Master thesis research project:

Paradoxical tensions experienced by project managers managing digital transformation projects

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Preface

I would like to use this opportunity to thank my first supervisor Robin Effing and my second supervisor Ton Spil for their time spent on supervising my thesis. Furthermore, I would like to thank my study advisor, Charlotte Röring, for her continued support throughout this longer-than-expected trajectory of finishing my master's thesis. Without her continued support and positivity, I would not have been able to do this. I would also like to thank Rosalie for proofreading my thesis. Furthermore, I would like to thank my parents, my brothers, my friends, my coworkers, and anyone else supporting me with their kind words and willingness to listen to me complain about the writing process.

Finally, I want to apologize to my brother, Roel, for teasing him about not pursuing higher academic achievements. As it turns out, becoming a welder at a young age is not a foolish decision, and, as demonstrated by him, leads to significantly more positive financial outcomes compared to staying in university until the age of 31.

Abstract

Digital transformation presents both opportunities and challenges for incumbent firms, often giving rise to paradoxical tensions that complicate project delivery. This study investigates the specific tensions encountered by project managers leading digital transformation initiatives and examines the strategies they employ to navigate these competing demands.

Semi-structured interviews were conducted with eight project managers from diverse incumbent organizations in the Netherlands, selected via purposive snowball sampling. Interview transcripts were coded inductively to identify recurring themes, then reframed into paradoxical "A versus B" tensions using Gioia's method and assessed against Smith & Lewis's criteria for paradoxical tensions. A final thematic analysis categorized twenty-four tensions—fifteen of which met the criteria for true paradoxes—according to the dynamic equilibrium model of organizing.

Key paradoxical tensions include balancing short-term deliverables with long-term innovation, maintaining process stability versus adopting process flexibility, addressing older versus younger workforce resistance, and managing project scope ambitions against resource constraints. Non-paradoxical tensions such as goal-setting versus expectation management and stakeholder misalignment were also identified. Interviewees reported fifty suggested coping mechanisms, among which splitting (e.g., parallel pilot structures), temporal cycling (alternating focus), and bridging (integrating stakeholder interests) featured prominently. Selective avoidance emerged pragmatically as a short-term "pressure valve" rather than a long-term resolution.

Findings contribute to paradox theory by extending its application to digital transformation project management and reveal how hybrid project approaches (stage-gate versus agile) intensify classic organizing versus performing tensions. Practically, the study offers guidance for project leaders and organizations: ensuring continuous senior-leadership commitment, building coalitions across demographic divides, and leveraging concrete use cases to align stakeholder expectations. Recognizing and actively managing paradoxical tensions is essential for achieving sustainable digital transformation outcomes. Limitations include a small sample size and potential blurring between project-level and organizational tensions, suggesting avenues for broader, quantitative validation in future research.

1. Introduction

Digital transformation presents both opportunities and challenges for incumbent firms (established large-scale companies founded in a pre-digital age). This often leads to paradoxical tensions that complicate the transformation process. This study seeks to identify the tensions encountered by project managers and examine the strategies they use to navigate these challenges. By understanding paradoxes in digital transformation projects and strategies for handling them, this study contributes to both academic literature and practice, offering insights that can enhance the success rates of digital transformation initiatives.

Digital transformation is an intricate, cross-disciplinary and multifaceted topic which mandates significant changes to employees, organizations and society at large (Appio et al., 2021). digital transformation can be defined as "a change in how a firm employs digital technologies, to develop a new digital business model that helps to create and appropriate more value for the firm" (Verhoef et al., 2021). digital transformation, therefore, goes further than a mere technology upgrade; it requires the restructuring of an organization's strategy, processes, and culture. (Ebert & Duarte, 2018; Wessel et al., 2021). Through these practices, digital transformation may enable businesses to increase productivity, generate more value, and maintain their competitiveness (Reis et al., 2018).

While digital transformation can be beneficial to companies, introduces new organizational challenges. Research suggests that incumbent firms are highly likely to fail at their efforts to achieve digital transformation, with failure rates reported to be as high as 80% (Wade & Shan, 2020). Failing at digital transformation may lead to far reaching consequences for organizations including financial bankruptcy or organizational collapse. According to Oludapo et al. (2024), failure can be attributed by factors related to technology, management, innovation and information systems. For example, digital transformation failure may be due to a lack of coordinated ideas, a lack of strategic structure, pressure to keep maintaining failed projects, resistance to tech adoption, inappropriate vested interests, and several other factors.

Research suggests that the digital transformation process of incumbent organizations is intertwined with paradoxical tensions that complicate the reshaping process (Wimelius et al., 2020; Volpentesta et al., 2023). These paradoxes can be defined as "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011, p. 382). Examples of paradoxes include simplicity vs complexity, focus on stability vs embracing innovation, reliance on internal resources and experts vs reliance on external resources, and control and efficiency vs agility (Poláková - Kersten et al., 2023; Verhoef et al., 2021).

Mismanagement of paradoxes during digital transformation may lead to adverse outcomes for organisations, including chaos, decline, and ambivalence (Lewis & Smith, 2014). On the other hand, effective management of paradoxes can foster learning, sustainability, legitimacy, and long-term performance benefits. Effective innovation management is essential for successfully addressing the complexities and paradoxes inherent in digital transformation initiatives. Traditional and more deterministic stage-gated innovation management strategies, which firms may use for other aspects of their business, may not be well suited to handle digital transformation's fluidity and emergent nature (Volpentesta et al., 2023). Therefore,

incumbent firms may choose to manage digital transformation initiatives through agile innovation management. This misalignment may itself create new paradoxes, as organizations are forced to navigate the tensions between coexisting project management approaches. Regardless of the chosen project management style, the implementation of digital transformation projects inevitably leads to changes within the business, giving rise to tensions that organizational actors feel. (Smith & Lewis, 2011).

1.1 Research goal

The goal of the research is to investigate paradoxical tensions felt by project managers, as well as their strategies for handling these tensions, when working on projects that aim to implement digital transformation initiatives. Possible tensions and coping strategies are disseminated to their core and examined in the context of digital transformation initiative projects. Next, through qualitative methods, an attempt is made to find best practices for paradoxical situations based on respondents' experience with managing said paradoxes.

1.2 Central research question

What are the key tensions experienced by project managers in incumbent firms when implementing digital transformation initiatives, and which strategies do they employ to handle these tensions?

1.3 Contribution

The practical implications of this paper are relevant for project managers and organizations engaged in digital transformation. By applying the strategies and best practices identified, project managers can enhance their ability to navigate these complexities, leading to more successful digital transformation initiatives. Furthermore, the insights gained can inform professional development programs, guiding the training of project managers to better handle the multifaceted challenges they face. Ultimately, by improving the management of paradoxical tensions, organizations can increase their competitiveness, drive innovation, and achieve sustainable growth in a rapidly evolving digital landscape.

Concerning scientific relevance, the aim of this research is to verify and expand the literature surrounding digital transformation, project management and paradox theory. Multiple research agendas identify gaps in the literature when it comes to existing tension in organizations with regard to digital transformation(Tallon et al., 2019; Volpentesta et al., 2023). Furthermore, Iivari (2021b), indicates a need for the validation of paradoxes in project management, as well as the possibility of finding additional paradoxes.

1.4 Structure of the chapters & contents outlook

The rest of this paper is structured as follows. Chapter 2 builds the theoretical basis by first defining digital transformation and its organisational impacts, then presenting key project management paradigms, and finally reviewing paradox theory, including major tension typologies and strategies to address them. Chapter 3 explains the research design and methodology, detailing the purposive sampling of eight project managers, the semi-structured interview protocol, and the inductive thematic analysis method used to identify and evaluate paradoxical tensions. In Chapter 4, the empirical results are shown: the eight interviewees are introduced, twenty-four recurring tensions are mapped—with fifteen meeting Smith and Lewis's criteria for true paradoxes—and the coping mechanisms are summarized. Chapter 5 connects these findings to the main research question, discusses theoretical insights and practical implications for managing digital transformation projects, and considers study limitations with recommendations for future research. Finally, Chapter 6 highlights key insights and reflects on their relevance for both scientific understanding and practical application.

