-related issues and problems and then envisioned the future. In this process, the enterprise architects played an important role both in mapping the current situation and in creating the to-be models of the enterprise architecture. After both the IT department and the business unit representatives were content with the plans, they were presented to the board of the respective business unit. For the digitalization plan to become official, the business unit's board had to commit to it.

4.2.3 Introduction of new work and management practices

While the most visible transformation in the IT department focused on process transformation, the management practices and daily activities in the IT department were also changed via the introduction of agile approaches. Agility and lean thinking

were the guiding values in the design of the new IT development process, along with the reorganization of the daily routines.

The changes to the daily routines included, for example, the adoption of the practice of Scrum meetings. Depending on the type of task, these meetings were held either daily or twice a week. In these meetings, each team member reported what they had done since the last meeting, what they were currently working on, and whether they needed any help. The agenda was restricted to avoid prolonged meetings.

To guide the work, the IT department also introduced the Kanban approach (Ahmad et al. 2013) to guide and provide an overview of the work situation. First, the Kanban board was a physical board in the IT department's office, but it was later transformed into an electronic form. On the Kanban board, the IT department recorded new needs brought up by the business units as well as ongoing and upcoming projects and their progress. The tasks on the board were divided in a way that allowed them to be completed in two-week cycles, thus ensuring a continuous workflow. The workflow of different tasks was also constantly measured to enable fast detection of tasks that were not advancing. In cases where concerns were detected, corrective actions were taken depending on the issue. Especially at the beginning, many tasks were not advancing because the IT department's employees had not yet learned how to divide them in a way that could be completed in two-week cycles. With training, this challenge was at least partly resolved. *"Our approach to Kanban is a bit different because we have these 15-minute meetings on Tuesday and Thursday where we check the situation, and at that point, the Kanban is also updated. This is, of course, not how it is supposed to go as the cards should be constantly moving, but we will get there at some point"* (Consultant A).

The IT department also improved its management of upcoming projects. While previously, the funds for projects were allocated once a year during the creation of the IT department's budget and were based on the list of needs provided by the business units during this process, owing to the digitalization plans, the IT department was able to create a more visible and far-sighted approach to address the backlog of future projects. This enabled the IT department to transfer funds and resources between current and upcoming projects when issues preventing the advancement of ongoing projects came up. *"The biggest thing is this city-level ICT-investment program [available for all], where you can see all the projects we have, the project managers, the degree of realization. Now it is all visible: what we do, where we are, and what is happening"* (Consultant A). Together, the goals of the changes in work management practices were better empowerment of employees, transforming the relationship

with the business units from contract negotiations to collaboration, and switching from responding to change instead of relying on plans.

Besides introducing new work practices, the CIO also established new management roles, such as CDO and development manager. The CDO's responsibilities included the general development of the process with which the IT department was providing digitalization services to the business units, as well as the role of head of the solution office. The development manager's responsibilities, on the other hand, were to gain an overview of the IT development process and its bottlenecks and to speed it up whenever possible. The development manager was also expected to improve the use of funding and other resources in the procurement processes.

4.2.4 The transition from internal employees to consultants

In addition to transforming the internal operations, the IT department was also gradually transitioning from the use of internal employees to the use of consultants in day-to-day work. Consultants were commonly used in the municipality in different types of projects where there was a need for additional resources or desire to access knowledge the municipality did not have. The use of consultants was particularly common in the IT department, where they were used, for example, as IT project managers when internal employees were not available. While IT-related needs in the municipality were on the rise, the use of consultants had also increased. Whenever there was a need for additional work resources, the IT department turned to consultants, both when a project needed a project manager or when, for example, an EA team needed a new architect. Moreover, when internal employees left, they tended to be replaced by consultants. While the CIO and development manager found this to be an acceptable approach, some consultants raised concerns: "*The approach of the CIO is that he makes a parallel organization; in practice, this means that consultants do the work. I hope that [the new IT development process] will not result in a similar situation; we cannot build the operations on the shoulders of consultants, especially as the tasks are already mainly in the hands of external people"* (Consultant C).

The main driver of the IT department relying on consultants in their digitalization and later in digital transformation efforts was previous positive experiences related to their use. Consultants were an easy and agile way to control the number of workers in the IT department while the resource and competence requirements varied based on ongoing projects. When a new project manager was needed, the IT department

could just simply contract one. By using consultants, the IT department did not have to spend time and prolong the initiation of new projects because of the slow processes related to hiring people in the public sector, nor was it necessary to take risks related to internal employees such as getting involved in difficulties related to laying people off. It was also easier to change consultants if the competencies of the consultant and the needs of the IT department were not in line. The consultants were seen as competent professionals that were not bound by the bureaucratic culture and could be more efficient in their work. Reasons encouraging the increasing use of consultants in the IT department are listed in Table 8.

Table 8. Reasons to use consultants (Ylinen and Pekkola 2021b).

Reasons to use consultants' services	Quotations
Skills	"At least their CVs are outstanding" (Consultant J). "Now that we are using the consultants, we have a lot of skillful people to choose from" (Development service manager).
Faster to acquire than internal employees	"Our recruitment process takes a long time … and you need to start projects quickly if you want to do the projects on the investment list" (Development service manager).
More secure availability of resources	"If you want to be a pioneer in developing services, you need top performers …, and with our current payment structure, you cannot recruit those people" (Consultant A). "We have issues with getting good applicants; the pay grade is not tempting, and now people have other job opportunities" (Development service manager).
Consultants remain even when internal people leave	"Skilled people have left the municipality. It is even becoming a challenge that while the internal staff leaves, the consultants stay" (Consultant C). "In a way, it is quite funny that it is irrelevant whether you are internal or external. We [the consultants] are kind of standard equipment" (Consultant D).
Consulting agency bears the risks of employment	"With internal workers, we struggled with people being in the wrong projects where they had no competence or interest, or they were on sick leave or something. With consultants, we do not have such issues; if [a consultant] is on sick leave, the agency provides a replacement" (Development service manager).

Over time, the use of consultants in the IT department transformed. Instead of only contracting project managers for specific tasks, the IT department began to make long-term agreements with the consulting agencies. This was the approach, for example, when the IT department tasked one consulting agency to redesign the IT development process. The design and implementation of the process was not a specific time-bound project but rather an iterative and constantly evolving transformation wherein the consultants were tasked to both design and run the new operations. The transition of seeing consultants as a long-term resource was visible,

for example, in the decision to appoint a consultant to the role of CDO instead of an internal employee.

From the IT department's perspective, this more extensive reliance on consultants did not differ from their use in project management and did not raise the worry of unsustainable reliance on them. This was the case even though, at the end of 2018, many operations, including EA, fully relied on consultants. There was no longer even a single internal employee on the EA team. The lack of concern can be explained by the fact that extensive use of consultants was very beneficial to the IT department. For example, consultants enabled the agile responses to the business units' demands but also made the IT department look more cost-effective as the fixed costs of the IT department were low owing to the low number of employees.

It seemed that without the extensive use of consultants, the IT department would have not been able to implement its transformation efforts nor adjust to the new manner of operation. While this transition was gradual, it was significant for the IT department's operations.

4.3 Contradictions of the transformation

Despite the transformation activities having been conducted, multiple contradictions persisted in the IT department's operations that prevented effective service provision and acted as initiators of the transformation. Next, the evolution of these contradictions is analyzed.

4.3.1 Contradictions before the IT process transformation

In the spring of 2017, the IT department had been centralized for almost fifteen years, the basic IT operations had been outsourced for ten, and the struggles with EA had lasted for almost five years. All these activities were intended to help the IT department support the municipal digital transformation but were not successfully implemented. The CIO, on whose shoulders the successful digital transformation mainly lay, was in a challenging spot in spring 2017.

When the operational situation is analyzed with activity theory, multiple contradictions hindering operations are revealed. The contradictions between the factors of the IT department's digital transformation activity system in the spring of 2017 are depicted in Figure 19.

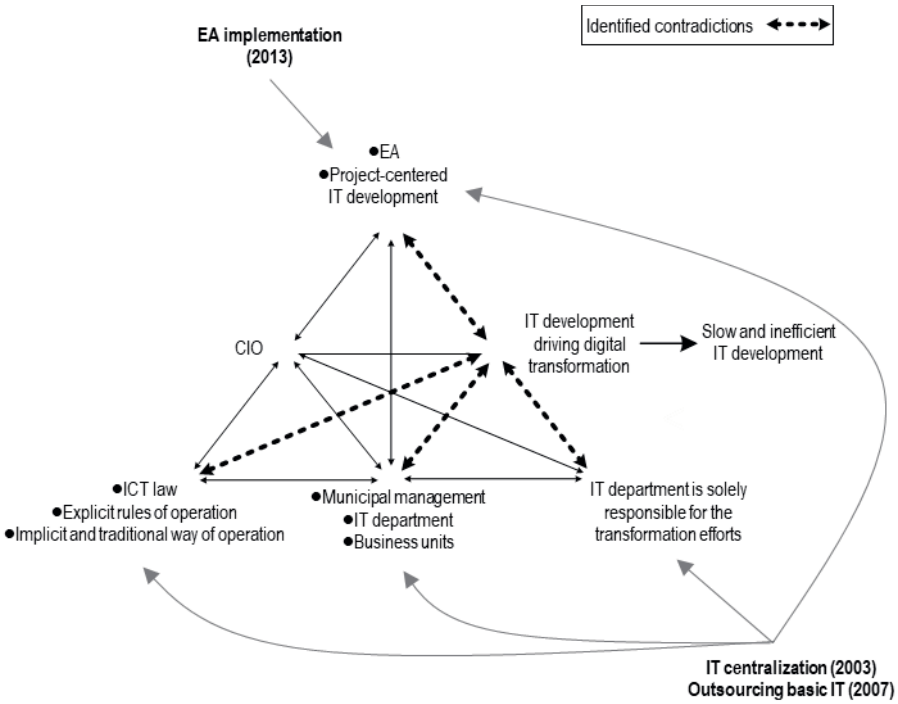

Figure 19. Contradictions of the IT department's digital transformation activity, spring 2017 (Ylinen and Pekkola 2021a).

The digital transformation activity was facing multiple contradictions in the different levels of the activity systems. Contradictions persisted within its interlinked activities, such as IT centralization, outsourcing basic IT, and EA implementation. There were also internal contradictions within the corners of the activity system and between the corners and the objective of the activity. Owing to these contradictions, the outcome of the activity was not an advancement of the municipal digital transformation but slow and inefficient IT development.

Because IT centralization, outsourcing of basic IT, and implementation of EA were not successfully implemented, they did not sufficiently support the main activity of the digital transformation. For example, the poorly executed IT centralization had resulted in the persistence of the previous norms and rules of the municipality (left corner of the activity triangle). The business units saw themselves as independent operators who were free to do their own IT development. The independence of the business units also influenced the division of labor. The municipal digital transformation was left on the shoulders of the IT department, as

individual business units were focused on their individual needs, not the holistic development of the municipality. Basic IT outsourcing had again changed the tasks of the activity and, in this way, altered the community and division of labor (bottom and right corners of the activity triangle). As many tasks were no longer part of the IT department's responsibilities, the employees had to adjust to new types of tasks, for which they were not necessarily competent or accustomed.

The EA implementation again, which was intended to provide a proper management tool for the digital transformation, was creating more work instead of providing benefits. When the EA was introduced, no clear effort was made to clarify the tools of the work, nor was there sufficient effort put into clarifying the rules and norms of the operation. The EA was also not integrated into the community, nor was the division of labor related to EA clear in the IT department, as pointed out by one of the consultants: "*We have several reference architectures. They are indeed references, not concrete. The EA work remains isolated from our projects*" (Consultant C).

In addition to the contradictions persisting in the interlinked activities, the digital transformation activity system also had internal contradictions, some of which resulted from contradictions of the interlinked activities, such as the EA implementation. The tools of the digital transformation activity were not working the way they should. This was particularly the case with the poorly defined IT development process and ill-implemented EA, both of which suffered from internal contradictions.

The IT development was not clearly defined, and the process was typically project specific: *"[Earlier,] there was nothing; things just came from here and there*" (Consultant A). The project portfolios of different business units were poorly managed, and no one had a proper overview of the situation at the municipal level. New needs were hastily collected once a year during the budgeting process, and a long-term view of the upcoming development projects was missing. Together, these practices hindered the day-to-day work and did not support the digital transformation activity. On the other hand, the EA, which was introduced as part of the toolkit for digital transformation and was perceived as an answer to many of the IT development-related challenges, was struggling with the internal contradictions presented above.

The internal contradictions of the tools (top point of the activity triangle) rendered them incapable of supporting the digital transformation activity. Instead, they slowed down processes and demanded resources without providing benefits.

As well as with the tools, there were persistent internal contradictions in the rules and norms that mediated the relationship between the CIO and the community (the municipal management, the IT department and its employees, and the business

units). These were largely the result of the poor change management efforts when the IT department had been centralized, as well as the IT department's poor ability to provide IT development services at the pace the business units would have wanted. "*Overall, change management is missing altogether. Actually, it is very common in this city …; let's just say that people are quite free to do as they please"* (Department head of the digital agency). Thus, the old ways of operation persisted. In addition to these challenges with internal operations, the legislation also restricted the digital transformation activity. For example, the legislation demanded the use of EA but provided insufficient guidelines for its usage: *"[Regulations and their development] are not visible in any way. [When creating the regulations, the Treasury] did not ask our opinions though we are one of the largest cities"* (CIO). Municipalities had to implement EA, but the guidelines were not providing proper advice on how to benefit from it. As a result, the rules and norms were hindering the digital transformation activity.

Furthermore, the community of the activity exhibited contradictions. The municipal management, while demanding the IT department to support the organizational digital transformation, was not aware of the related requirements and was unable to provide proper support: "*For now, [the IT department] is given about seven million [per year], and the management has no understanding of whether the amount will be adequate for the change they desire …, and for now, the managers brought up [the version of] change they are willing to support.… The heads of business units cannot go around saying that we should make a profit; the political playing field is very different"* (CIO).