2. Theory

This chapter explores the core theoretical concepts necessary to gain a deeper understanding of the research question.

2.1 Digital transformation

Digital transformation is a current focal point of the information systems scholarly community. This can be seen by a significant rise in the number of digital transformation-related publications in the past few years (Plekhanov et al., 2023). Although the rise in the number of digital transformation-related publications is recent, the roots of digital transformation research can be traced back to the 1980s and 1990s when IT-enabled business transformation rose to prominence (Volpentesta et al., 2023). As IT systems have broadened in scope and power, digital transformation research has spread across many management, business and economic disciplines. This now interdisciplinary research field encompasses research from, among others, IT, entrepreneurship, strategic management, operations management, marketing, and organizational science (Plekhanov et al., 2023). In summary, the path of digital transformation research—from its inception in IT-enabled business transformation to its current interdisciplinary landscape—highlights its impact across management, business, and economic domains.

Despite existing for some time, there remains ambiguity surrounding the meaning of the digital transformation concept in academic literature. Information system scholars and practitioners find it difficult to pin down what exactly is digital transformation, and how it differs from the more established concept of IT-enabled organizational transformation (Wessels et al., 2021). Wessels et al. (2021) name two distinctive differences between digital transformation and IT-enabled transformation. According to them, digital transformation activities leverage digital technology to redefine the existing value proposition of a company. Furthermore, digital transformation encompasses a distinct organizational identity shift through IT-enabled organizational transformation. In line with these characteristics, Gong and Rebiere (2021) give the following definition for digital transformation:

“A fundamental change process, enabled by the innovative use of digital technologies accompanied by the strategic leverage of key resources and capabilities, aiming to radically improve an entity and redefine its value proposition for its stakeholders.”

Although closely linked, this definition sets it apart from IT-enabled business transformation, digitization, and digitalization. First, IT-enabled business transformation is characterized by the emergence of a reinforced organizational identity where digital technology supports the value proposition (Wessel et al., 2021). Digital transformation, on the other hand, is characterized by a new organizational identity in which digital technology has redefined the value proposition. Digitalization and digitization are also linked to the reinforcement of existing value propositions as opposed to redefining a value proposition (Gong & Ribiere, 2021). Consequently, while synergies exist among these concepts, digital transformation stands out by pioneering the creation of novel organizational identities and value propositions, fundamentally diverging from the supportive or enhancing roles typically associated with IT-enabled business transformation, digitization, and digitalization.

According to Wessel et al. (2021), digital transformation is not only applicable to the level of the organization, but also at the level of the individual, and the ecosystem (along with the geopolitical level which will not be explained). Digital transformation makes an impact on each of these levels. First, at the level of the individual, there is a shift in the skills and capabilities required of workers. Workers are required to accept and adopt new technologies at a faster pace (Trenerry et al., 2021), and acquire digital competencies (Štaka et al., 2022). In turn, Blanka et al. (2022) suggest that individuals who possess intrapreneurial and digital competencies are crucial in helping organizations in their digital transformation.

At the ecosystem level, new possibilities have emerged, enabling business actors to work together through digital technologies and infrastructures. This allows business actors to co-create independently of place and time (Dąbrowska et al., 2022). These digital transformation-enabled ecosystems, however, do bring new challenges in terms of joining, staying in, and leaving ecosystems, as well as questions surrounding the management and leadership of said ecosystems. One example of the orchestration of the ecosystem is the focus on a central hub actor that organizes the ecosystem. For example, in a study by Koukouvinou et al. (2022), the focal organization is an innovation cluster comprising multiple companies in the forestry industry, coordinated through a central hub led by its own dedicated CEO. This structure, however, may pose certain challenges, which will be discussed in the chapter on tensions. Alternatively, digital transformation-enabled ecosystems can form without a dedicated coordinating body (Dąbrowska et al., 2022).

As explored above, there are various levels of digital transformation. Concretely, at the level of the organization, Furjan et al. (2020) give several examples of digital transformation initiatives. In their study, initiatives showcase a wide range of digital transformation efforts, from process optimization and business model innovation to customer experience enhancement and public service improvement. Likewise, Reis and Melão (2023) identify, among others, AI, Big data, digital manufacturing, employee experience, and sustainable business as overarching categories related to digital transformation. These examples show the many forms digital transformation initiatives can take on. All in all, digital transformation represents a change in business across a wide spectrum, accompanied by numerous opportunities and challenges for businesses.

In the next part, project management is discussed, as this is often a component at the base of the implementation of digital transformation initiatives in organizations. Even though project management is a central theme in this research, it is important to note that digital transformation is not merely a sequence of implementation initiatives. As previously discussed, it represents a fundamental shift in the business model, accompanied by the emergence of a new organizational identity.

2.2 Project management

The implementation of digital transformation initiatives is often—if not always—carried out through a project that requires some form of project management. Project management can be defined as "The application of knowledge, skills, tools and techniques to project activities to meet project requirements" (Schwalbe, 2018, p. 9), where a project can be defined as "A temporary endeavor undertaken to create a unique product, service or result" (Schwalbe, 2018, p. 4). These projects can contribute to the digital transformation of an organization. It is important to note, however, that the digital transformation is more than a sequence of projects, as described in section 2.1.

Traditional project management consists of multiple stages. Initiation, planning, execution, control, closeout (McCray et al., 2002). In the initiation and planning stages, the commitment is made to start a project. Resources are allocated to a project, and an outline of the tasks to be completed during each phase of the project is made. These phases result in specifications after which the execution stage can be initiated. After the execution, follows the delivery and control stage, where stakeholders use and evaluate the project products. Finally, in the closeout stage, there is a formal closure to the project, with the possibility to start a new project. The strictly defined criteria, prescription of detailed product specifications, front-end plans, sequential phases, and development activities according to agreed specifications are all attributes linked to traditional project management (Bianchi et al., 2020). This traditional way of managing projects has proven benefits related to better control of resources, higher profit margins, better internal coordination, and a positive impact on strategic goals (Schwalbe, 2018). In IT projects, this structured approach to project management has led to increased new product design effectiveness (Mabert et al., 1992), more success in executing projects (Tatikonda & Rosenthal, 2000) and a faster speed to market (Griffin, 1997). All in all, traditional project management has brought many advantages to organizations employing these methods.

However, despite traditional project management methodologies having obvious strengths, there are also some weaknesses. Stage-Gate systems, for instance, have received criticism on multiple fronts for being too linear, too rigid, too planned for more innovative or dynamic projects, unable to adapt, unable to encourage experimentation, not context based, too financially based, too controlling and bureaucratic, too much focused on non-value adding work (Becker 2006, as cited in Cooper, 2014; Lenfle & Loch 2010). Furthermore, traditional project management seems most suited to be employed in a stable, predictable business environment (Agbejule & Lehtineva, 2022). Traditional forms of project management, therefore, are not suited to every project, especially when it comes to more dynamic environments.

To counter some of the shortcomings of traditional project management, various new forms of project management have emerged. Examples of these methods include agile, scrum and Kanban. Agile, being a project management method focused on delivering value to customers in short intervals, originated in software development (Dingsøyr et al., 2012). In contrast to traditional project management methodologies, Agile project management has gained prominence, particularly in dynamic environments like digital transformation initiatives. The Agile Manifesto (Beck et al., 2001) emphasizes adaptability, iterative development, and

customer collaboration, valuing individuals and interactions over rigid processes. This approach aligns well with digital transformation projects, which often require flexibility to manage evolving requirements and paradoxical tensions such as stability versus innovation (Smith & Lewis, 2011). Agile methodologies, such as Scrum and Kanban, enable organizations to respond more effectively to change, making them a viable alternative to traditional, stage-gated project management frameworks. Meanwhile, both Scrum and Kanban are methodologies that fit the agile project management practice. There are also hybrid models that seek to find a balance between agile and traditional project management. These new methods aim to address the rigidity of traditional project management and may lend themselves better to projects in more dynamic environments (Cooper, 2014). A study by Lalic et al. (2022) found agile project management to be linked to higher satisfaction from the project team employees and to have a positive impact on developing new capabilities. The latter is especially relevant to the context of digital transformation initiatives. Serrador and Pinto (2015) link agile project management to increased efficiency and increased customer satisfaction. Regardless of which method of project management is chosen, there is a likelihood that friction will occur due to the nature of digital transformation initiatives. These so-called organizational tensions may take different forms. The subsequent discussion focuses on a deeper understanding of organizational tensions and approaches to addressing them.