This was the case also with the business units. Their actions were not in line with the requirements of the digital transformation activity, and they were making the CIO's job more difficult. The community-related contradictions were limited to not only the IT department's external stakeholders but also the fact that the IT department employees lacked the necessary competencies and ability to collaborate, which caused the outcome of the activity to differ from the desired one.

The contradictions within the community also resulted in contradictions regarding the division of labor. As the IT department did not have an adequate mandate and both the business units and the municipality management were not sufficiently aware of their roles, the IT department was considered solely responsible for the digital transformation, while the business units continued their individual development projects without properly understanding that these too were related to the digital transformation. This created contradictions between the division of labor and the objective of the IT department since a commitment to digital transformation on the part of the whole municipality was missing: *"Everyone was looking at their stuff, but no one was looking at the big picture"* (Consultant C). Changes had to be made.

4.3.2 Contradictions driving the transformation activities

To support the transformation, the CIO invited in a group of consultants, who were tasked with improving the tools of the digital transformation activity (i.e., the IT development process, EA, and later, the digitalization plans). The goal was to improve these tools by formalizing the IT development process and, in this way, improve both efficiency and customer satisfaction. As the EA was integrated as part of the process, the previous challenges related to the lack of objectives, focus, organizational commitment, and work management (see Figure 17) were resolved, as the EA work was now managed in the solution office.

The integration of these new tools into the activity was not easy. While the IT department's employees were slowly adopting the new practices, the changes also revealed the deep-rooted lack of commitment in the business units. Instead of following the new processes, they continued their previous way of operation. As Account manager A pointed out: "*The challenge is that when I get an idea, it is no longer in the idea state …; the contracts are almost signed.*" To resolve this challenge but also to support the new IT development process in general, the IT department introduced digitalization plans. The digitalization plans were a needed addition to the tools of digital transformation. They helped the IT department engage with the business units and improved the IT department's understanding of its customers and the IT development situation in the municipality. The digitalization plans also tightened the relationship with the business units: "*[Securing a commitment from the business units] has gone quite well. After all, these digitalization plans are accepted by the business units and their executive teams*" (Consultant C).

Besides the tools, the internal contradictions of the community of the digital transformation activity were also addressed with the increased use of consultants. These contradictions were mainly due to the growing resource demand and lack of competent workers, which was compensated by increasing the number of consultants.

Initially, this approach seemed to solve at least some of the internal contradictions. The consultants filled the gap in resources and provided valuable knowledge to the IT department concerning both the development of the IT development process and the implementation of actual IT development projects. Although initially only a quick solution to an acute problem, consultants became a well-integrated part of the digital transformation community: "*Three years ago, when I first came here, there were more than 30 internals and a couple of consultants .... Now things have*

turned upside down. It seems that even at the business units, there's no one wondering [whether I am a consultant]" (Consultant J).

The balance obtained was short-lived. While the use of consultants was beneficial, it was gradually becoming unsustainable: "*If the environment had been more stable, I think we would have gained better results. It is a miracle how much we have accomplished with constantly changing people*" (Enterprise architect). Although the consultants did provide a solution for the activity at the start, they neglected the continuity of the digital transformation activity. As the activity system and the role of consultants within it evolved, their increasingly critical role became a new type of contradiction hindering the activity of municipal digital transformation.

The process of how these contradictions drove the transformation efforts, which then revealed new contradictions that resulted in new transformation efforts, are depicted in Figure 20.

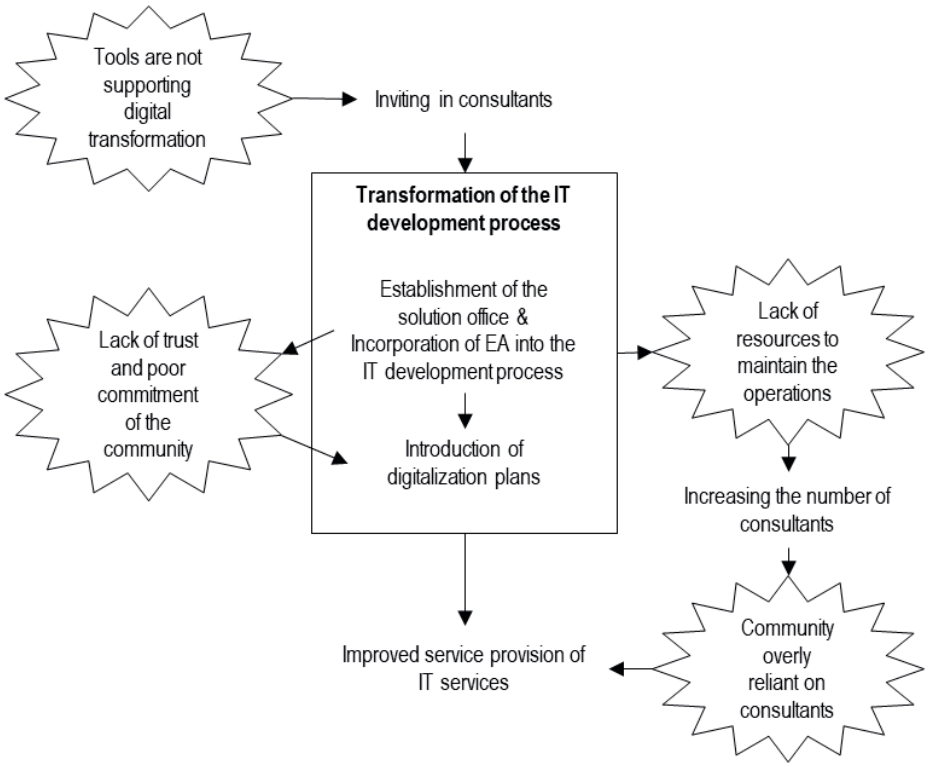

Figure 20. Contradictions driving the transformation activities.

The contradictions of the activity system drove the IT department to transform the elements of the activity system. Because the transformation efforts were directed at

solving one contradiction at a time, the IT department overlooked many critical contradictions persisting in the digital transformation activity.

4.3.3 Contradictions after the IT process transformation

The IT department's activities aspiring to mitigate the contradictions of the digital transformation improved the situation. As the transformation efforts resolved some of the persisting contradictions, they also pushed the IT department toward a more proactive way of operating. In the autumn of 2018, the IT department was more equipped to serve the business units and advance the organizational digital transformation. The digital transformation activity and its contradictions in the autumn of 2018 are presented in Figure 21.

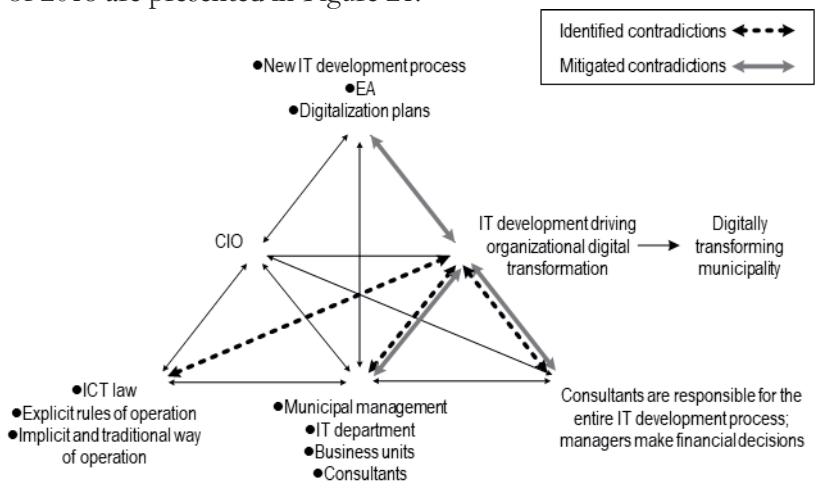

Figure 21. Contradictions of the digital transformation activity, autumn 2018 (Ylinen and Pekkola 2021a).

The transformation efforts of the IT department mitigated some of the contradictions of the spring of 2017. This was especially the case with the tools that the transformation efforts were focused on (the top point of the activity triangle). Owing to the new IT development process, a new approach to EA and the introduction of the digitalization plans, tools, and processes of the IT department were now aligned with the objective of municipal digital transformation and were supporting it.

The transformation efforts also clarified the division of labor (the right corner of the activity triangle). The new IT development process had also made the division

of labor related to IT development more transparent. The digitalization plans were again clarified as roles of the IT department and the business units in defining the current and future IT development needs faced by the business units. Previously, this had been the responsibility of the business units; now, the IT department had taken on a more proactive role. The proactiveness of the IT department also increased the commitment of the wider community, thereby increasing the legitimacy of the IT department. *"For now, the business units have randomly brought in their needs to the solution office, basically on an impulse of the day. On the other hand, we have this obvious bottleneck, our investment funds. So, digitalization plans are a way to solve the situation. When we do these plans in collaboration with the business units …, this way we will ensure that people will commit to digitalization plans more than to these individual needs that are brought to the solution office"* (CIO).

The fact that the transformation efforts focused mainly on the tools of the activity resulted in the persistence of contradictions in the rules and norms (left corner of the activity triangle) as well as in the community and division of labor (bottom of the activity triangle). For example, the consultants responsible for the redesign of the IT development process focused on fixing internal challenges. Little attention was paid to the business units and their lack of trust in the IT department when it came to IT development. This resulted in poor compliance with the new process, which partly drove the consultants to introduce the digitalization plans. Nonetheless, the digitalization plans were only a first step in securing the commitment of the business units, as pointed out by the CIO: *"We will go through one round and see; I will not do another round of the digitalization plans if nothing is achieved through them within two years."* In the case that the IT department cannot keep its promises in following the plans, the digitalization plans may be rendered useless.

Besides the lack of trust, the insufficient understanding of the digital transformation in the municipality was also largely overlooked, which also prevented the resolution of the contradiction between the community and the objective of the activity. The managers did not understand digital transformation and its requirements, so they were not committed to the transformation process.

The contradictions between the norms and rules and the objective of digital transformation persisted. While the new IT development process and, especially, the digitalization plans attempted to encourage the business units to change their independent IT development practices, some of the business units still challenged the IT department's ability to fulfill their promises. Consequently, there was the potential that if the IT department were successful in its new service provision, it could gain a legitimate position in the municipality; however, this legitimization was

bound to performance. As a result, the unfavorable power balance for the IT department persisted. This resulted in a persistent contradiction between the rules and norms and the objective of the activity.

While all the contradictions were not solved, the IT department's efforts to mitigate the contradictions also resulted in new types of contradictions, especially in the community in which the consultants had become an integral part. The initially suitable short-term solution in advancing digital transformation had resulted in growing instability in the digital transformation activity as the tacit knowledge of the IT department had been transitioned from internal workers to external consultants. The continuous and long-term digital transformation had been moved to the shoulders of a short-term solution.

The IT department focused on solving one issue at a time, putting most of its efforts into improving the tools of the activity. This prevented them from realizing that the challenges were not merely a result of poor practices and improperly utilized tools but rooted in the organizational culture of the municipality. While the new tools the IT department had introduced into use were encouraging a more proactive approach to IT development, the business units, in many ways, continued to see IT as a support function, not as a driver of digital transformation. This again made it easy to limit the IT department's power and resources, which again hindered the digital transformation efforts.

4.4 Outcomes of the transformation

The transformation activities of the IT department resulted in improved operations in that department. However, while, in general, many aspects were improved, new types of challenges also appeared.

4.4.1 Positive impacts

In line with the objectives of the transformation carried out, with the new IT development process, digitalization plans, and new agile practices, the IT department had become better equipped to support the municipal-level digital transformation. This was the result of the multiple advances that these activities created. The positive impacts of the transformation and supporting quotations are presented in Table 9.

Table 9. Positive impacts of the transformation (Ylinen 2021).

Positive impacts	Examples
Improved understanding of the operational situation	"While we have started to think [about] the future, we have quickly learned that first, we should get the existing things to work" (Account manager C).
Improved visibility of actions undertaken	"[In the past,] we have not been able to show any advancement. Now, change is approved by the business unit managers [through a commitment to the digitalization plans]" (Chief information officer).
Improved planning for the future	"[With the digitalization plans,] the understanding business units have about their internal development will improve significantly. Now, they can see their development path through these different projects" (Consultant A).
More flexible money allocation	"Now that we have the project suggestions [from the digitalization plans] and their prioritization . . ., we can start calculating, for example, that though the projects are prioritized, the project in seventeenth place costs very little, so actually, implementing that would be more beneficial than [implementing] the project in second place, as it costs so much that it has to be taken through an investment process" (Account manager C).
Improved collaboration	"[In terms of] customer collaboration—there we have gained trust; they know now how they can move things forward" (Consultant C).
Improved customer service	"This model enables us to make better investments. [Owing to this process,] investment suggestions will be added to the investment plan with a bigger probability than before" (Chief information officer).
Improved customer satisfaction	"We have gained good feedback on the way [we operate,] and . . . we have succeeded in providing what they were expecting" (Account manager A).

First, the new IT development process and its supporting functions, such as the creation of digitalization plans and better integration of EA into the operations, enabled the IT department to gain an improved understanding of the operational situation in the municipality. This included both an understanding related to the internal operations of the IT department and the as-is and to-be enterprise architectures of the municipality. For example, for the first time, the responsibilities and processes of the IT department were defined. The Kanban board provided an overview of the ongoing projects. Also, as a result of the efforts made to improve collaboration with the business unit, the IT department had an improved understanding of the ongoing projects and the needs of those units. The digitalization plans again provided an overview of what was to come.

The clearly defined processes and new practices, especially the Kanban board, also provided a better overview of the IT department's operational situation and the actions taken. Unlike before, the employees and consultants knew what others were working on. On the Kanban board, the projects and their tasks were visibly advancing. As the advancement of the projects was also assessed in greater detail, there was now also a proper record of finalized projects. Finally, the CIO had

something to show to the municipal managers when they wanted to know how the IT department was providing the services it was expected to.

With this improved understanding of the operational situation and visibility of actions undertaken, the IT department also improved future planning. In this, the digitalization plans played a crucial role. For the first time, the IT department and the business units had a shared understanding of upcoming development initiatives beyond the yearly budget. With the holistic overview of the situation possessed by the IT department and business units, the former was now able to manage its budget more efficiently, and the money allocation and transfer between different development initiatives became more fluent.