2.3 Agile project management

Agile project management has become a popular alternative to traditional stage-gated approaches. Originating from software development, Agile focuses on incremental delivery, adaptability, and solid collaboration among team members and stakeholders (Beck et al., 2001). These traits have made Agile especially appealing in digital transformation efforts, where organizations must quickly react to evolving needs, incorporate continuous feedback, and handle complexity.

While Agile provides notable advantages in fast-paced settings, its adoption can also reveal or intensify numerous paradoxical tensions in organizations. These paradoxes go beyond operational difficulties; they arise from the substantial organizational changes that Agile entails. For example, Agile encourages self-organizing teams and decentralized decision-making. This focus on autonomy can often conflict with established governance structures and accountability systems, generating a tension between delegation and control (Danneels, 2021). Agile promotes experimentation and learning through iterative cycles, yet this must be balanced with stakeholders' demands for efficiency and performance. This creates a pronounced tension between learning and performing, particularly in deadline-driven contexts (Lindskog, 2022).

Moreover, Agile's core values of flexibility and change may clash with the need for stability and standardization within traditional organizations. Teams must be agile and dynamic while still being in harmony with broader organizational strategies and timelines. Netz (2021) contends that managing the tension between stability and change is a key challenge in Agile environments, particularly in organizations experiencing transformation.

The shift towards Agile necessitates a cultural transformation that affects identity and belonging. Conventional roles, such as project managers or technical leads, may lose their definition or status within Agile teams, potentially leading to resistance, confusion, or disengagement among employees. Neumann et al. (2024) emphasize that without aligning the Agile mindset with the organizational culture, the transformation risks becoming superficial or failing entirely.

In addition to its practical aspects, Agile can be understood theoretically as both a resolution to and a source of paradoxical tensions. The adoption of Agile methods often coincides with traditional structures, leading to hybrid models that integrate elements of both. These hybrids are inherently paradoxical, necessitating simultaneous alignment with agility and formal processes (Ciampi et al., 2021). Consequently, Agile project management does not eliminate tensions; instead, it brings them to the forefront and requires active management.

As will be discussed in the following sections, project managers play a crucial role in navigating these paradoxes during digital transformation projects. Their experiences with Agile methods provide valuable insights into how organizations manage competing demands and implement strategies to address paradoxical tensions in practice.

2.4 Organizational tensions

The implementation of digital transformation initiatives means the organization goes from one state to another, a process in which organizational tensions can either be created or come to light (Smith & Lewis, 2011). Tensions come to light when different stakeholders have conflicting demands (Donaldson & Preston, 1995). The paradox perspective explores how firms can simultaneously meet these conflicting demands.

Smith and Lewis (2011) p.386 define paradoxical tensions as “Contradictory yet interrelated elements (dualities) that exist simultaneously and persist over time; such elements seem logical when considered in isolation, but irrational, inconsistent, and absurd when juxtaposed.” In other words, all sides of the duality seem necessary or important (Poole & Van de Ven, 1989, Cameron, 1986). These elements are mutually exclusive opposites instead of mutually reinforcing opposites, meaning they are incompatible and difficult to reconcile (Poole & Van de Ven, 1989). Therefore, both choosing between or combining the elements may seem impossible or undesirable (Cameron, 1986). To gain long term sustainability of a firm, there must be a continuous effort to meet paradoxical demands (Cameron, 1986).

Not all tensions are paradoxes, however. Tensions can also appear in the form of similar constructs like a dialectic or a dilemma (Smith & Lewis 2011). A dilemma, also called an either-or-situation, is a tension where a choice must be made between multiple competing options (Cameron 1986). In a dilemma, the options to consider from are perceived to be of high cost but also to offer considerable value benefits to the organization (Smith & Berg, 1987). To solve a dilemma, all options are weighed against each other, and a choice is made for the (seemingly) most beneficial option.

A dialectic can be described as a both-and-situation (Nonaka & Toyama, 2002). Dialectical tensions are continuously resolved by combining synthesized solutions out of contradictory ideas. The new resolution will then be implemented. After some time, this will again spur dialectical tension which will be resolved in a similar manner in a repetitive process (Bledow et al., 2009). This is because in a dialectic to synthesize tensions, similarities are stressed while the differences are being neglected (Smith & Lewis, 2011). Dialectics and dilemmas can both be paradoxical if they persist over time and their contradictions are interrelated.
Paradoxes are dualities which consist of two opposite elements which are intertwined and related thereby creating great complexity (Lewis & Smith, 2022). Both elements are interrelated and exist at the same time all the while opposing each other which creates a dynamic connection which persists over time.

Paradoxes contain either-or-thinking to highlight differences. However, in thinking of paradoxes in terms of either-or-tensions, there is a risk of blurring the way in which paradoxes are interrelated (Lewis & Smith, 2011). In this situation, the complex construct of a paradoxes is simplified by separating the elements, thereby possibly obscuring their interconnectedness (Lewis, 2000). Furthermore, although this simplification may seem an effective short-term solution, over a longer timescale it can become a hindrance as paradoxical tensions underly ongoing conflicts within the organization (Lewis & Smith, 2022). In practice, either-or-thinking in managers who try to choose between elements by examining them separately may lead to them to stress the importance of one of the elements (Luscher & Lewis, 2008). In turn, this leads to the accentuation of the other element(s), making the decision process impossible. In this way, it is possible for a continuous reinforcing cycle to emerge when a decision maker chooses one element over another, resulting in the eventual dysfunction of all elements (Cameron, 1986). Thus, opposing forces must be balanced to prevent extremes in any of the elements. This exitance of balanced opposites in a system may even increase the flexibility and freedom within that system which would be absent without the balancing of the paradox (Schumacher 1977).

In practice, paradoxes can come in several forms. In their study, Koukouvinou et al. (2022) find several paradoxes related to digital transformation initiatives in the forestry industry. One of these, is the need for a strong and fair leader of the innovation network of ten forestry companies aimed at fostering innovation among its members. Said leader must cater to both the needs of the innovation network itself, the participating companies, and do so while maintaining neutrality and fairness to each of the companies participating. Another example comes from work by Luoma et al. (2023) who explore the exploitation of data in the textile industry. They report the increasing awareness of consumers of textile sustainability on the one hand, but their lack of handling on said information on the other. Consumers appear to be primarily driven by price, while communicating the environmental cost to them proves challenging, and defining what constitutes sustainable textiles remains unclear.

2.5 Strategies for handling tensions

Figure 1 shows the process through which paradoxes are handled according to Smith & Lewis (2011). First, tensions in the organization are latent, persisting in the organization but not yet perceived as such by organizational actors. Next, as organizational actors become aware of the tension, the tension becomes salient. Such tensions can be triggered either by environmental factors—such as change and resource scarcity—or by new cognitive insights of organizational actors (Smith & Lewis, 2011). At this point, organizational actors may start to respond to the tension. This can either trigger a vicious cycle or a virtuous cycle of handling the paradoxical tension. A vicious cycle may occur when organizational actors act out of emotional anxiety, defensiveness, or the need for consistency (Cialdini et al., 1995; Heider, 2013). Their defense mechanisms toward contradictions may include denial, repression or even humor to avoid dealing with the inconsistencies (Hatch & Erhlich, 1993; Vince & Broussine, 1996; Wimelius et al., 2020). Further negative responses may include clinging to consistency at the cost of the alteration of their beliefs or just maintaining mindless commitment to past behaviors (Cialdini et al., 1995; Weick, 1993). Alongside organizational forces for inertia, these actions or inactions lead actors to increasingly focus on a single choice (Smith & Lewis, 2011). While this can lead to short term success, it may also lead to missing alternative perspectives and promoting unethical behaviors (Barron & Harackiewicz, 2001; Schweitzer et al., 2004).