The IT department also succeeded in improving collaboration with the business units, which was one of the main intentions of the introduction of the digitalization plans. The IT department now had a clearly defined process on how the business units and their representatives were to be involved in IT development. The business unit representatives had a dedicated person to contact. Besides collaboration with the business units, the IT department's internal collaboration also improved as the solution office and the new virtual team dismantled the previously very siloed team structure.

The transformation activities and their positive impacts then helped the IT department improve its customer service. As the transformation activities created a holistic overview of the current and desired state of the municipality, as well as improved collaboration with the business units, the IT department was now able to improve its customer service. This again led to improved customer satisfaction and attitudes toward the IT department. The challenges that resulted in the initiation of the transformation activities, such as the challenging operational situation, the unclear role of the IT department, and the lack of holistic understanding, were, in many ways, solved through the IT department's transformation activities.

4.4.2 Negative impacts

The transformation activities were largely successful and received a positive reception. Despite this, there were multiple challenges with the transformation. These challenges and supporting quotations are presented in Table 10.

Table 10. Negative impacts of the transformation (Ylinen 2021).

Reasons to use consultant's services	Examples
Negative attitude toward constant changes	"I think that [it is bothering] many of the long-standing employees, and me as well, that there are changes after changes. Is there any sense in these constant renewals?" (Web designer).
Reluctance to change	"Also, [the business units] need to make changes and reorganize things. So actually, [this transformation] does not measure the change capability of the IT department but [of] the whole organization" (Consultant H).
Issues with following the new process	"I did not take the needs that came straight to me to the solution office. I tried to advance them on my own because it was possible" (Account manager C).
New types of financial challenges	"Now that project managers are asked to do realistic budget evaluations instead of excessive ones, we must tell them that a month ago, you said that you needed 70,000 this year, and now you're telling me that you need more than 70,000, but we've already relocated the money. Now, this project will start to give excessive budget suggestions again" (Project manager).
Unsustainable dependence on consultants	"Well, quite a lot of people are leaving, and they are replaced by consultants. So, that hinders the operations, and the work time is increased" (Enterprise architect). "This has resulted in uncontrolled growth of the number of consultants. Every time some new development project is started, a new consulting agency is brought in. [The IT department] is on this endless tendering treadmill" (Consultant A).

First of all, the IT department employees were growing tired of the continuous changes. The consultants took an iterative approach to the design of the new IT development, which enabled them to improve it constantly. The employees of the IT department were not used to this type of approach, which resulted in a growing negative attitude toward the constant change. The benefits of incremental improvements compared to a one-time holistic transformation were not conveyed from the consultants to the employees. Although for the consultants, these changes seemed incremental, this was not the case among the internal employees who were, some for the first time, facing a requirement to adapt constantly to previously unfamiliar practices. Reluctance to change was increasing.

The reluctance to change was also visible among the business units. For example, these units were accustomed to using their budgets as they wished. When the IT department adopted a more proactive approach, the business units lost some of their power to the IT department. Although the digitalization plan process indicated that the business units were content with the IT department's operations, the former still tended to conduct independent development projects.

The new development process was mainly communicated by the consultants and presented via complicated EA models. These models provided an all-inclusive overview of the changes but did not properly clarify how the process would work in

practice nor how the IT department's employees should change their work practices. As a result, the new process was not necessarily followed as intended. Because the new process was designed by consultants who were not necessarily that familiar with the existing structures and working practices of the IT department, many ordinary aspects of the new way of working were not clarified. For some employees, this was an opportunity, while others were more comfortable following the old rules and structures.

The more agile approach also attempted to leave more power to the individual employees, which caused issues. Employees were flustered that there was no higher-level decision-making body to provide clear rules on how things should be done or, for example, whether previous performance evaluations were still valid. It was safer for the internal employees not to follow the new and vague guidelines as doing so was not necessarily beneficial to them. This resulted in, for example, behavior whereby the employees intentionally focused on advancing IT development projects of the business unit they were originally assigned to instead of following the new process and competence allocations.

Furthermore, new types of financial challenges appeared. Because the IT department changed its process of allocating money to a more flexible approach, the project managers were flustered in the face of new demands related to budgeting their projects. The project managers were now facing growing responsibility in defining project budgets. Unlike before, the IT department was now able to move money from one project to another flexibly. For the project managers, this meant that they needed to be very precise in evaluating their budgets, as underestimation could result in financing issues as there was no longer money "lying around"; however, overestimation would result in slowing down other projects. This challenge also created a confrontation between the business units because the IT department's budget was no longer divided among these units.

Additionally, the solution to the lack of resources (i.e., the consultants) began to reveal its problems. While consultants were an excellent solution for the short-term resource shortage, keeping a team of costly consultants working full-time to replace regular staff was not cost-effective. Over time, the consultants had become a critical force keeping the new IT development process operational, which resulted in unsustainable dependence on consultants. This had multiple negative implications (see Table 11. for a list of negative effects and supporting quotations).

Table 11. Negative effects of extensive reliance on consultants (Ylinen and Pekkola 2021b).

Negative effects	Quotations
Knowledge is not rooted in the organization	"Well, this is quite a special situation. New consultants come in, and a lot of old information is just lost" (Department head of the digital agency).
Expensive	"Let's just say that it has been an expensive service that they have tendered" (Consultant H).
No long-term guarantee that the consultants with the tacit knowledge will stay	"Our main architect left our agency. Now we have [name removed,] who is now the main architect" (Consultant A). "Another company won the bidding. We got new coworkers from [the new agency]. Then the city realized that it cannot let us go, and we had to dig up some old framework agreements so we could stay for now" (Consultant A).
Not enough knowledge about the organizational culture or operations	"Now that we have these outside consultants as project managers, I don't think that we can talk about our culture anymore …. Of course, [our] own employees can also change constantly ..., but now, there are always newly appointed external project managers [to whom] you need to explain how the budget works …. There is a continuous need to help them" (Project manager). "I would say [that in this current situation] where the consultants brief other consultants, the end result cannot be good. Even the consultants who have been here the longest don't possess the same knowledge as internal employees do" (Account manager A). "It would be wrong to say that it has no influence …. [W]e have to adjust and transfer as much information as we can …" (Development service manager).
No internal workers to provide briefing	"The briefing has been quite scant" (Consultant E). "We have wasted lot of time because they [the consultants] have not been taught properly about what we are trying to accomplish here" (Web designer).
Time lost when new consultants are constantly coming in	"As a lot of people leave and are replaced by consultants, of course, we are not as efficient as we could be; the schedules are prolonged, etc." (Enterprise architect). "Of course, it takes extra work when new guys come in" (Consultant E).
Tensions between internal and external workers	"From my point of view, the work would be more meaningful [if I could work with internal employees.] Working with the consultants, you get more of these sudden changes, and they think more about their own agency even though we are their customers" (Enterprise architect).
Business units prefer internal employees	"Well, the consultants are surely competent. But I have faced many situations where [the business units] are like, 'Oh, a consultant; could we have an internal worker instead, please? A kind of person who is employed by the city'" (Department head of digital agency).
Unmanageable number of consulting agencies	"This is visible in the uncontrollable increase in the number of consultants. Every time something new is started, it is done by a new consulting agency …; now, the municipality has at least ten IT consulting agencies working for it" (Consultant A).
Complete reliance on consultants	"Even though I myself am working here as a consultant, I do not think that we can build this operation upon ourselves, that is, consultants. Now, the whole circus is run by external workers" (Consultant C).

First, because the consultants had become responsible for the everyday operations in the IT department, knowledge related to IT development was no longer rooted there. Instead, the consultants had become the gatekeepers of operations in the IT

department. While initially, this was beneficial to the IT department as the consultants were as knowledgeable about the operations as internal workers, the consultants were only there for the duration of their contract. While the reliance on consultants grew, so did the contracts, which forced the IT department to engage in laborious tendering processes, meaning that it was no longer in the IT department's hands to ensure that the consultants holding tacit knowledge of the operations would remain.

For example, at the beginning of the transformation, the IT department had tendered the EA work to a single consulting agency, which then redesigned the EA work practices and governance models. When the EA contract ended, the work had to be tendered again, and a new agency took over. Because at this point, the IT department had no internal enterprise architects, all the tacit EA knowledge resided within the initial consultants. The IT department had to bring in new consultants but could not let go of the old ones. The results were, on the one hand, the creation of a new and looser contract with the initial agency so that the old consultants would not leave, and on the other, that the official EA tasks were handed over to new consultants from another agency. The IT department was facing a situation where they had several large concurrent contracts with different consulting agencies. At the end of the day, the number of consultants and contracts had become unmanageable.

Meanwhile, the number of internal workers was decreasing, making the consultants who had been working in the IT department for years the key holders of the IT department's tacit knowledge. Owing to their accumulated knowledge and expertise (and the difficulty of hiring people in the public sector), these consultants were appointed to managerial positions and were becoming invaluable to the municipality. This knowledge, while extensive, was not at the level of internal operations. The consultants were not familiar with the organizational culture and operations, which was visible, for example, in the change resistance among the internal employees, which the consultants failed to take into consideration. Because the consultants were also not responsible for providing each other with an orientation, knowledge was not properly transferred throughout the IT department. A lot of time was lost as new consultants attempted to get familiar with the IT department.

As the number of consultants grew, there were also tensions building between the internal employees and external consultants. The internal employees felt that it was their responsibility to make sure that their work would benefit the IT department and the municipality but felt that their views were not necessarily listened to. Similar

attitudes were evident among the business units, who would have preferred internal employees.

While focusing on the benefits gained from individual consultants and contracts, the municipality outsourced its tacit knowledge. Eventually, the municipal officials felt that the only reasonable way out of this unmanageable locked-in situation was to outsource the whole of IT development. The outsourcing decision was officially announced right after the case study ended.

5 DISCUSSION

This chapter will first present the different activities of the IT department in light of the current literature. It will then proceed to provide answers to the research questions and, finally, present the practical implications of this dissertation.

5.1 Advancing organizational digital transformation in the public sector

In the case studied, the initial push for the IT department's digital transformation can be traced to the growing service demand of the municipal business units. As the IT department was suffering from difficulties in responding to this demand, a larger-scale transformation in the IT department was initiated. This transformation included multiple activities, which revealed tensions and a need for further activities but also resulted in transformation outcomes influencing the operations in the IT department and municipality. The general steps of this transformation are presented in Figure 22.

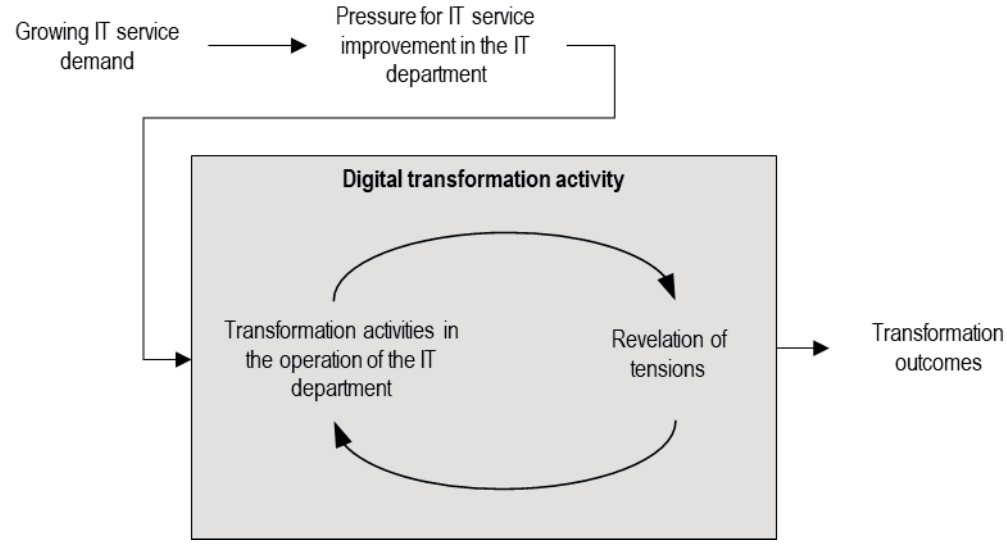

Figure 22. The digital transformation process in the IT department.

Next, the digital transformation process in the IT department is discussed in light of the current literature. First, the environmental changes and their role in driving the IT department to improve its service provision are discussed. Then, the different transformation activities are considered. Finally, the outcomes of the continuous transformation process are analyzed.

5.1.1 Environmental change and pressure to transform

In the IT department, the initial push for the transformation came from the growing IT service demand of the business units to which the IT department was not able to respond with its existing processes and resources (see Figure 22). Notably, previous studies of organizational digital transformation often emphasize the role of responding to environmental and organizational disruptors as the starting point of digital transformation (Bockshecker et al. 2018; Carroll 2020; Chanias et al. 2019; Matt et al. 2015; Vial 2019). One key disruptor is technology, which has been seen as one of the main drivers of digital transformation (Tangi et al. 2021; Vial 2019; Wessel et al. 2021). Also, in this case, technological change was one of the influencing background factors and, in this sense, a relevant disruptor (Muehlburger et al. 2019; Vial 2019); however, it does not explain the initiation of the transformation. Instead, ongoing societal change, including the growing number of residents, created pressure on the municipal business units to improve their service provision, which eventually resulted in pressure on the IT department to transform. While improvements in digital technologies enabled the municipality to consider technology as the solution for their operational issues, technological change was not the driver but the enabler of the transformation. Thus, technology was the facilitator of the change (Orlikowski 1992), not its driving force.

As the number of residents in the municipality was growing, the different business units needed new types of solutions to serve the growing demand. Support for the creation of these solutions, at least in principle, was expected to come from the IT department, which resulted in growing IT service demand. However, the IT department was struggling with its operations and was not equipped to provide the support the business units needed.

At the IT department, the inability to respond to the growing service demand of the business units was initially seen as the fault of EA, which was consuming the IT department's resources without providing sufficient benefits. The IT department's desire to blame EA for the challenges was understandable, as EA, in general, is well

known for its problems (Al-Kharusi et al. 2016; Banaeianjahromi and Smolander 2016; Cram et al. 2015) and difficulties related to benefit realization (Aier and Simon 2012; Niemi and Pekkola 2016). In the IT department's case, the EA issues arose from poor tension management, not necessarily from traditional EA-related challenges. When the IT department finally began to analyze these challenges, it became clear that the IT department was suffering from larger-scale operational issues that needed to be solved.