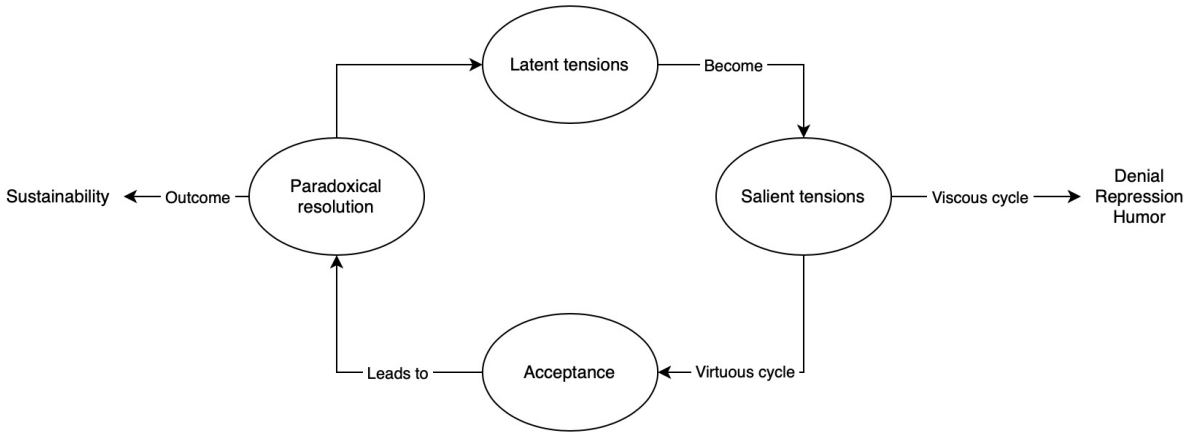

Figure 1. Simplified dynamic equilibrium model of organizing after Smith & Lewis, 2011

Alternatively, depending upon the response by organizational actors, a virtuous cycle toward awareness and acceptance of tensions may occur as opposed to defensiveness toward them (Smith & Lewis, 2011). This requires dynamic organizational capabilities as well as cognitive and behavioral complexity, and emotional calm by the organizational actors. Characteristics that, in turn, allow organizational actors to accept the coexistence of tensions, enabling them to work toward a more complex resolution of the paradox. This is possible either through splitting and choosing between tensions or by finding synergies beneficial to all sides of the paradox (Smith & Lewis, 2011; Wimelius et al., 2020).

Balancing strategy and open dialogue is key to resolving tensions in digital transformation projects. According to Habermas (1984), rational discourse and communicative action are two ways to manage paradoxical tensions in digital transformation projects. According to his thesis, conflicts can be resolved through thoughtful discussion, enabling a range of stakeholders to communicate openly and reach a shared agreement. This is consistent with tactics like bringing disparate forces together (Smith & Lewis, 2011) or establishing lively forums for discussion (Luscher & Lewis, 2008). To resolve conflicts such as control versus flexibility or short-term efficiency versus long-term innovation, project managers should facilitate structured dialogues that balance strategic (goal-driven) and communicative (understanding-based) actions.

2.6 Organizational tensions in managing projects related to the implementation of digital transformation initiatives

Much of the literature on paradoxes focuses on the organization as a whole. However, as Iivari (2021a) argues, both small and large projects can be viewed as temporary organizations. Therefore, paradox theory literature should be applicable individual projects as well as organizations as a whole. By this logic, digital transformation projects fall under the scope of paradox theory. Through his research, Iivari (2021a), finds 11 paradoxical tensions (table 1) related to systems development projects (specifically in relation to agile software development). These tensions relate to priority, structure, and execution of projects, each imposing competing demands. Though similar, these findings are not directly in line with the tension categorization by Smith & Lewis (2011). Boonstra et al. (2017) identify several tensions in large technology projects. These include standardization versus customization, large scope versus small scope, high impact versus low impact, integration versus differentiation, top down versus bottom up, big bang versus incremental, and differentiated versus integrated.

Further tensions are found in a study by Wimelius et al. (2021) who describe technology renewal in digital transformation as a paradoxical process involving three main tensions: First, the conflict between established and renewed technology usage arises from reliance on legacy systems versus adopting new technologies. Second, a tension exists between deliberate and emergent renewal practices, where top-down strategies clash with bottom-up initiatives from employees. Third, organizations must balance internal priorities with external pressures such as regulations and market trends.

Table 1

Tensions in Iivari (2021a) study

Criterea	Tensions	Description
Priority Tensions	Quality vs. Quantity in Time	Balancing high-quality outcomes with rapid delivery.
	Development Time vs. Development Effort	Reducing development time may require increased effort and cost.
	Efficiency vs. Innovativeness	Efficiency promotes routine, while innovation thrives on experimentation.
Structural Tensions	Management Control vs. Team Autonomy	Balancing centralized oversight with empowered teams.
	Formality vs. Informality	Structured rules vs. informal collaboration and decision-making.
	Individual vs. Team Compensation	Rewarding individuals vs. fostering shared success.
	Team Homogeneity vs. Heterogeneity	Similar team members ease communication; diversity boosts creativity.
Execution Tensions	Averse vs. Responsive to Requirements Change	Fixed requirements support planning; responsiveness enables adaptability.
	Blueprint vs. Continuous Planning	Upfront detailed planning vs. evolving project plans.
	Rigid vs. Flexible Method Enactment	Strict process adherence vs. adaptive practices.
	Disciplined vs. Spontaneous Process	Structured execution vs. improvisation and flexibility.

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3. Methodology

3.1 Methods of data collection

Given the complexity of the research objectives, this study relies on qualitative rather than quantitative data collection methods. Hammarberg et al. (2016) suggest qualitative research allows gathering data about experience, meaning and perspective from the participant's standpoint. This is in line with the research question of this paper, as the aim is to gather the subjective experience of the project manager in relation to paradoxes in digital transformation projects. To collect qualitative data the choice was made for semi structured interviews with practitioners, i.e. project managers, as the aim of the data collection is to both collect new data and conform and expand on existing findings (Lincoln & Guba, 1985). Semi-structured interviews provide a balance between comparability across respondents and flexibility to explore emerging themes. This is particularly useful for studying paradoxical tensions, which may manifest differently across organizations and contexts.

The selection of participants has been subject to a number of preconditions, as shown in table 2. First, participants should have managed at least one significant digital transformation project or must be well into the process of doing so. Then, participants should have at least two years of experience in project management as a project manager, program manager, or project director, to ensure candidates have some depth of understanding of managing projects. Finally, participants must be willing to participate in semi-structured interviews and share their detailed experiences. Participants were recruited through the use of purposive snowball sampling. This method finds new respondents through previous respondents (Bryman, 2016).

Table 2

Interviewee selection criteria

Criterea
At least 2 years of relevant experience
Experience as project manager or program director
Participants should have managed at least one significant digital transformation project, or must be well into the process of doing so

Note. Interviewees should all conform to all of the criteria

The interview questions were designed to align closely with the research objective: to explore paradoxical tensions experienced by project managers in digital transformation projects and the strategies they use to manage them. Grounded in the paradox framework by Smith and Lewis (2011), the questions reflect four key categories of organizational tensions—learning, organizing, belonging, and performing—relevant to the digital transformation context (Wimelius et al., 2020; Iivari, 2021a). The interview guide combined open-ended questions to capture spontaneous insights with structured questions to explore specific tension categories. This approach balanced inductive exploration with theoretical grounding. To ensure conceptual clarity, participants were provided with a brief explanation of paradoxical tensions in advance. The semi-structured format allowed for comparability across interviews while remaining flexible to emerging themes, strengthening both the depth and validity of the findings.

Before conducting the interviews, a test interview was held to review the questions asked and the methods used. Due to the specific terminology used in the interview questions, and due to feedback received in the test interview, participants were sent information on paradoxical tension and the research questions in advance (see appendix 2). Doing so may have several benefits to both the interviewee and the quality of the answers (Haukås & Tishakov, 2024). The candidates were not yet sent the exact explanation of the various tension categories as this was deemed detrimental to their responses to the initial open questions. During the interviews, appendix 2 was first covered with the interviewees to ensure a baseline understanding of paradoxical tensions. Then, the first open interview questions were asked according to the interview guide in appendix 3. After this, appendix 1 was covered with interviewees to set a baseline understanding of the tension categories as identified in Smith and Lewis (2011). Thereafter, the rest of the interview guide was followed.

The aim of the data collection phase is to reach theoretical saturation. According to Boddy (2016), theoretical saturation starts to occur at 6 participants and can definitely be concluded from 12 participants. Therefore, the aim was to interview 12 project managers to reach saturation.

Throughout the interview process, several measures have been taken to ensure ethical interview practices. For this, the work of Bryman and Bell (2011) was used as a guide. First, informed consent was addressed by informing the participants in the interviews about the goal of the study and what would be asked of them. Next, the participants were informed about the role of the interviewer as a student at the University of Twente. Participants were informed that at any point in the interview, they could stop the interview or not answer a question. Thereafter, participants were informed about issues regarding privacy. First their consent was asked to record the conversation to later be transcribed. Next, they were informed that the recordings would only be used for the transcription process and would be deleted thereafter. Furthermore, participants were informed that the recordings would be kept in a closed off encrypted environment, provided through the university, where only the interviewer and the thesis supervisors would have access to the data. In the transcripts, no mention was made of the participants name or any other personal information other than their job title. The final transcripts of the interviews have also been provided to the participants. Lastly, the ethical commission of the University of Twente was given the research proposal before the interview process. Trough following these steps, ethical practices regarding no harm to participants, informed consent, privacy and honesty and transparency are deemed fulfilled.

3.2 Method of analysis

The data collected through interviews is analyzed through thematic analysis. Thematic analysis is a widely applicable research method which identifies, analyzes, orders, describes and reports themes found in data collected through qualitative research (Braun & Clarke, 2020). The interviews were recorded, and the recordings were later used to assign themes to statements made by experts. The thematic coding was done with help of Taguette software (https://www.taguette.org). For the coding practice, the previously identified categorization of tension types by Smith & Lewis (2011) was used. In their work they identified learning, belonging, organizing and performing as categories for organizational tensions. Tensions can exist in these individual categories, or as tension between categories. This classification was used to assign themes to answers regarding tensions experienced.

To identify recurring tensions in the sample, a threshold was established such that any tension present in at least two out of the eight interviews (25% of the sample) was regarded as a recurring tension. This approach is consistent with established practices in qualitative research: Braun & Clarke (2006) assert that prevalence thresholds should be defined by researchers and reported transparently, while Guest, Bunce, and Johnson (2006) indicate that code saturation typically occurs within the first 6–12 interviews, justifying the choice of a 25% cut-off. Additionally, Mason (2010) posits that the theoretical significance can warrant the inclusion of themes appearing less frequently, and Charmaz (2006) states that theoretical saturation is reached when further data do not reveal new properties. By integrating both prevalence and theoretical relevance, this study guarantees that the tensions chosen for further analysis are empirically supported and theoretically significant.

The analytical procedure comprised four steps, each underpinned by established methodological sources. First, recurring tensions were identified through thematic analysis (Braun & Clarke, 2006) alongside constant comparison techniques from grounded theory (Charmaz, 2006), ensuring that coded themes reflected both prevalence and iterative categorization. Second, first-order codes were reframed into dichotomous “A vs B” tensions via the Gioia methodology for conceptual development (Gioia et al., 2013) and paradox coding frameworks (Schad et al., 2016), facilitating the generation of second-order constructs. Third, each tension was evaluated against the five paradox criteria of contradiction with interdependence, simultaneity, persistence, mutual-gain potential, and the necessity for both-and thinking (Smith & Lewis, 2011), with additional sensemaking guidance from Lewis (2000). Fourth, tensions were mapped onto Smith & Lewis’s typology of organizing, performing, learning, belonging, and cross-category tensions, as validated in empirical studies (Andriopoulos & Lewis, 2009). Together, these steps provide a rigorous and transparent framework for analyzing paradoxical tensions experienced by project managers in digital transformation projects.

3.3 Evaluation and justification of methodological choices

The methodological choices made for this paper come with potential challenges. The quality of the data from the interview is highly dependent on the ability of the interviewer to guide interview in the right direction, requiring a level of understanding of the topic at hand (Bogner et al., 2009). An insufficient amount of knowledge from the interviewer may lead the interviewee to give answers with insufficient depth to get the complete picture regarding all the paradoxical tensions experienced by project managers. Furthermore, Finlay (2021) finds describes the possibility for themes to be insufficiently anchored in its own data and in theory. Further pitfalls include too many of too few themes, too many theme levels, confusion between codes and themes and overlap between themes (Braun & Clarke, 2020). Despite these challenges, the chosen research methods are most suited to capture the personal subjective experiences of project managers.

4. Findings

4.1 Participants

The project led by Interviewee 1, a seasoned project manager with considerable expertise, took place within a major financial services provider based in the Netherlands, which employs over 20.000 individuals. This organization is currently undergoing a significant digital transformation. The initiative managed by Interviewee 1 focused on transitioning from a traditional, on-premise IT infrastructure to a cloud-native setup. This change encompassed both technological and cultural shifts, including the adoption of DevOps practices and cloud service platforms. Interviewee 1 brings a wealth of experience that spans both strategic and operational aspects of this transformation. They were selected due to their experience in overseeing a large-scale digital transformation initiative, particularly because the company involved operates in a different sector compared to the other companies studied.

Interviewees 2 and 3 have been involved in the implementation of digital transformation initiatives at various water boards in the Netherlands. Both were hired as project managers by the water councils from an external party. The water boards' goal with the projects was to enable data-driven water management across the full water cycle, from municipal collection to treatment and distribution. This includes efforts to implement a centralized data platform and enable predictive analytics through machine learning. However, an additional layer of complexity arises from the political nature of the water boards, where top leadership is elected every four years. As a result, the priorities of newly elected boards may not align with the long-term goals of digital transformation initiatives, potentially impacting their continuity and support.

Interviewees 4, 5, 6 and 7 are all project and program managers within the same company. The company is an engineering consultancy firm with over 1500 employees. The company has a unique decentralized structure, where semi-autonomous business units manage their own operations, clients, and financial responsibilities. This model promotes entrepreneurial behaviour and client focus, but also presents unique challenges in facilitating organization wide digital transformation.

Interviewee 8, with over 30 years of experience leading digital transformation projects across various sectors, was selected for this study due to his extensive experience and broad perspective on organizational change. The project discussed during the interview involved the replacement of legacy IT systems within a membership-based organization, with the goal of reducing costs and enabling more effective digital marketing. While the technical objectives were achieved, the project encountered resistance from parts of the organization, particularly among middle management and operational staff. Interviewee 8 emphasized the importance of stakeholder alignment, adaptive leadership, and context-sensitive communication in navigating organizational tensions. His approach drew on both strategic frameworks and practical tools to build support across all levels of the organization.

4.2 Tension results

The interviews with participants yielded 24 tensions related to digital transformation projects. Below is a short description of each tension alongside some of the statements which led to the theme classification. Table 3 contains an overview of which of the interviewees experienced which tension.