The pressure to improve the service delivery (see Figure 22) was caused by multiple tensions persisting in the IT department's operations that prevented successful operations even though these tensions were visible, especially in relation to EA. Many of the tensions represented uncertainty about the future role of the IT department. The long-term strategies were especially unclear. This was particularly evident with tensions related to the lack of focus of EA (see Figure 17), which were closely linked to questions such as *Who is the customer of the IT department?*, *What is the product or service they are providing?*, and *How the services will be served?* (cf. Hill and Jones 2014; Sanchez and Heene 2004). The paradoxical tensions related to the lack of EA work management again can be linked to the strategic management of organizational resources (Huselid et al. 1997; Sanchez and Heene 2004), indicating a clear need for the IT department to clarify its long-term role in the municipality (David 2007).

Together, these challenges made the situation in the IT department unsustainable. This was also clear at the higher levels of the municipality, which resulted in pressure on the IT department to improve its operations, or the municipality would have to seek out other options to serve the municipal business units. Thus, the IT department had to transform to survive.

When the initiation phase of the digital transformation is compared to examples in previous research, multiple differences can be identified. For example, unlike in the previous literature (Bharadwaj et al. 2013; Holotiuk and Beimborn 2017; Mithas et al. 2013; Oestreicher-Singer and Zalmanson 2013; Vial 2019), the transformation in the IT department was initiated at the operational level, not through strategy formulation and implementation. The motivation behind the initiation of the transformation was more of a necessity than a desire to gain any strategic advantage. This contradicts the typical objectives of digital transformation, such as the desire to secure a competitive advantage (Kahre et al. 2017; Vial 2019) and innovativeness (Kahre et al. 2017). After the number of consultants in the IT department grew, new types of objectives for the transformation were introduced. The objectives were no longer limited to survival but, as Hess et al. (2016) suggest, included a desire to learn

to promote innovation and business development. The core motive for the transformation remained.

At the municipal level, the desires corresponded more with the objectives identified in the literature. Nonetheless, even in the case of the municipality, the push to digitally transform did not come from a desire to benefit from the new technologies but rather from a desire to cope with the demands of the operational environment. The municipality was not necessarily trying to succeed in the long run but to cope with the challenging operational environment that it found itself immediately facing. Therefore, the initiation of the digital transformation appeared to be a necessity, not a tool to gain strategic advantage. This lack of strategic focus contradicts the findings of previous studies emphasizing the role of strategy in organizational digital transformation (Chanias et al. 2019) and the fusion between IT and business strategy (Bharadwaj et al. 2013; Kahre et al. 2017).

The lack of intentionality and strategic perspective in the transformation can be explained by the operational situation in the IT department. After its centralization, the IT department had become accustomed to its unclear role in the municipality and the poor legitimization it received from the municipal top management. It was not intuitive for the IT department to take the lead in introducing or suggesting a more strategic approach to the organizational digital transformation, especially as its current operational capacity might not enable it to fulfill the requirements that the new strategy might put on them. Consequently, a strategic approach was not a viable option, although strategic initiatives related to digital transformation are expected to improve organizational capabilities by leveraging digital resources and creating value through existing products and services as well as by creating new services (Bharadwaj et al. 2013; Chanias et al. 2019). For the IT department, the digital transformation was not a strategic objective but an operational approach to address its troublesome situation.

Moreover, the transformation in the IT department indicates that digital transformation does not need to have a strategic response from the start, nor does the initial goal have to be the redesign of the organizational value proposition (cf. Wessel et al. 2021). Instead, the objective can be to improve the current operational situation without any strategic intent: for example, to improve existing service provisions to enhance the ability to respond to growing service demand. This finding is in line with the work of Lanamäki et al. (2020), who questioned the concept of intentionality concerning digital transformation.

5.1.2 Digital transformation activity

The digital transformation activity in the IT department advanced through an iterative process whereby transformation activities conducted in the operations of the IT department followed one another (see Figure 22). While each transformation activity often improved the situation, it also revealed new problems requiring additional transformation efforts. For example, EA implementation revealed multiple persistent tensions in the IT development process, which resulted in the transformation of this process. The transformation of the IT development process again revealed challenges in the relationship between the IT department and municipal business units, resulting in the introduction of digitalization plans.

The solutions for the identified challenges (i.e., tensions) largely resembled approaches suggested as necessary in organizational digital transformation, such as the introduction of agile practices. Many of the implemented transformations improved the IT department's operations but also entailed the revelation of new tensions.

To clarify the role of the different transformation activities in the IT department's digital transformation process, they will next be discussed in light of the current literature. In this, special attention is given to two perspectives: the introduction of new values and practices and the introduction of new organizational assets.

5.1.2.1 Introducing new values and practices

In accordance with the literature (cf. Fuchs and Hess 2018; Gerster et al. 2018; Vejseli et al. 2019), the IT department introduced agile values to its operations in an effort to improve its ability to respond to the growing demands of the municipality. In the IT department, the agile implementation centered around the new IT development process, through which the IT department incorporated agile values suggested by previous literature. These included improved empowerment of employees (Olsson et al. 2004), a shift in the focus from contract negotiations to collaboration (Mergel et al. 2020), and learning to focus on responding to change instead of relying on pre-planning (Lappi and Aaltonen 2017).

First, the IT department improved the *empowerment of employees* by establishing the solution office and the virtual team responsible for it. As the virtual team brought together employees from the siloed teams and was not bound by the official structures of the IT department, the IT department's employees and the consultants could collaborate more efficiently. As people were selected to work on different

solution development projects based on their skills and competencies, the existing knowledge and know-how of the employees could be utilized more effectively, as suggested by previous literature (Janssen and van der Voort 2016; Mergel et al. 2020; Olsson et al. 2004). The empowerment of employees also appeared to improve the IT department's ability to respond to the needs of the business units more effectively.

As suggested by Janssen and van der Voort (2016), adopting agile practices, such as the empowerment of employees, in the public sector is not necessarily as simple as in the private sector. This was the case in the IT department as well. The organizational rules and structures, for example, limited the extent to which employees could be empowered to decide collectively who would work on which project. The CIO did not have the right to dissolve the IT department's siloed team structure; therefore, the empowerment of employees relied on unofficial team structures, such as the virtual team. While this unofficial team improved collaboration between the different siloes, the work contracts of the employees stayed the same, forcing the employees to balance their "official" with their "virtual" duties.

Efforts to empower the employees also suffered from employees' difficulties in following the new process. These types of challenges in agile adaptation are typically explained in terms of unsuitable organizational structures, mismatches in values (Hekkala et al. 2017), insufficient capabilities, and the lack of motivation and an agile mindset (Fuchs and Hess 2018). In the case of the IT department, the unsustainable organizational structures hindered the adoption of the new way of working, while the other challenges were largely overcome due to the extensive use of consultants, who were not bound by the previous values, existing capabilities, or lack of an agile mindset. The challenges faced by the IT department in attempting to incorporate agile processes can be explained by unsuitable organizational structures, which encouraged the IT department's employees to work independently to advance their projects as this enabled them to benefit the business unit for which they were structurally responsible. This is in line with the suggestions of Janssen and van Der Voort (2016) and Mergel et al. (2020), who have pointed out that bureaucratic structures of public sector organizations are one of the key challenges in incorporating agile values into the public sector context. In the case of the IT department, the extensive use of consultants mitigated this challenge significantly.

In addition to the empowerment of employees, the IT department began to *shift from contract negotiations to collaboration*. This was especially visible in the relationship between the IT department and the municipal business units. The new IT

development process played an important role in this transformation as well and directed the IT department in a more proactive direction. This proactivity, especially at the front-end of the IT development process, guided the IT department to rely more on collaboration than contract negotiations.

The relationship between the IT department and the business units was also improved owing to the dedicated contact persons and the active involvement of the business units in the solution development. Additionally, the digitalization plans improved this relationship because the planning process enabled the business units to become more familiar with the IT department, which, in turn, was enabled the IT department to become more familiar with the needs of the business units. Together, these improvements enhanced the collaboration, as suggested by Fowler and Higsmith (2001). In line with the findings of Janssen et al. (2013), the focus on collaboration also enabled the IT department to successfully increase its understanding of the different stakeholders, which again improved collaboration and enhanced the IT department's ability to provide services and drive the digital transformation.

Although the IT department managed to increase collaboration with the business units, this collaboration was largely delimited by the IT department's ability to keep its promises. Through the collaboration, the IT department was building trust, but in the case that they could not fulfill the digitalization plans, the business units would most likely demand a return to more contract-based operation.

Third, to improve its ability to support the municipal digital transformation, the IT department began to *respond to change instead of relying on plans*. By virtue of its more proactive approach in collaboration with the business units, clarification of roles and processes, and especially because of the digitalization plans, the IT department gained a better overview of the situation in the municipality. As suggested by the previous literature (cf. Olsson et al. 2004), the improved understanding of the situation in the different business units better equipped the IT department to monitor and respond to environmental feedback.

In the IT department, this better understanding of the operational situation also improved the money allocation for IT-related projects. Instead of possessing only a snapshot of the needs of the business units once a year during IT budgeting for the next year, there were now prioritized four-year plans. This again enabled more flexible money allocation, where funds could be moved from halted projects to new ones when necessary. The two-week development cycles in the solution office provided an opportunity to reevaluate the situation of ongoing IT development

projects more regularly, and this way enabled the IT department to respond to change instead of merely blindly following the original IT project plan.

The introduction of agile approaches enhanced the IT department's ability to advance organizational digital transformation, as suggested by the previous literature (cf. Vial 2019). However, the challenges emphasized by the previous literature, such as the contradictions between stability and agility (Janssen and van der Voort 2016), were not the key issues arising from the case. Instead, the findings show that the challenges of introducing agile approaches are a result of a deeply rooted operational culture where business units, as well as individual projects, fight for scarce resources instead of working to build trust and improve collaboration. While the rules and regulations have been identified as challenges for transformation in the context of the public sector (Savoldelli et al. 2014), these do not necessarily play a significant role in the operations as expected. Instead, as long as there is a willingness to collaborate and build trust, the bureaucratic structures of public sector organizations can be overcome.

As previous research has suggested (cf. Vial 2019), implementation of agile values alone is not enough to enable continuous digital transformation; ambidexterity is also needed. For example, the IT department's short-term focus resulted in unsustainable reliance on consultants in the long run. The need for ambidexterity was also evident in the contradictory demands the IT department was facing. The IT department needed to improve productivity while becoming more proactive. While the demand for operational efficiency required explicit and stable processes, the CIO understood that the current processes would not serve the IT department in the long run. This need to balance stability with agility (Janssen and van der Voort 2016) or exploitation and exploration (Magnusson et al. 2020) are contradictions that many have long attempted to solve with ambidexterity.

To cope with the contradictory operational demands, the IT department separated the demands for efficiency and proactivity. This approach closely resembles structural separation, which is one approach to achieving organizational ambidexterity (Simsek et al. 2009). Here, structural separation was achieved by recruiting consultants to take care of the proactiveness while the existing resources (i.e., the internal employees) continued to take care of the existing processes, but in a more structured and efficient manner. To some degree, this separation did work, and the IT department achieved a more harmonic way of operation, as suggested by previous research on adapting ambidextrous approaches (Simsek et al. 2009). While the IT department did adapt ambidexterity to some operations, it did not successfully incorporate it into all aspects of the operations, for example, the use of consultants,

probably because there was no proper comprehension in the IT department that in a continuously changing environment, the role of consultants would also change.

This indicates that while ambidexterity has been suggested as a suitable approach to coping with the contradictions of digital transformation (Magnusson et al. 2020), its utilization in continuous transformations can be challenging. The research on ambidexterity has focused on static environments (Heracleous et al. 2019; Luger et al. 2018; Raisch and Birkinshaw 2008) and does not provide sufficient guidance on how to utilize ambidextrous approaches in fast-changing environments. As the case shows, this was a skill that was critically needed when the organization began its digital transformation. In sum, the degree and velocity of digital transformation can make using approaches that are suitable for stable environments difficult to utilize elsewhere (cf. Bharadwaj et al., 2013).

5.1.2.2 Introducing new organizational assets

The IT department incorporated many of the new organizational assets suggested by the existing literature: it brought in new capabilities (Hafezieh and Pollock 2018), increased digital leadership (Muehlburger et al. 2019), introduced the role of CDO (Horlacher et al. 2016; Tumbas et al. 2018), formulated hybrid project structures, and put a great deal of effort into improving collaboration with the business units (Mueller and Renken 2018). Also, the existing digital transformation assets, such as the EA (Ajer and Olsen 2018), were transformed to support the more holistic IT management.

Many of these asset introductions relied on and were promoted by the extensive number of consultants working in the IT department. These consultants brought in new capabilities, encouraged the IT department's digital leadership, acted as the CDO, as well as designed and supported the IT department with hybrid project structures and customer collaboration. While the transformation of the other organizational assets improved the operations in the IT department in many ways—and this way the finding confirms their benefits—the use of consultants as long-term transformation support was not as simplistic.

While seeking to improve its ability to support organizational-level digital transformation, the IT department became consultant reliant. The rationale for reliance on consultants was similar to the one in use and identified by previous literature, such as the fact that internal employees are often difficult to hire in the public sector due to the bureaucratic structures, and long-term employees are not the best fit in an operational environment with rapid project turnarounds and

assumed competence of the consultants (Rosenblum and McGillis 1979), all of which make consultants seem like a good solution to a lack of internal resources. Unlike internal employees, consultants were also presumed to provide a quick and flexible solution to resource shortages (cf. Kalleberg et al. 2003).

The initially positive attitude toward consultants acted as a good foundation for the relationship between the IT department and the different consulting agencies. The client-consultant relationships with different consulting agencies were formed similarly to the way suggested by previous literature (cf. Coelho et al. 2016; Pozzebon and Pinsonneault 2012; Robey et al. 2002) and were based on the expectation that the consultants' role in the IT department was to provide additional expertise in digital transformation, while the IT department would hold on to the knowledge related to operations. These relationships were based on specific written agreements, similar to Coelho et al. (2016), but the consultants were perceived more as partners than contracted extra resources. The initial client-consultant relationship in the IT department resembled that of a partnership (cf. Pozzebon and Pinsonneault 2012), where potential issues, such as consultant dependency or mistrust in consultants (Robey et al. 2002), were not detectable.

Over time, this client-consultant relationship evolved. Similar to the depiction of Pozzebon and Pinsonneault (2012), in the beginning, the consultants were brought in as experts. Because of the imbalance in the knowledge related to digital transformation between the IT department and the consultants, the consultants had the upper hand. As the IT department did not see this as a problem, inadequate effort was put into knowledge transfer from the consultants to the IT department employees. When the consultants eventually left or were changed, the IT department was left powerless. This resembles examples provided by Pozzebon and Pinsonneault (2012), although unlike in their examples, the powerlessness was exaggerated by the fast-changing personnel structure where the consultants were replacing a rapidly shrinking number of internal employees.

As the personnel structure of the IT department began to evolve, also the consultants' roles began to transform. Previous studies acknowledge that the evolution of the client-consultant relationship is possible (Pozzebon and Pinsonneault 2012), but these studies focus on the use of consultants in projects with clear objectives and endpoints (Coelho et al. 2016). The IT department often did bring in consultants for a specific task or project but was unable to let the consultants go afterward. For example, one management-level consultant was initially brought in to help the IT department solve its challenges with EA. From this initial task, he moved to redesign the IT development process, after which he became responsible

for the virtual office and, eventually, was nominated for the CDO of the municipality. Eventually, this one consultant had a better view of the operations than the internal employees, but unlike the internal employees, he was not there to stay.

The assumption that the consultants were more capable than the internal employees also largely defined the trajectory of the client-consultant relationship. Due to trust in the consultants' competencies, they were granted extensive access to the knowledge, resources, and important roles in operations (cf. Pozzebon and Pinsonneault 2012). While previous studies do acknowledge changes in aspects such as the power balance, they do not acknowledge the continuous nature of digital transformation and how the objectives, needs, roles, and resources can drastically evolve throughout the period when consultants are contracted.

In the case of the IT department, this drastic change resulted in the IT department unintentionally outsourcing its tacit knowledge. Warnings have been sounded about this kind of involuntary outsourcing of tacit knowledge. For example, Perl and White (2002) cautioned that if tacit knowledge were lost to consultants, public sector organizations might end up losing their capability to think for themselves. The pace at which this happened in the IT department was surprisingly fast.

This dissertation shows that while the utilization of consultants as a tool to bring in new organizational assets can result in positive outcomes, these assets do not automatically become part of the organization if proper attention is not paid to their integration. In particular, the challenges of over-reliance on consultants show that when organizations use short-term solutions in a continuous transformation, unexpected challenges can manifest themselves. In the IT department's case, the initially temporary use of consultants' services became a permanent part of the IT department and its operations, leading to the outsourcing of those operations. Note that this outcome was not the result of ill intentions of the consultants (cf. Lapsley and Oldfield 2001), nor was it the result of a poorly managed client-consultant relationship (cf. Robey et al. 2002). Instead, the focus on operational factors led the IT department astray, and proper attention was not given to the long-term consequences. When the long-term effects started to materialize, it was already too late to change direction.

5.1.3 Transformation outcomes

The digital transformation activities of the IT department resulted in multiple outcomes (see Figure 22). The IT department improved its operational situation. The initial challenges, such as the challenging operational situation, unclear role of the IT department in the municipality, and lack of holistic understanding of the operational situation, were all resolved to some degree. The transformation activities also helped the IT department improve the digital service channels, define the processes and IT infrastructure, renew the work practices, align the transformation initiatives, define the necessary governance, and strengthen collaboration with the business units. These are benefits that have been recognized in previous digital transformation studies as well (cf. Berghaus and Back 2017). Moreover, the IT department improved its customer orientation while conducting continuous and iterative transformation (cf. Chanias 2017).

In this further improvement of capabilities, the transformation to agile practices played a vital role. Many of the positive outcomes from adopting agile practices, such as improved understanding of the operational situation, flexibility, and better customer collaboration, which are typically identified with the private sector context (Weingarth et al. 2018), also applied to this context. Again, the challenges were more context-dependent and resulted from factors such as the rules and regulations of public sector organizations that prevented the full adoption of agile values, such as the empowerment of employees. Some challenges, for example, the reluctance to change and fatigue toward constant change (Paasivaara et al. 2018), are generally recognized challenges; however, because of the way more context-specific challenges were solved, these issues were not properly managed.

Moreover, the transformation was also not limited to the IT department; it also required the business units to change. While the new IT development process directed the business units to contact the IT department in a more formalized manner, the new processes also attempted to change the business units' old habit of conducting IT development projects independently. The IT department had to work on changing the presumptions of the business units so that they would change their attitude toward the IT department. The business units had to give up some of their independence while simultaneously committing to the digitalization plans and the prioritization of projects. Disappointment experienced when some projects were not seen as the most important to execute was no longer so easy to blame on the IT department.

Besides changing their attitudes toward the IT department, the business units also needed to change their attitudes toward each other. As the funds for IT projects were no longer dedicated once a year and money was instead flexibly allocated between projects, the funds first intended for one business unit could be used to benefit another. The business units were now more clearly competing for the same resources. Furthermore, the organizational culture in the municipality hindered agile adoption yet again as the lack of trust among different operators resulted in challenges in financing new IT development projects. And while the organizational culture did indeed hinder the transformation, it did not prevent it altogether and was partly mitigated by managerial activities, which is in line with the findings of Tangi et al. (2021).

The outcomes of the transformation were largely operational. The lack of strategic perspective resulted in a narrow approach to digital transformation (cf. Berghaus and Back, 2017). These outcomes were limited to within the municipality as their focus was to improve internal efficiency and further the capability to provide services to the residents. The focus on improving existing services contradicts the findings of Wessel et al. (2021), who see digital transformation as resulting in a redefinition of the organizational value proposition. Because the present study focuses on an IT department that, during the case study, did transform its value propositions, it is possible that when the transformation extends to other parts of the organization, a similar redefinition of value propositions at the municipal level could be detected.

5.1.4 Summary of the digital transformation process in the IT department

When the digital transformation process in the IT department (see Figure 22) was compared to previous conceptualizations of digital transformation processes, both internal and external factors previously suggested as drivers of digital transformation were identifiable (cf. Vial 2019; Wessel et al. 2021). However, the roles of strategy and technology were not as significant as previously suggested. The digital transformation activities were driven by operational necessity instead of organized initiatives guided by digital business strategy (Bharadwaj et al. 2013), digital strategy (Stockhinger and Teubner 2018), or digital transformation strategy (Chanias 2017; Matt et al. 2015).

The transformation activities with which the IT department aspired to improve its ability to provide IT services resembled those suggested in the literature (Vial

2019). Nonetheless, as Figure 22 shows, the introduction of the different approaches supporting organizational digital transformation was not a straightforward process following a predefined plan but rather an iterative process wherein new transformation initiatives were introduced when the previous initiatives revealed tensions demanding mitigation. This iterative process shows how the different digital transformation activities become intertwined and create a continuous process of digital transformation.

Finally, the transformation outcomes were positive in many ways and beneficial when considered in relation to the initial objective of the transformation (i.e., the desire to improve the service delivery of the IT department). The outcomes show that while the initiation and conducting of transformation activities were largely limited to inside the IT department, these activities also influenced the other parts of the municipality. First, through improvements in IT service provision, the municipal business units g improved support for their digital transformation efforts. Second, owing to the changes in the dynamics of the IT department's collaboration with its stakeholders, the new values and practices were also slowly spreading to other parts of the municipality, creating a good start for the organizational level transformation.

5.2 Answers to the research questions

In the following subchapters, answers are provided for the two main research questions: (1) *How can the digital transformation of a municipality be initiated and advanced by its centralized IT department?* and (2) *What kinds of tensions can be identified in a process of organizational digital transformation?* Answers are also provided for the two sub-research questions: (2.1) *What is the role of these tensions in the evolution of digital transformation?* and (2.2) *What kinds of pitfalls might these tensions generate?*

5.2.1 Question 1: How can the digital transformation of a municipality be initiated and advanced by its centralized IT department?

The findings show that transformations implemented in the IT department had multiple benefits that improved the IT department's ability to support the municipality in its digital transformation efforts. These transformation activities included both introductions of new values and practices, such as a more agile way of

operation, as well as new organizational assets, such as the introduction of the role of CDO, increased digital leadership, and the introduction of new capabilities. The IT department also improved its collaboration with the business units, formulated hybrid project structures, and integrated EA into the core of its IT development process, all of which, in light of the findings, are useful approaches to help public sector IT departments advance organizational digital transformation.

The findings also show that the mere introduction of these different assets does not guarantee improved ability to advance organizational digital transformation. For example, the initial introduction of EA into the IT department seemed, at first, only to hinder the IT department's ability to provide services by demanding resources without creating value, although the actual issue was more deeply rooted in the IT department's operations, which prevented the proper utilization of EA. For the IT department, the improved ability to support the organizational digital transformation did not rely merely on adopting the new but also on fixing the old.

Besides introducing new assets, values such as agility and ambidexterity also need to be incorporated into all aspects of the operations. For an IT department to become more equipped to support organizational digital transformation, the new values need to be properly integrated into attitudes and not merely guide, for example, IT development processes. In the case of agility, this can mean attention to constant improvement. For instance, when the challenges of the EA revealed more deeply rooted issues in IT development, the IT department began to transform the IT development process. Again, when it was revealed that the new process was not being followed, the IT department introduced digitalization plans to improve the commitment of the business units.

The findings also show that while public sector organizations often have more bureaucratic structures that are not necessarily in line with the new values of digital transformation (such as agility), this was not as critical an issue for the IT department as the current literature on agility in the public sector would indicate. Although the incorporation of agile practices demanded innovative approaches for the IT department to cope with the restrictive nature of the organizational structures as well as to reveal deep-rooted mistrust between the business units and IT, the case showed that agile approaches also have great potential in the public sector. When aspiring to advance organizational digital transformation, the incorporation of agile practices is not only beneficial but also necessary in the public sector.

The challenges with the use of consultants also show that agility on its own is not a sufficient approach to advance digital transformation. For example, the consultants were an agile solution for the resource demands in the IT department. Bringing in

one more consultant when the need arose seemed a sensible and fast solution for a short-term need. However, in the long run, this approach corroded operations and eventually forced the municipality to outsource its IT development. When introducing an agile way of operation, it is also important to incorporate ambidexterity.

Agility encourages constant sensing and reacting to change (Mergel et al. 2020), which can take attention away from the long-term perspective. While digital transformation requires the ability to adapt continually to the changing operational environment, its objective is long-term, not short-term success (Bharadwaj et al. 2013), meaning that organizations should learn to strike a balance between these two contradictory demands (Simsek 2009). As the findings of this dissertation show, obtaining this balance can be very challenging, especially as it can be difficult to detect when the long-term view is not being properly considered.

When a centralized IT department aspires to advance the digital transformation of a public sector organization, proper attention must be given to the integration of agile values and the incorporation of an ambidextrous attitude while keeping the continuous nature of digital transformation in mind. This process can require innovative approaches to cope with complex organizational structures as well as significant change management efforts; however, if the process is successful, it can improve the IT department's change capability and enable constant improvement of operations based on identified challenges. Subsequent activities aimed at advancing the digital transformation can then be based on the current and future needs of the organization.

5.2.2 Question 2: What kinds of tensions can be identified in a process of organizational digital transformation?

Both the paradox perspective and activity theory revealed multiple tensions within the IT department's operations and its digital transformation efforts. The use of the paradox perspective as a lens revealed the paradoxical situation of EA work and utilization at the beginning of the case study, while activity theory revealed tensions within the different factors of the digital transformation activity, tensions of the different factors of the activity and its objective, as well as tensions between the main activity and its contributing activities.

While the tensions can be categorized based on the contradiction categories of activity theory (Engeström 1987), they also played different roles in the IT

department's transformation. The paradoxical tensions related to the EA work, for example, were tensions hindering the IT department's operations. Instead of supporting the holistic management of IT resources and IT development, EA demanded resources without providing support for the transformation efforts. When these tensions were more closely analyzed, it was discovered that they were rooted in the operational structure of the IT department, i.e., the tensions of EA were underlying tensions persisting in the IT department, which were merely revealed by the change of EA implementation. Finally, the EA-related tensions were the driving force behind the decision to initiate a larger-scale transformation. Consequently, EA-related tensions can also be seen as tensions driving organizational change.

In the IT department's efforts to advance organizational digital transformation, three types of tensions were identified: tensions revealed by change, tensions hindering change, and tensions driving change (see Figure 23.

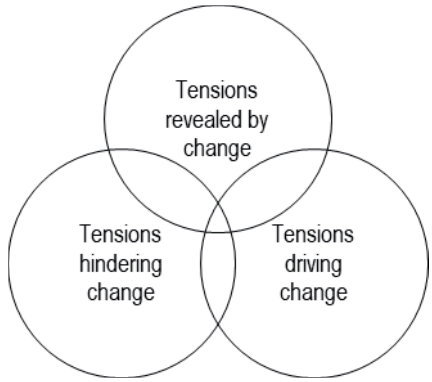

Figure 23. Tensions of the IT department's efforts to advance digital transformation.

While the IT department transformed its operations to improve its ability to support the organizational digital transformation, the transformation also revealed tensions. Initially, transformation activities that were intended to solve easily identifiable operations issues seemed to create only new operational challenges. In many cases, the sources of the tensions were difficult to detect. For example, when the IT department first introduced EA as part of its operations, the situation in the IT department seemed to become more challenging. At first, these challenges were blamed on the EA, although a more in-depth analysis revealed that the change created by EA implementation had only revealed existing tensions in the IT department. Among these underlying tensions revealed by the change was the

unclear role of the IT department. Similarly, the transformation of the IT development process revealed tensions, such as the mistrust the business units harbored toward the IT department.