Table 3

Tension by interviewee

Tension identified	I1	I2	I3	I4	I5	I6	I7	I8
Age-related tensions	✓	✓	✓					✓
Goal setting & expectation management	✓	✓				✓	✓	
Underestimating resources/ resource contraints	✓		✓	✓			✓	
Lack of top-management support	✓	✓		✓		✓		
Sponsorship & coalition building			✓		✓			✓
Insufficient mandate					✓	✓		
Stakeholder involvement	✓	✓			✓			
Intention vs contribution		✓		✓	✓			
Lack of direction / decision making		✓	✓		✓	✓		
Vision through examples		✓		✓			✓	
Parallel structure implementation	✓				✓	✓		
Short term vs long term	✓	✓		✓			✓	
Process flexibility	✓	✓		✓			✓	
Organizational silos		✓		✓			✓	
One size fits no one		✓				✓	✓	

Tension identified	I1	I2	I3	I4	I5	I6	I7	I8
Technology-user alignment	✓		✓					
Cost scrutiny	✓			✓		✓		
Stakeholder interest conflict	✓				✓		✓	
Goal misalignment	✓				✓	✓	✓	
Management-team conflicts	✓							✓
The customer doesn't grasp their own request	✓		✓		✓			
Customer-driven catalyst				✓	✓	✓	✓	
Unclear value proposition			✓	✓		✓		
Project discontinuation				✓	✓		✓	
Unwillingess to change	✓	✓						✓

Note.

4.2.1 Clustered tension results

Age-related tensions have emerged as a challenge for project managers overseeing digital transformation initiatives. Numerous project managers have noted tensions concerning the ages of employees engaged in their digital transformation initiatives. Water boards struggle to attract young talent, leading to an increasingly aging workforce. It appears that older employees are more resistant to the changes associated with digital transformation projects, as they are accustomed to their traditional working methods, as illustrated in quote 1. Consequently, project managers observe a decline in intrinsic motivation among older employees to engage with, participate in, or meet the demands of these digital transformation initiatives, which ultimately undermines their success. Project leaders suggest that these employees may fear the uncertainties that come with a digital transformation since it requires them to adopt new tasks. Rather than actively participating in the transition, they are viewed as merely biding their time until retirement, as illustrated in quote 2. In contrast, as illustrated in quote 3, younger employees are seen as quickly acclimating to technology and new methodologies, injecting a spirit of change into the organization. These contrasting views exacerbate "us vs. them" sentiments between the younger and older workforce.

(1) *"You see in practice, therefore, the operators who have been used to working in a certain way for 30 years, have to change there. That technology offers a lot of*

opportunities, but the operators' acceptance is something else though. Not everybody is cheering to start doing this." – i2

(2) "In addition, there was an incentive among those managers, namely, I'll serve my time until retirement. That says something about one of the most important things. They are mainly older people who have difficulty with change and don't actually want to learn anymore." – i8

(3) "Bringing in young guys who have just graduated or who can adopt very quickly. That speeds up your capability tremendously." – i1

Goal setting and expectation management tensions have led to project ambitions misaligning with actual outcomes. Tensions related to goal setting and expectation management have been identified in at least four of the interviews. Interviewees describe how the initial ambitions of the projects are not in line with their outcomes. For instance, several participants emphasized that initial objectives were overly optimistic or had to be revised due to complexities or shifting organizational priorities. Quote 4 highlights how the scope of the project was halved from the initial goal. Quote 5 illustrates how the initial deadline of the project kept shifting as the project went on. The initially unrealistic scope of the projects led to some project leaders failing to deliver on the full scope of the project, as shown in quote 6. Interviewees stressed the importance of managing ambitions transparently to prevent disillusionment or a sense of failure among stakeholders.

(4) "(…) we reduced our scope significantly. Initially, we actually had 8 objectives that we were going to work on. Those are content themes about water management and wastewater management and we reduced those objectives to 4 use cases." – i2

(5) "I also just let go of the fact that we have to cross the finish line at a certain time. That finish line also keeps shifting." – i6

(6) "We did not end up making 90% of our staff more digitally capable than at the beginning of the programme. That was it. That was the original objective." – i7

Underestimating resources and resource constraints have frequently jeopardized digital transformation progress. Several interviewees reported that digital transformation projects face limitations due to scarce resources. Many participants noted that the initial planning phases did not adequately predict the comprehensive requirements necessary for successfully achieving the desired outcomes, highlighting the conflicts inherent in goal setting and expectation management. As emphasized in quote 7, there were concerns regarding the viability of the original business case, especially considering the significant financial investments that only become evident as the project progresses. Quote 8 further emphasizes that financial limitations are particularly prominent in digital transformation projects. Quote 9 indicates that if the necessary resources had been clearly identified from the outset, different decisions might have been made regarding the project's initiation or its goals.

(7) *"Whether that business case is so really sound I have. I do have some doubts about whether it is well-considered. Because the amount of money that goes into it is enormous and is not always seen beforehand." – i3*

(8) *"If you don't get your resources, you can't deliver successfully and usually money is one of the biggest drivers that gets stuck, because we don't have that money." – i1*

(9) *"That's something you can't express well at the beginning, huh, that you are going to be busy for 3 years. If we had known at the beginning that so much time, money and energy would go into this business platform, you have different questions: would you approach this in a different way? Maybe to the goal or maybe to achieve the same result." – i5*

Lack of top-management support tensions have undermined project accountability and momentum. Tensions stemming from insufficient support from top management were identified in four interviews. Quote 10 highlights a lack of clear ownership at the top, where management emphasizes the need for on-time, high-quality project outcomes yet fails to invest adequate time in the projects themselves. Additionally, at water boards, the issue of elections for leadership undermines sustained support for digital transformation projects, as illustrated in quote 11. Moreover, the fragmented governance within the organization necessitates robust top-management support for the initiative, which has been lacking and is hindering project progress.

(10) *"Indeed from senior management, it was considered very important that everything was done well, and finished on time, but that they themselves did not invest in it at all." – i4*

(11) *"Water boards are elected by residents. And they are then attached to a political party and they have their own party programme. So there has been a director in the past who said, 'We have to work on a data platform for the whole chain.' (…) Only then when new elections come, that board changes and then that board is perhaps less explicit in pursuing such kinds of goals." – i2*

Parallel structure implementation tensions arose when new frameworks ran alongside legacy systems without adequate integration planning. Three interviewees noted creating a new structure alongside the existing one during their digital transformation projects. This approach, illustrated in quotes 12 and 13, allows the original organizational structure to remain intact while necessary changes are made within the parallel structure. As a result, the original structure can continue to function without adapting to the new requirements of the parallel structure. This setup enables project leaders to introduce new methods of working without resistance from the adjustments they seek to implement. Ultimately, they aim to fully establish a new way of working before eventually merging it with the old structure.

(12) *"Well, we solve in this case we solve it by just putting a new group next to it, the geospatial information management group. (…) And therefore, we have put a new structure next to it. So yes, well, these should now come together." – i5*

(13) "What we have done is we have left the organisation that were part of the as-is completely, we have just cut those off ... have not made them part of our transformation organisation and objectives." – i1

Process flexibility tensions underscore the need to balance experimentation with structured governance. Four interviewees highlighted the necessity for flexibility in processes during digital transformation projects. They emphasized that some leeway is required throughout the process, and sometimes it is essential to deviate from the planned approach to accommodate stakeholders' needs. Quote 14 exemplifies this need for flexibility while also emphasizing the importance of having a structured framework. This is further supported by quote 15, where interviewee 7 explains that collaborating with people necessitates adaptability and agility during the change process.