In the IT department, the tensions revealed by the change were often blamed on the cause of the change. Consequently, the underlying tensions revealed by the change were overlooked. In such cases, the tensions resulted in vicious cycles, which began to hinder the transformation activities in the IT department. In the case of EA, the underlying tensions were initially overlooked, which resulted in years of insufficient EA work that consumed resources without providing the intended support for the digital transformation efforts. Thus, the underlying tensions in the operations became factors hindering change. Especially troublesome tensions hindering the change efforts were those persisting in the norms and rules as well as in the division of labor of the digital transformation. For example, the lack of legitimacy of the IT department among the business units hindered the IT department's efforts to provide better services to the business units.

While the tensions revealed by the change and the tensions hindering the change caused a multitude of issues in the IT department, they were also the driving force behind the fundamental transformation of the IT department. The initial challenges with EA initiated the transformation of the IT development process, and the challenges encountered with this process again initiated the creation of digitalization plans, and the tensions of overreliance on consultants eventually forced the municipality to outsource IT development.

Depending on the point of view, the tensions identified in the process of organizational digital transformation can be described as tensions revealed by transformation, tensions hindering transformation, or tensions driving transformation forward. Often, these tensions become problematic: they are revealed when new and old ways collide and hinder the transformation until they are properly understood, after which they have the potential to become the driving force behind further transformation efforts.

In the literature and especially in paradox research, tensions are typically divided into latent and salient, where environmental factors such as change or actors' paradoxical cognition render latent tensions salient (Smith and Lewis 2011). In the categorization of the tensions of the digital transformation, the tensions revealed by the change can be interpreted to represent these salient tensions of the paradox perspective. Due to the holistic and interlinked nature of the transformation efforts of the IT department, these salient tensions were indicators of other latent tensions more deeply rooted in the organizational culture. In the categorization presented in

Figure 23, Figure 23. the tensions hindering the change include both latent and salient tensions, which, when properly understood, can act as drivers of virtuous change, and when poorly understood, can result in vicious cycles of transformation. Consequently, the categorization presented in Figure 24 is in line with the paradox perspective while also emphasizing that depending on the point of view and organizational desire to solve tensions, the tensions of digital transformation can play multiple roles in organizational digital transformation simultaneously.

5.2.2.1 Question 2.1: What is the role of these tensions in the evolution of digital transformation?

As the findings indicate, tensions in digital transformation can act as drivers or hindrances of further transformation. The paradox perspective views the role of tensions in transformation as a key component of dynamic equilibrium, where management strategies result in latent tensions, which then transform to salient tensions spurring either vicious or virtuous cycles of transformation (Smith and Lewis 2011). In activity theory, tensions, referred to as contradictions, are viewed as forces that unbalance the activity system and drive the transformation when the activity system aspires to balance itself (Engeström 1987). While the paradox perspective views this tension-driven transformation as resulting in sustainability (Smith and Lewis 2011), it further views the process as a continuous balancing act in which when one factor of the activity system is transformed due to a contradiction, the whole activity system requires balancing (Engeström 1987).

When these two perspectives and the findings of the case are combined, the role of tensions in the evolution of digital transformation can be presented in the manner shown in Figure 24.

In the illustration of the role of tensions in the evolution of digital transformation, the transformation of the operational environment triggers the need for an internal transformation of the public sector organization, resulting in operational demands. In the case of the IT department, this revealed tensions hindering the operations, such as the contradiction between growing service demands and slow operations. This triggered change activities in the IT department, such as the transformation of the IT development process. These change activities again revealed new tensions in the IT department and with its relationship with the other parts of the municipality.

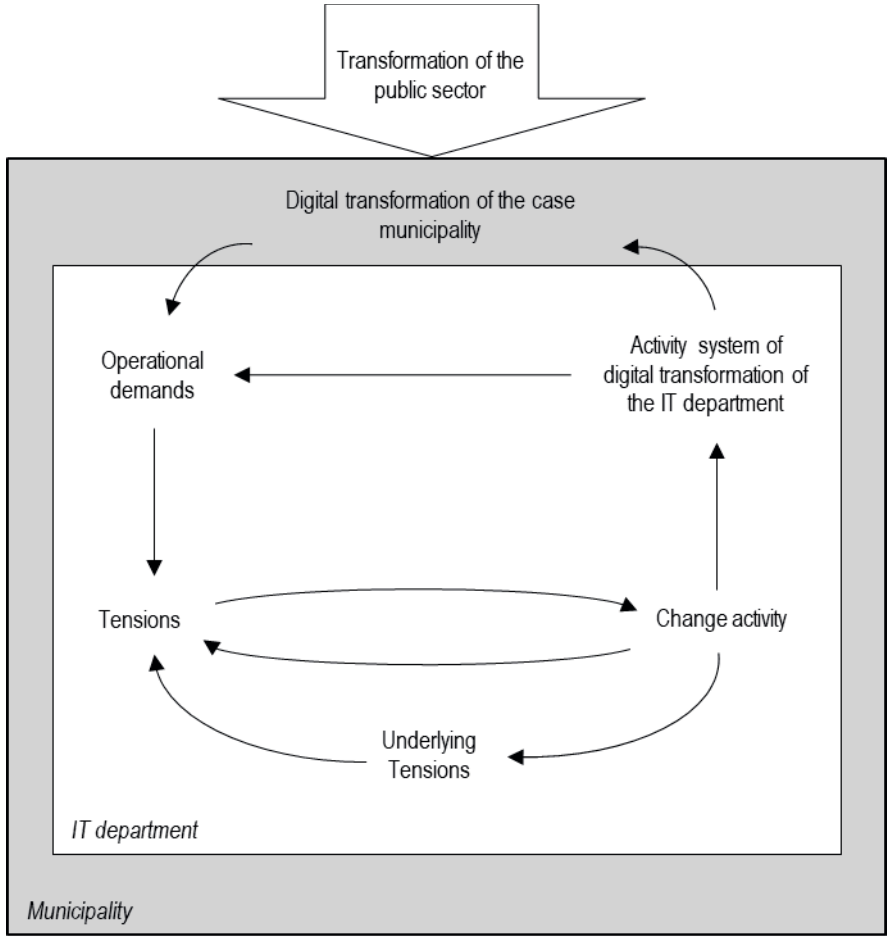

Figure 24. Illustration of the role of tensions in the evolution of digital transformation.

Some of these tensions were visible, whereas others were underlying. Initially, many of these underlying tensions were ignored, while the more visible tensions resulted in change activities. One example was the intensive attention placed on the front-end development of the IT development process, while the underlying challenge of the lack of trust the business units had toward the IT department was overlooked. Once this underlying tension was understood, efforts to solve it with the digitalization plans were introduced.

Tensions have a significant role to play in the evolution of digital transformation, at least when IT departments aspire to advance organizational digital transformation. In digital transformation, these tensions are the drivers of continuous change, wherein reacting to tensions revealed by previous change activities drives new

change activities. As the case shows, an agile and continuous reaction to these tensions can drive transformation forward, but it does not ensure a successful transformation. Instead, depending on the way the tensions are managed, they can result in either vicious or virtuous transformation. Because of this, organizations must comprehend the role of tensions in the evolution of digital transformation so that they do not fall into the trap of thinking that solving one tension at a time will result in continuous improvement of the operations.

5.2.2.2 Question 2.2: What kinds of pitfalls might these tensions create?

The challenges faced by the IT department also show that while the agile approach enabled the IT department to respond quickly to the rising tensions hindering the operations, it also hampered the IT department's ability to fix the right problems with a proper understanding of long-term development. This resulted in multiple pitfalls into which the IT department fell.

First, the IT department made the mistake of focusing mainly on the most visible tensions in the operations. As the analysis of the activity system of the digital transformation revealed, initially, attention to solving the contradictions persisting in the activity system was mainly focused on the improvement of the tools used to support the digital transformation activity. The contradictions in the rules and norms, community, and division of labor persisted and continued to hinder the IT department's operations.

Second, the IT department focused on the tensions revealed by change. Because of this, many underlying problems were overlooked. For example, at the beginning of the case study, the IT department focused mainly on fixing the issues with EA within the EA, even though the issues were more deeply rooted in the core operations of the IT department.

Third, digital transformation is inherently continuous, i.e., the constant change continues to reveal new tensions. During this continuous transformation, the IT department largely focused on solving tensions from a short-term perspective. This was especially the case with the consultants, who at first seemed like a solution to a lack of resources that would not create new relevant tensions. As the development of the role of consultants in the IT department revealed, in the long term, the unsustainability of the use of consultants was problematic.

The tensions in the IT department created an image that the transformation in the IT department was constantly advancing. When issues were detected, quick efforts to fix them were undertaken. Reacting to tensions as they arose seemed like

a good approach to improve the operational situation in the IT department and enable better service provision to the municipality. This constant development led to the unintentionally overlooking of the underlying tensions preventing a true transformation in the IT department and the municipality, which was only detected after there was no way to turn back.

5.3 Practical implications

The findings show that while the IT department faced challenges in its operations and their continuity, the implemented activities improved the IT department's ability to provide IT development services to the municipal business units and, in this way, enabled it to advance municipal digital transformation. Many of these approaches, such as the efforts to increase agility and improve digital leadership, as well as the introduction of the role of CDO and the formulation of hybrid project structures, were previously suggested for private sector digital transformation initiatives. This indicates that:

1. *Public sector organizations can benefit from similar digital transformation activities as private sector organizations.*

The IT department's transformation activities, such as the introduction of a new IT development process, resulted in improvements in the IT department's internal operations but were also visible at the municipal level. The transformation activities improved, for example, the business units' ability to utilize digital technologies in their internal operations and, consequently, better equipped the municipality to provide electronic services to their residents. These municipal-level improvements were achieved with a transformation initially limited to the municipality's IT department. This leads to the following implication:

1.1. *Centralized IT departments in public sector organizations are one suitable place to initiate digital transformation as transformation in these IT departments can develop their qualifications to support organizational transformation and because centralized IT departments can act as a node from where the transformation can be spread throughout the organization.*

Besides reaping benefits from transformation efforts such as the implementation of agile practices and EA, the IT department also faced difficulties in incorporating these practices into its operations. Therefore, while the findings indicate that public sector organizations can benefit from lessons learned in the private sector, this requires that these lessons be interpreted in the context of the public sector. This leads to the following implication:

1.2. *When adopting digital transformation approaches previously used in other contexts, public sector organizations can face contradictions between the demands of these new approaches and their traditional way of operation. These contradictions need to be acknowledged and mended for their successful utilization.*

For example, while the initial EA implementation in the IT department faced obstacles due to its unsuitability for the existing organizational structures, the situation improved when the structures were altered to enable its utilization. This again enabled the IT department to benefit from the EA but also improved the IT development process. Similarly, the introduction of an agile mindset to the IT department required innovative approaches to enable the IT department to benefit from its newly acquired agility while remaining bound by the existing organizational structures.

Besides revealing that digital transformation can be advanced with approaches similar to those employed in the private sector, the grassroots perspective of this dissertation also revealed the way digital transformation evolves at the lower levels of the organization. The motivation for the digital transformation in the present case can be traced to internal tensions persisting in the IT department. When these tensions were addressed through various change activities, new tensions and underlying ones persisting in the municipality were revealed. When these tensions were then addressed with new change activities, a continuous transformation process in the IT department and, eventually, in the municipality took shape (see Figure 24). Consequently:

2. *While digital transformation is often depicted as a transformation process guided by strategy, in the lower levels of the organization, digital transformation appears as an organic transformation driven by various tensions.*

This role of tensions in digital transformation has practical implications related to the implementation and management of digital transformation activities, as the tensions influence the direction in which the transformation can proceed. First:

2.1. When initiating digital transformation, it is practical to start with small-scale initiatives.

This is because, in small-scale transformation initiatives, the complex tensions of the entire organization do not have to be considered all at once. For example, the adoption of agile practices supporting digital transformation can benefit from starting with a small-scale implementation that is then expanded to other parts of the organization. As agile practices can challenge the existing organizational structures and culture, small-scale implementation can reveal multiple tensions that need to be addressed. Finding ways to address these tensions, first at a smaller scale, can help organizations to find ways to solve mismatches between new values and practices without crippling the whole organization, especially as small-scale implementations are often easier to implement than large-scale ones (Châlons and Dufft 2016).

On many occasions, as the transformation proceeds, the organizational-level tensions need to be addressed as well, meaning that for the tensions to be solved even at a small scale, other parts of the organization also need to transform. For example, for the IT department to integrate agile values into its operations, its different stakeholders, such as the business units, also needed to begin their transformation as the deeply rooted organizational structures and lack of trust could not be addressed within the IT department. Consequently, even when digital transformation initiatives begin on a small scale, this transformation needs to be extended to other parts of the organization by addressing organizational-level tensions. This also means that organizational-level commitment is necessary even when the digital transformation is initiated at the lower levels of the organization. In the IT department's case, many of these organizational-level tensions were first overlooked, which led to challenges later on. This leads to the second practical implication:

2.2. Actors advancing continuous organizational transformation should not focus solely on resolving visible challenges but also give attention to the mending of underlying tensions.

When the focus is solely on easily identifiable challenges, there is a risk that the underlying tensions (i.e., the root causes behind these challenges) will be overlooked

and remain unsolved. In the IT department's case, they were trying to cope with easily identified issues while largely ignoring the underlying causes creating these issues (i.e., underlying tensions). For example, in the case of EA, it was only when the IT department began to reflect on the tensions and identified paradoxes that the understanding of their root causes started to increase. In the case of EA, the issue was not EA itself. Instead, this new tool had merely revealed tensions persisting in the organization. The issues with EA were not the result of the tool but a consequence of other challenges and tensions persisting in the organization. Understanding the underlying tensions initiated a larger-scale transformation, where the transformation of the IT development process led to the redesign of the EA function, the introduction of digitalization plans, and use of consultants.

Initially, all the activities of the IT department seemed to advance the transformation. However, some of the activities were conducted at the expense of solving tensions that were difficult to identify or solve. This was especially the case concerning slowly changing aspects such as the organization culture, which was largely overlooked by the IT department and poses the risk of vicious cycles in the future. The IT department largely focused on solving visible tensions related to the tools of the digital transformation activity (i.e., the IT development process, EA, and digitalization plans). This overemphasis on the tools resulted in insufficient consideration of factors such as the culture of mistrust in the municipality. Therefore, no solid transformation in the relationship between the IT department and the business units was established.

In sum, while it is easy to focus on visible and evident operational issues, these issues are not necessarily the cause of the persisting organizational tensions; rather, they only reveal underlying issues in the operations. Through proper analysis of the tensions, it is possible to identify underlying problems and apparent tensions in time. This is especially critical in continuous transformations during which change is fast, and transformation efforts directed by poorly understood problems can cause significant issues in the long run. This leads to the third practical implication:

2.3. Organizations should adopt an ambidextrous approach when considering the short- and long-term implications of their transformation efforts.

Considering both the long- and short-term impacts of transformation initiatives (O'Reilly and Tushman 2004, 2008; Simsek 2009) is important because mending tensions is a continuous process. Initially, short-term solutions can become core elements of following changes, and if their long-term consequences are not properly

managed, short-term solutions can become long-term problems. For example, the initial way the consultants were utilized in the IT department corresponded with the typical manner the services of consultants are used. They were brought in to carry out specific tasks for which the customer organization lacked the necessary competencies or resources (Czarniawska and Mazza 2003). The consultants were seen as an operational choice to fill a short-term gap in resources, even though the projects they were involved in had no endpoint. Instead, the projects were undertaken via iterative and continuous development, which had long-term and unexpected ramifications. Consequently, in continuous transformations, even operational factors must be continuously evaluated and redefined so that issues are discovered in time and so that short-term solutions do not become hindrances in the long run.

6 CONCLUSION

The digital transformation of organizations is attracting an increasing amount of interest among researchers and practitioners. Despite this, studies of the evolution of digital transformation in practice remain rare. This dissertation has provided an in-depth and rich case study on the way digital transformation is initiated and advanced at a grassroots level in the context of a public sector IT department. Next, the contributions of this dissertation are presented, after which the factors influencing the trustworthiness and generalizability of the findings are considered. The dissertation concludes with future points of interest.

6.1 Contributions

In the following sub-chapters, the contributions to research and practical implications of this dissertation are considered. As this work has examined the phenomenon of digital transformation in the context of the public sector, the theoretical contributions in the context of digital government and IS research are discussed separately.

6.1.1 Contributions to digital government research

This dissertation contributes to digital government research (Janowski 2015; Tangi et al. 2021) by presenting an in-depth grassroots digital transformation case in the context of the public sector. First, the study indicates that multiple lessons learned from the private sector can be used in public sector digital transformation. This is especially the case with agility, which is often seen as a problematic value for the stability required in the public sector (Janssen and van der Voort 2016; Mergel et al. 2020). Consequently, the dissertation contributes to the digital government research by providing a much-needed practical example of how bottom-up agile experiments can increase governmental agility and adaptability and, in this way, improve an organization's ability to advance organizational digital transformation.

Second, the study shows that IT departments can be the drivers of public sector digital transformation. While the potential of IT departments as enablers of change has been recognized before (Châlons and Dufft 2016; Matt et al. 2015), this dissertation has shown that the IT department's potential in driving transformation is also relevant in the context of public sector digital transformation. Additionally, this case has shown that IT departments can benefit from taking the initiative here.

Third, the findings reveal that agile approaches in process management can help public sector organizations and especially IT departments to cope with changing organizational demands, such as an increase in demand for IT development services. The potential of agile methods has been recognized before, but unlike the previous literature (Greve et al. 2020; Mergel et al. 2020), this case emphasizes the role of organizational culture in successful initiation, especially concerning agile implementations. While the current literature related to organizational agility implementation has emphasized issues related to introducing agility in stable and bureaucratic structures (Janssen and van der Voort 2016), this case has shown that when the agile practices are implemented in public sector organizations, the challenges are not necessarily the result of restrictive structures but cultural aspects and, especially, a lack of trust between different stakeholders.

Fourth, the findings show that when public sector organizations face challenges in implementing tools of digital transformation, organizational factors unrelated to the public sector context can actually be the cause of the difficulties. For example, when EA was initially introduced into the IT department, benefits were expected without careful consideration of how the prevailing situation in the organization influenced its utilization. The problem was not the public sector context but poor implementation of the tool. Consequently, when challenges related to the implementation of tools usually used in the private sector context are analyzed, more emphasis should be placed on the operational context.

Fifth, the findings highlight the need for sufficient management of consultants as a resource for public sector digital transformation. As the findings show, consultants can be a tempting solution when there is a need to obtain resources and competencies to support organizational digital transformation. The possible ramifications can be severe and should be managed in advance.

6.1.2 Contributions to IS research

This dissertation provides multiple contributions to IS research. The key contribution of this dissertation derives from the grassroots perspective of digital transformation, a perspective for which other areas of IS research have voiced a need (Karpovsky and Galliers 2015). The findings revealed that while digital transformation is often depicted as a transformational process guided by strategy (Bharadwaj et al. 2013; Mergel et al. 2019; Vial 2019; Wessel et al. 2021), in the lower levels of the organization, digital transformation appears as an organic transformation driven by tensions. The identified tensions, while case-specific, explain how tensions in organizational operations drive change initiatives, which, in turn, reveal new tensions demanding attention and, thus, result in a continuous transformation. Emergent transformation is not a new phenomenon in the field of IS. It has been discussed, for example, in the context of IS strategizing, where the need for both deliberate strategizing as well as emergent strategizing are recognized (cf. Galliers 2006). However, exploration (i.e., emergent strategizing) in the context of IS strategizing is considered to have a sense of direction and purpose (cf. Galliers 2011), which is not necessarily the case in situations driven by tensions.

Tensions and contradictions have long been connected to organizational transformations (cf. Cunha and Putnam 2017; Smith and Lewis 2011) and have been recently connected to digital transformation as well (Wimelius et al. 2021). This dissertation expands the role of tensions in digital transformation from by-products of change to the driving forces of this transformation. The present work expands our understanding of digital transformation by revealing that digital transformation cannot be viewed only as a strategic initiative but also as an organic, tension-driven continuum. Therefore, more attention in digital transformation research and management should be directed to managing the tensions of this transformation.

This realization leads to other contributions. First, the current simplification of technology as the main driver of digital transformation (cf. Verhoef et al. 2021; Vial 2019) is too simplistic a way to explain the initiation of digital transformation. Emphasis on the role of technology not only hides the organizational factors driving the transformation but can also simplify the actual transformation occurring in the organization, especially at multiple organizational levels that can have very different relationships with technology. Consequently, this dissertation contributes to the digital transformation discussion by revealing the importance of change and tensions as the drivers of digital transformation. While technology and the desire to benefit from it can act as one of the initial motivators for transformation, the transformation

itself advances through tensions the change within organizations, and that their operational environment creates. Technology and its evolution are only one factor driving digital transformation forward.

Second, this dissertation provides an exemplary case of a digital transformation process that does not evolve due to the strategic initiative of the organization but rather through organic evolution inside the organization. By means of its example case, this dissertation extends the findings of Lanamäki et al. (2020) by revealing that the emergent nature of digital transformation can be identified within organizations as well as within industries. The findings show that what makes digital transformation different from other IT-related changes is not a new type of strategic approach (Teubner and Stockhinger, 2020; Wessel et al., 2021). For this reason, strategy alone should not be considered a sufficient tool for managing organizational digital transformation. Especially at the lower levels of the organization, the transformation can be organic and, therefore, constantly accumulating and difficult to manage through long-term views such as organizational digital transformation strategy.

Third, by viewing digital transformation through the paradox perspective, this dissertation has revealed the importance of underlying tensions in understanding the evolution of organizational digital transformation. The activity theory perspective then extended this view by revealing tensions persisting in different factors, emphasizing that digital transformation is not a straightforward process but instead an attempt to balance the contradictions persisting in and between different factors of the activity, sometimes successively and sometimes concurrently. This view also underlines the need to consider digital transformation as a fundamental transformation in which the mere alteration of tools while ignoring the organizational culture and norms is problematic. By viewing digital transformation through the lens of activity theory, the findings increase our understanding of why digital transformation is defined as holistic and fundamental transformation.

Fourth, through a better understanding of the nature of digital transformation, this dissertation also contributes to IS literature by suggesting approaches to manage organizational digital transformation. Consequently, this dissertation further contributes to IS research by showing that it is critical to pay attention to the underlying tensions, as continuously evolving digital transformation creates tensions that need to be properly managed for organizations to avoid potential vicious cycles of digital transformation.

Finally, by revealing the organic nature of the digital transformation, the findings indicate that such transformation is not merely a solution that organizations can

utilize to improve their ability to survive in changing operational environments but also a new type of change that they need to manage.

6.1.3 Contributions to practice

This dissertation also makes practical contributions. The study provides a practical grassroots example of how public sector organizations can start to advance their digital transformation. While the IT development process described is case-specific, it shows relevant aspects that should be considered, such as the need to build trust with different stakeholders and the need to solve issues by simultaneously considering the short- and long-term effects of the selected solution. For example, the findings of the study show that when public sector organizations utilize consultants to support long-term transformations, the role of consultants and their utilization needs to be considered in a longer time frame than when consultants are used as resources bound to specific projects.

For public sector organizations considering how to begin their digital transformation, this dissertation also shows that a centralized IT department is a potential place to start. The findings also show that small-scale experiments can be a useful approach when it comes to implementing values such as agility. Additionally, the findings indicate that approaches suggested as necessary for private sector organizations can also be beneficial to public sector organizations, such as the incorporation of agile values. In this, there needs to be a will to try out approaches that are not necessarily in line with the bureaucratic structures, as long as they do not challenge the core values of public sector organizations.

While the findings indicate that practitioners in public sector organizations can benefit from digital transformation approaches conducted in the private sector, they also emphasize that this transformation needs to be carefully managed. In particular, the tensions driving digital transformation merit careful consideration as the way these tensions are managed can define the direction of the transformation. When conducting digital transformation activities, practitioners must dedicate enough attention to the tensions arising from the transformation and simultaneously iterate between the solution for the particular tensions and the objective of the transformation as a whole. In this management process, it is not enough for public sector organizations to rely on IT-led transformation efforts; the top management must also, eventually, be involved in the process to ensure organizational legitimization of the transformation. After all, IT-led transformation does not

provide a long-term strategic perspective for the organization, which could be necessary to enable iteration between the short-term tension perspective and the long-term transformation overview.

6.2 Evaluation of the study

This research has been conducted with a qualitative research approach, and therefore, there are no quantitative tests with which the study could be evaluated (Golafshani 2003). However, this does not diminish the importance of evaluation of the study as it is critical for readers to know whether they can trust the findings presented and conclusions drawn from them. To assist in this evaluation process, different elements and principles have been suggested to guide researchers in their effort to improve communication with readers (Klein and Myers 1999; Sarker et al. 2018).

Sarker et al. (2018), for instance, have suggested that their four key elements of qualitative research, including (1) the researcher's conception and use of data; (2) the nature and role of theory in the study; (3) the analysis strategy used in the study; and (4) the nature of and claims about the findings of the study, can be used to evaluate the quality of a study. Many of the questions raised by these elements and principles were discussed in the chapter describing the research design of this dissertation. Here the focus will primarily be on the tactics used to ensure the validity and reliability of the study.

6.2.1 Validity and reliability

Validity defines the level of accuracy with which the findings presented represent the studied reality (Creswell and Miller 2000). Validity evaluation focuses on discovering how the findings of a study could be wrong and, for example, whether there are alternative explanations that could result in similar findings. Validity is closely connected to the methods, research questions, and conceptual frameworks of a study, which need to be aligned to ensure its objectivity. (Maxwell 2008)

Objectivity as a quality measure of a qualitative study entails the level of biases of the researcher. As in an interpretive study where the researcher is responsible for collecting and interpreting the data (Walsham 2006), it is critical that measures to ensure the objectivity of the researcher are taken (Mansourian 2008). While the

objectivity of the researcher can be difficult to uphold as the previous experiences of the researcher guide the way the researcher interprets the world, acknowledging the potential of biases is important (Maxwell 2008).

Reliability then defines the extent to which a study can be reproduced under the same circumstances under which the original study was conducted. As qualitative studies tend to be conducted under special circumstances and on special cases (Sarker et al. 2018), the concept of reliability can easily be misleading in qualitative research (Golafshani 2003). In the case of qualitative research, reliability refers more to the extent to which if another researcher conducted the same study, the findings would remain similar. This requires a good description of the way empirical materials are collected and analyzed for the reader to evaluate whether other researchers could obtain similar outcomes (Mansourian 2008).

In this dissertation, multiple tactics to improve trustworthiness were used before and during the data collection, as well as during the data analysis and reporting of the findings. Before the initiation of data collection, the interview questions (see Appendix A) were iteratively developed in collaboration with another researcher to decrease the risk of biases in the research questions. Additionally, after the first interviews, the research questions were updated to provide a better overview of the situation in the IT department. The first interviewees were then interviewed a second time to ensure that all the interviews followed a similar structure.

In the data collection, the trustworthiness of the study was improved through the following measures. First, all the interviews were audio-recorded and transcribed to ensure that the data used would not rely solely on the memory of the researcher. To ensure an in-depth understanding of the case, the author of this dissertation personally transcribed the interviews of the first and second rounds.

Second, to improve the objectivity of interviews, at the beginning of the study, a second researcher attended some of the interviews not only to ensure the quality of the interview approach but also to enable better collaborative reflection on the findings at later phases of the study. To ensure proper comprehension of the message of the interviewees, the interview questions presented in Appendix A were deepened with multiple clarification questions. Whenever possible, the interviewees were also asked to provide examples. For instance, when an enterprise architect was interviewed about their involvement in IT development projects, they were asked to choose one IT development project and walk the interviewer through the process and the points in which the enterprise architect was involved in the process.

Third, the data were collected in three rounds, which enabled validation of the previous findings with new data (Creswell and Miller 2000). The three-phase data

collection process offered the possibility to improve not only the data collection but also the iterative analysis of the data. The three-phase data collection process also enabled validation of the data collection and analysis process by the case organization.