(14) "You've really got to give yourself a bit of free rein—you need to be able to experiment, even crash and burn, that kind of thing. And yet, at some point you also benefit from properly documenting everything and bringing clarity and focus to your processes, your team, your vision, your roadmap. It's just a question of where you draw that line, you know?" – i4

(15) "This program is all about people, so you really can't treat it mechanically. People don't come with built-in focus and efficiency—after all, they're always flexible, agile, and dynamic. And yes, there needs to be room for that. That's what you're aiming for." – i7

One-size-fits-no-one tensions have emerged when organization-wide digital solutions clash with department-specific needs. During three interviews, tensions surfaced about the discrepancy between digital solutions intended for the entire organization and those tailored for specific departments or end users. The interviews revealed that the most effective solutions require individual departments to make concessions regarding what works best for them. Interviewee 2 noted that their stakeholders involved in the water board data platform project resisted these compromises and were unwilling to accept that the needs of other stakeholders could impact their work, as shown in quote 16. Furthermore, quote 17 demonstrates how various departments made differing decisions, which could now complicate future communication of digital systems across the organization.

(16) "Ultimately, it helps to take a bird's-eye view of what the problems are, how you might steer things, or where priorities should lie. But they say, 'Look, we've simply defined our own scope here, and we're not necessarily going to team up with other domains to look beyond our insulated framework.'" – i2

(17) "And what we're seeing now is that the four sectors each have their own platform to reach that Horizon point—they've all poured a lot of time and energy into them, but those platforms operate differently, relying on different technology stacks. So if you want to run a project between (department 1) and (department 2), they simply don't talk to each other." – i6

Technology-user alignment tensions highlight disconnects between technical priorities and actual user needs. Two interviewees noted a discrepancy in the needs of the users versus the technical implementation of their digital transformation projects. Quote 19 illustrates the point that technical personnel often focus on technology from their perspective while the actual users of the digital transformation project might want something different which is not seen by the technical people. Meanwhile, another project leader forces the end user to use their solution even though the end user indicates a misalignment between the outcome they wanted and the technical solutions from the project, as illustrated in quote 18.

(18) *"(…) people complain about yes, you don't deliver, you don't deliver what we asked for. Then I say, yes, but I deliver what I deliver and you have to adapt to me and not the other way around. Not very nice but. We are dealing with new technology, then you do have to adapt." – i1*

(19) *"The focus from the engineering office from technical management is often on the technology, but we also pay attention to the operators and the implementation." – i3*

Cost scrutiny tensions frequently lead stakeholders to challenge the financial feasibility of digital transformation efforts. Three interviewees noted that stakeholders questioned the expenses associated with digital transformation projects. This criticism may emerge from other areas within the organization where managers hold different objectives compared to the project's goals. Quote 20 exemplifies this tendency as a manager critiques the expenses of the digital transformation project. In contrast, quote 21 depicts a different type of financial scrutiny, wherein stakeholders hesitate to allocate a budget in their tender for the digital product's costs.

(20) *"Then I get, a response from a manager (...) who says dear (...) What you are doing costs tons of money, I see none of it, stop that." – i6*

(21) *"So we very much want to offer it, but we do really only have this this available and we say, yes, but that's not enough. And I understand I really get it. You also have to make money out of it and so on, but this is just all we have estimated and so yeah, but yeah, so that's not how it works." – i4*

Stakeholder interest conflict tensions arise when individual goals diverge from project or organizational objectives. In three interviews, a conflict of interest emerged among the actors involved in the projects. Quote 22 emphasizes that individuals tend to overlook the broader perspective of the transition, focusing instead on their personal objectives. These objectives may align with the organization's interests or reflect the self-interests of the stakeholders engaged in the project. Quote 23 provides a specific example of an organizational goal that contradicts the project's objective.

(22) *"You're simply being held back by all sorts of other goals and interests—how shall I put it?—where individuals have different performance targets than one another, and you're never going to resolve that. (…) And on top of that, there are people who pursue only their own individual interests; some of them don't think*

about the bigger picture at all, but just want to enrich themselves and come out ahead." – i1

(23) "And what I mean by that is if in my short-term project it doesn't deliver anything, then I don't support the idea. Then it's for someone else to make that long-term. That long-term investment, yeah, that's not what I'm about." – i5

Goal misalignment tensions lead stakeholders to pursue contradictory objectives within the same digital transformation project. Four interviewees noted instances of goal misalignment. This often occurs when stakeholders have different interpretations of the objectives of a digital transformation project, causing them to pursue goals that stray from the original intent. Such misalignment can arise from unclear project objectives or insufficient guidance for the employees involved. Quote 24 illustrates the friction this creates as stakeholders pursue their own diverging goals. Quote 25 comes from a project manager who views their contribution to the organization through the project as useful, while their manager disagrees, leading to additional tension. Finally, quote 26 demonstrates how employee interpretations can differ from those intended by the project initiators.

(24) "A lot of friction arises, because everyone starts chasing their own goal, whatever they consider important. And that—that really shouldn't happen." – i1

(25) "I know what (manager) wants, but she and I disagree on what the scope of (the company's) support should be. And, you know, something that can be applied directly within a project is, in my view, already good enough from a business-case perspective. And that—well, that creates some tension, because (manager) doesn't see it that way." – i5

(26) "That it's very easy for the interpretation of where it's headed—what the transformation involves, what you want to transform, even how you'd get there—to diverge. It can be explained in different ways, and within that it can happen that you think you're pursuing the same thing, but in fact you're aiming at entirely different goals." – i7

Management-team conflict tensions arise when project leaders face opposition or lack of support from their own management peers. Two interviewees faced conflicts with their management teams during digital transformation projects. Interviewee 1 encountered scrutiny from other management team members regarding their role in leading the digital transformation project and the need to change their way of working, as illustrated in quote 27. Interviewee 8 reported difficulties with fellow management team members related to their perceived inadequate capacities as a manager, which hampered the digital transformation project (quote 28).

(27) "I've had colleagues—even fellow management team members—who outright despised me, saying, 'Look, I've been doing this for ages. I'm responsible for it now, and I do it far better than you ever could. So I'm not going to learn anything new. I want nothing to do with it. I'll just stick with what I've got.' And I thought, 'Fine—then you'll be phased out soon enough.'" – i1

(28) *"Five, six years ago, I was still in that management team, and I noticed there were incompetent people who wanted to do all sorts of things. And what happens then is that your feelings come into play—you can't stop it, because we're all human. There are managers who are very good at playing the poker game. But what happens is irritation builds up, and then aversion follows. You distance yourself from someone, and you might even take active steps. But that depends on whether you have the influence—can you persuade the board to move that person to another position or at least get them off the management team, so you personally no longer have to deal with them." – i8*

Sponsorship and coalition-building tensions highlight the struggle to find internal champions for digital innovations. A constant challenge faced by project managers was the necessity to engage internal champions—such as colleagues, managers, or departments—who were willing to back digital innovations. Many employees were reluctant to participate due to uncertainty and perceived risks. These supporters, referred to as a "coalition of the willing," played a crucial role in legitimizing efforts and testing innovations. In the absence of formal mandates or widespread support, transformation initiatives depended on identifying colleagues open to experimentation and calculated risks. Quote 29 underscores the importance of locating stakeholders willing to abandon their familiar routines for the potentially advantageous new methods introduced by the digital transformation project, serving as a stepping stone toward gaining more stakeholders' involvement. Additionally, quote 30 addresses the need to explore the organization for stakeholders who recognize the project's potential value and are therefore inclined to engage with or sponsor the initiative.

(29) *"Exactly—and you need someone who can say, 'We always do it this way. I don't know if your solution works—because it hasn't been tried in a project yet—so let's use my project to test it out. Once it's proven to work, someone else will see how it works and say, "Ah, that's the way to do it," and then they can roll it out in their own project as well.'" – i4*

(30) *"When it comes to new projects, I really have to shop around within the organization to find someone who says, 'Yes, this is what I want.'" – i5*

Lack of direction and decision-making tensions have caused governance vacuums and unclear accountability. During four interviews, interviewees highlighted tensions stemming from unclear direction and decision-making. They expressed the necessity for structured governance, emphasizing that merely granting project participants autonomy wasn't sufficient. In some instances, interviewees felt that too much autonomy was given, advocating for more guidance for the stakeholders involved. Conversely, other project leaders observed that the expected governance from upper management was lacking, leading to a vacuum in accountability for the overall digital transformation. Quote 31 illustrates this issue, as shifts in the water board's leadership over the years have led to a reduced focus on the project, resulting in less guidance. Quote 32 demonstrates that after the initial leadership of the program was returned to individual departments, the clarity of direction started to wane compared to the previous phase.