The fourth tactic to ensure the trustworthiness and objectivity of the study was validation of the findings by the case subjects. The findings of the first round of interviews were presented to the CIO and consultants participating in the study to ensure their correctness before the second round of interviews was initiated.

Fifth, to gain a better understanding of the case, additional sources of data were used. These included, for example, official reports of the municipality, the material provided by the interviewees, and the publicly available EA models of the municipality. For example, as the EA models evolved during the transformation process, they provided a good tool to compare the descriptions of the interviewees with the official depiction of the process and the way it evolved during the case study.

In the data analysis phase, the analysis results were iteratively formed and discussed with the second researcher of the study to improve their quality and objectivity. Two theories were also used to guide the analysis and provide a structured approach to analyze the findings instead of merely relying on the researcher's subjective conclusions. The findings have also been reported in research publications, where the review process has provided valuable guidance on the way they should be derived from the data and presented to a wider audience.

6.2.2 Generalizability

When evaluating a study, besides considering its trustworthiness, it is important to consider the generalizability of the findings and the theoretical statements related to them (Maxwell 2008). In general, theoretical statements that lack generalizability are lacking in usefulness as well (Lee and Baskerville 2003). In qualitative research, as in the case of this dissertation, the research is typically conducted in a single or very small number of research settings (Maxwell 2008), where no great emphasis is placed on generalizability beyond the case (Lee and Baskerville 2003).

While the nature of generalizability in qualitative versus quantitative studies differs, this does not mean that in the former, generalization is forbidden or lacks usefulness (Lee and Baskerville 2003). To support generalization in the context of qualitative research, Lee and Baskerville (2003) introduced a generalizability

framework, wherein four types of generalization are classified based on 1) whether they create generalizations from empirical or theoretical statements and 2) whether they create generalizations to empirical or theoretical statements. With this, they attempt to emphasize that generalization is not limited to statistical generalization but that there is value in other types of approaches as well (Lee and Baskerville 2012).

The generalizability framework has received criticism concerning its view on induction. For example, Tsang and Williams (2012) have suggested that instead of generalizability, Lee and Baskerville (2003) should use the concept of applicability. This, according to Lee and Baskerville (2012), indicates a somewhat limited view of what generalizability can mean. For example, Lee and Baskerville (2012) state that the two classifications of generalizability allow for their mutual existence when generalizability is not considered to belong to the evaluation of statistical research.

What these two perspectives on generalization agree on is the fact that generalization cannot be extended to settings where it has not been empirically tested (Lee and Baskerville 2003; Tsang and Williams 2012). When the attempt is to generalize from rich descriptions of a single case to rich insights and not specific facts (Lee and Baskerville 2003), this line can be blurred, and the concept of applicability by Tsang and Williams (2012) seems quite reasonable.

When the insights of the case are analyzed concerning their generalizability or applicability beyond the case itself, the level of analysis needs to be considered (see Figure 25). The present case study was conducted inside a centralized IT department of a municipality and guided by the structures and values of a public sector organization. The phenomenon studied, on the other hand, is not limited to the context of one public sector organization but considers all digitally transforming organizations, which, again, can be considered a subset of all organizations.

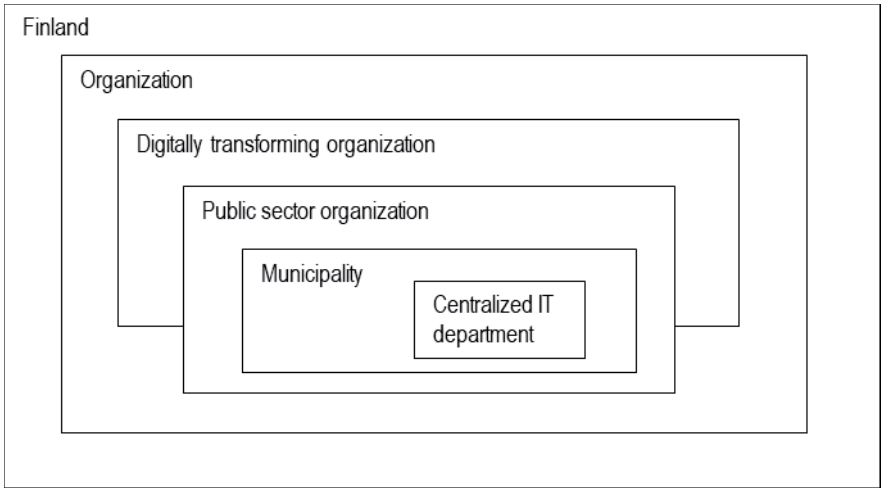

Figure 25. Levels of generalization.

The definition above is still somewhat simplistic when it comes to generalization. For example, the study of this dissertation was conducted in Finland, which in itself has a different governmental history and culture than other European or even Nordic countries. This means that in the context of change, the objectives but also the approaches to change considered acceptable can differ from other countries (Pollitt and Bouckaert 2011, pp. 49, 115). Similarly, the context of Finnish municipalities makes this study a somewhat special case as Finnish municipalities have comprehensive rights to self-govern their operations and decide how they produce their statutory services (Suomi.fi 2021). Moreover, because the case municipality is one of the largest municipalities in Finland with extensive IT resources, it is a rare case among Finnish municipalities. Consequently, the findings should be generalized cautiously.

While the case can be seen as special and its findings as ungeneralizable, the insights derived from the case are not. For example, the insights gained from the answer to the first research question are not limited to large public sector organizations. For instance, one of the key findings, i.e., the need to integrate agile values and incorporate ambidextrous attitudes, is recognized as critical for all types of organizations (cf. Vial 2019). The way the agile values and ambidexterity can be incorporated into the context of the public sector again limits the generalizability to the context of public sector organizations, and as the findings and insights derived from them are reliant on an organizational structure where there are independent business units, generalizability beyond the municipal context is questionable. This does not mean that other public sector organizations or even other organizations

striving for digital transformation could not benefit from the insights of this dissertation.

Whereas the answer to the first research question can be classified as a generalization from empirical findings in the generalizability framework of Lee and Baskerville (2003), the answers to the second research question and its sub-questions rely more on the use of theories to create insights. For example, while many of the identified tensions were case-specific, their classification under the three tensions of digital transformation (tensions revealed by change, hindering change, and driving change) resembles the paradox perspective's division of tensions into latent and salient (cf. Smith and Lewis 2011). The latent and salient tensions of the dynamic equilibrium model of organizing are not bound by any specific context (Smith and Lewis 2011). The same applies here, indicating that the generalization of the three tensions of digital transformation is not bound by the context of this dissertation.

This is the case with the insights of the two sub research questions of research question two. While the identified tensions are case-specific, the insights related to the role and risks of the tensions of digital transformation are such that they can also be considered generalizable or applicable in the context of other organizations aiming to digitally transform.

6.2.3 Limitations

Like any study, this one also has its limitations. First, the findings presented in this dissertation are based on a single case study. Although the single-case-study approach enabled the creation of thick descriptions that enabled the derivation of insights related to the nature of organizational digital transformation as a continuous process, with a multiple-case-study approach, these findings could have been validated and, in this way, the contributions of this dissertation strengthened. However, the multiple-case-study approach might have limited the depth of the study, which was critical for the derivation of the results. In single case studies, the role of case selection is also emphasized. Although multiple reasons indicated that the selected case was suitable for the study objectives (e.g., the researcher had the opportunity to observe the initiated transformation from its inception, there was a clear desire in the municipality to initiate and advance digital transformation, and the municipality and IT department were willing to actively participate in the study), more careful consideration of potential cases might have resulted in a better-suited transformation case.

Also, the study context of the public sector can be seen as a limitation as it makes the applicability of the findings to digital transformation in general questionable. Nonetheless, as there are few domain-specific findings, the insights remain valuable to a broader audience. The contributions to the public sector context are valuable as well, even if the findings would not be applicable in other contexts. As for now, digital transformation is still a new phenomenon; therefore, providing in-depth descriptions even in the context of a single case is valuable and provides a good starting point for further research.

Concerning the data collection, the three-phase data collection approach, while providing a good overview of the transformation, also resulted in multiple interviews of the same individuals. Consequently, the individual interviewees and their interpretations have a great deal of weight for the findings, which is a significant limitation of the study, especially as the trustworthiness of the informants cannot be confirmed. In this regard, the limited use of documents can also be seen as a limitation. If additional sources, such as emails and official meeting notes of the organization, had been added to the data used, it might have been possible to confirm various statements as well as obtain information that the interviewer did not think to ask.

Limitations can also be identified in the data analysis process as the data analysis was conducted by an individual researcher; the credibility of the findings would be stronger if multiple researchers had been more closely involved in the data analysis process. Instead of one researcher conducting the data analysis and then discussing the findings with another researcher, it would have been better if at least some of the data had been analyzed by two researchers and the findings then compared.

In the data collection and analysis, the focus on quite a small number of activities conducted in the IT department can also be considered a relevant limitation of the study. While the intention behind this focus was to provide rich descriptions of these activities and their relationship to each other, one could also ask whether the focus on these activities is too great of a simplification. Due to this focus, the findings and, especially, the answer to the first research question are limited to a couple of activities. However, as the insights derived from these findings are not activity-specific but related to the digital transformation activity as a whole, this limitation can be considered to be acceptable.

Also, the timeline in which the study was conducted can be considered a significant limitation. Although the three interview rounds provided an overview of the transformation efforts between the rounds, their long-term implications remain unclear. Due to the limited timeline of the study, the effects of the IT department's

digital transformation efforts were not visible in other parts of the municipality. However, as digital transformation is a continuous transformation without a clear endpoint, conducting a study that would provide an overview of the municipal-level transformation would not be possible within the time constraints of a single dissertation.

6.3 Future points of interest

While the conducted study provided insights related to the steps municipal IT departments can take to advance organizational digital transformation and the role of tensions and contradictions in this transformation, it also gave rise to new questions and interesting future research areas. First, as this study only focused on the transformation occurring inside the IT department, similar research where more attention is paid to the transformation of the municipality as a whole could provide additional insights related to the way transformation advances inside public sector organizations. A more extensive and longitudinal study could also provide insights on how bottom-up digital transformation can be spread throughout an organization and whether this type of approach is, in general, applicable to continuous digital transformation.

Research has also emphasized the role strategy plays in digital transformation efforts (Vial 2019). While some studies already acknowledge that digital transformation does not necessarily have to be intentional (Lanamäki et al. 2020), it would be interesting to see whether strategy plays a role in the long-term success in digital transformation even when its initiation was organic. After all, even this dissertation and the identified pitfalls of digital transformation indicate that in continuous transformation, a long-term perspective is important. Whether this long-term perspective needs to be a strategic one remains to be seen.

Concerning the long-term perspective of digital transformation, it would also be interesting to see whether both public and private sector organizations succeed in maintaining the progress of continuous transformation (i.e., whether the suggested approach based on the tensions of transformation continues to drive the transformation forward in the long run). As the findings of this dissertation show, this type of transformation can result in virtuous but also vicious cycles; therefore, studying the effects of vicious cycles and their role in guiding digital transformation is an interesting future research possibility.

The significance of continuity in the definition of digital transformation also needs further clarification. For example, Wessel et al. (2021) have suggested that digital transformation results in a transformation of the value propositions of organizations. This indicates that there is an endpoint to organizational digital transformation, which contradicts the findings of this dissertation. This calls for further research on the nature of digital transformation.

The necessity of transforming the value propositions of public sector organizations in order for them to be classified as digitally transformed invites further discussion. The value propositions of many public sector organizations are bound by laws and regulations. This need not mean that these organizations cannot digitally transform. On the other hand, in this study, the IT department transformed its value proposition from fixing issues to providing proactive services. Therefore, it would be interesting to study what types of new value propositions public sector organizations could provide through digital transformation.

The future points of interest are not limited to the transformation of single organizations. It would also be interesting to study how collaboration between different public sector organizations could improve the digital transformation of those organizations. In the present case study, the consultants acted as the holders of knowledge from both public and private sector transformations. If this transformation could be more collaborative, the public sector organizations would not necessarily be as reliant on external and expensive resources of support. It would be interesting to see whether employing a more collaborative approach to digital transformation would be possible and beneficial.

Finally, to improve the practical contributions of this dissertation, it would be interesting to study how governments and, for instance, the EU could support these digital transformation efforts. This dissertation has shown that many of the suggested approaches to advance digital transformation in the private sector context are also relevant in the public sector. As this dissertation indicates, because the transformation is continuous and largely driven by context-dependent tensions resulting in new transformations, providing a clear roadmap from beginning to end can be challenging. It would be interesting to study whether and in what way the findings of this dissertation could be adapted to the creation of guidelines.

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APPENDICES

Appendix A: Interview questions

Interview questions, translated from Finnish (Ylinen, 2021)		
Interview	Theme	Questions included in the theme
All interviews	General information	Who are you? What do you do in the municipality? How long have you worked in/for the municipality? What is your connection to this transformation project?
1	Current process description	Can you provide an example of an IT development case you have been involved in and what happened? Follow up: Can you specify?
	Process change	What factors led to the fact that the decision was made to change the way of operating? OR: Have you heard that there is a transformation project starting? Do you know what is happening and why?
	Why this approach	Why did you choose the agile and lean method as your approach?
	Expectations and challenges	What expectations do you have in relation to the new way of operating?
		Do you know how detailed the official objectives are?
	Reception	How has this change been received?
		How widely has this transition been communicated in the municipality?
2	Changes	Can you give a general description of what has changed since the last time (spring 2017/when we met the last time)?
	New process	Can you provide an example of a case that has gone through the new process? What happened?
	Improvements	What do you think has been good in the new way of operating? Follow up: Can you specify by giving an example?
	Negative aspects	Based on your previous example, has anything become more difficult?
		What are the main challenges you are facing related to the new process?
	Next steps and expectations	What will happen next?
		What are your expectations for the future?
3	Situation analysis	Can you give a general description of what has changed since the last time (winter 2017/when we met the last time)?
		What are the planned next steps?
		How do you feel about the process?
	Improvements	Have the changes implemented after spring 2018 had positive effects on the challenges identified in the last round of the interviews?
	Reception	How have the business units reacted to the changes? Please provide an example.