(31) "And one of the things that's tricky there—because it's kind of a water-board thing—is that department heads walk around with 50 to 70 people reporting to them. Who are they actually managing? That just doesn't work. You see managers dropping out, and the board doesn't want to add another layer. There are plenty of other water boards operate like that (…) It turns somewhat self-directed, and then you end up asking, 'Who's really in charge?' They could organize that better." – i3

(32) "We've gone without it for a while now, and you can see that the steering is missing again, so to speak." – i6

Intention-versus-contribution tensions reveal gaps between stakeholder commitments and actual engagement. The tension between intention and contribution emerged in three interviews. This issue arises from a gap where project stakeholders express that they consider the project significant and vow to contribute, yet in practice, they fall short in delivering the needed contributions, undermining their initial commitments. As highlighted by the programme manager in quote 33, this lack of action reveals the actual value the organization assigns to the project compared to its other operations. Additionally, as noted by the project manager in quote 34, there exists a disconnect between the positive feedback regarding the product from their project and the actual usage of the product within the organization.

(33) "Yes, and maybe sometimes you just have to acknowledge that if you say you want something but it doesn't get off the ground—well, then you really don't want it, because you must have deemed other things more important." – i7

(34) "We get mega positive reactions when you do user research and see it in action—it's really overwhelmingly positive—but if you look at how much it's actually used, there's a mismatch, so to speak, with what people say about it." – i4

Vision-through-examples tensions underscore the power of showcasing concrete use cases to persuade stakeholders. Three interviewees mentioned communicating a vision through examples. Examples are seen as an efficient way to persuade stakeholders in digital transformation projects of the usefulness of the projects. Quotes 35, 36, and 37 illustrate the idea of the project managers to use examples to get people thinking about how they can use it themselves.

(35) "Therefore, we assessed which municipalities qualified and selected one municipality to develop a use case in order to showcase a successful product. The hope is that others can then follow in a similar way, thereby building the persuasive power needed for the new or unfamiliar elements that some may be hesitant about." – i2

(36) "Can we now roll this out and, above all, share the success story within (the department)? Also present it in the other departments and see if we can get people there to get on board. So we've tried to show it primarily as a best practice: 'This is how you can get it off the ground.'" – i7

(37) "It just needs to be put into action once before people grasp what you can do with it. If you can show that, in this project, it was used in this way, then the gears will start turning." – i4

Organizational silos tensions impede cross-departmental collaboration and hinder unified implementation. The issue of organizational siloing emerged as a significant concern in three interviews. Interviewees noted that various departments within their organizations had differing views on how to execute their respective projects, leading to resistance against finding a company-wide solution for project implementation. This resistance was partly due to the considerable autonomy enjoyed by these departments. Quote 38 demonstrates how one department is solely focused on its current responsibilities and is unwilling to engage in the project unless it benefits them. Additionally, quote 39 reflects a similar challenge, emphasizing the departments' autonomy within the organization, which further enables their resistance to the project's implementation.

(38) "Ultimately, every department in every organization is responsible for translating investments and activities into what they ultimately contribute and what value they bring to the organization, and for saying, 'Yes, we're doing our job now and managing the assets we have. Fine. So there's no need, and you'll have to prove that there is one. Otherwise, we won't participate.'" – i2

(39) "We have our own things. We don't let another department tell us what we have to do. It isn't really competition—but in a way it is. Yes, we just do things our own way." – i4

Insufficient mandate tensions arise when project leaders lack formal authority to compel stakeholder alignment. In two interviews, comments related to the interviewees' mandates were noted. Insufficient mandate pertains to the interviewee's feeling or actual responsibility for the project while lacking the correct mandate to compel stakeholders to align with the project's goals, as illustrated in quote 40. Quote 41 explains that the programme manager for the digital transformation projects lacked a mandate but did have access to top management responsible for making project-related decisions.

(40) "No, very often I don't have the right influence because I'm not mandated for this." – i5

(41) "The program manager had no mandate, but you did have a short line to the top management. (…) The programme manager organises and directs but is not in charge." – i6

Unclear value proposition tensions highlight the difficulty in articulating and securing recognition of a project's worth. In three interviews, tensions regarding the unclear value proposition of the digital transformation project were observed. Interviewees find it challenging to convince others of their project's value, which may differ from the expectations associated with traditional projects. Quote 42 exemplifies how their organization believes it can leverage their work without compensating for the effort, as this is not typical for them. Similarly, quote 43 highlights the need for a new mindset that aligns more closely with digital

products, where the necessary effort is front-loaded rather than applied throughout the project. Quote 44 demonstrates the disagreement on the value to be derived from the digital transformation projects, stemming from varying interests within the organization.

(42) "Yes, people just think, 'This is something we already have. I can just grab it and use it,' while in reality we need to actually sell it. But it's digital, so it must be free, right? No—because we've put in the work, so it isn't. Sure, they understand what "hours" means, but they often don't grasp what the value of a product like this really is." – i4

(43) "When I say, 'Yes, but I have a good idea that could generate revenue in the long run,' you immediately haggle over, 'Okay, but how much revenue will it generate?' And then one person says, 'No, it shouldn't generate revenue at all—it should actually strengthen my position in the market.' So there's yet another agenda, and that's essentially what it comes down to." – i5

(44) "What we're trying to do there is introduce the concept of value-based thinking. That means that if you deliver value worth 100—and your efforts cost you 100—you're still delivering value of 100 even if your actual effort only cost 75. You can then have the conversation with the client: 'I deliver value of 100, so I'll invoice 100,' instead of invoicing based on the hours I spent to create that value. Eventually, if clients start offering only 70—because the market value for that type of work has dropped—you need to make sure you're not still spending 100 when the client will only pay 70. That's thinking in terms of value, having that discussion with the client, and exploring alternative revenue models." – i6

Project discontinuation tensions have forced some project managers to relinquish control before goals were achieved. Three of the interviewees quit their projects before they were able to fulfil the full scope of the project. Interviewee 4 stated that due to the many setbacks in one of their digital transformation projects, alongside their relative inexperience at the time, they were eventually unable to finish and had to hand over the project management role to a new project manager, as stated in quote 45. Similar reports of stopping as project manager due to too much resistance were reported by the other two interviewees as also illustrated by quote 46.

(45) "So it's not as if I can say everything worked out in the end—because I stepped away and they brought in a new project manager to replace me, given what a nightmare of a project it was with so many important internal stakeholders." – i4

(46) "We tried to bring everything together, to turn it into something joint. But there was actually too much resistance to that. Fine—so they found another solution. It then went back to the business, and the business itself had to take it forward." – i7

Customer-driven catalyst tensions have shown that aligning digital transformation efforts with tangible client needs accelerates progress. In the organization involving interviewees 4, 5, 6, and 7, tensions arise concerning the customer-driven aspect of the business, especially in relation to digital transformation projects. Interviewees indicate that the organization's

approach involves reacting promptly to tangible customer inquiries, as noted in quote 47. Tying digital transformation efforts to these concrete customer demands facilitates progress in the projects, as shown in quote 48. Conversely, projects that do not align with specific customer requests encounter greater resistance within the organization and face more challenges in being realized.

(47) "I think that we work in an organization where the customer's demand comes above everything else. This can lead to us keeping all kinds of resources running, simply because that's how we serve the customer, so to speak." – i6

(48) "I believe the real driver for (the organisation) lies outside of (the organisation): what do we really want to be able to offer our clients? What do we want to contribute to society? That's what truly excites people, and it's the imperative to break new ground much earlier, right? So if something comes onto our radar—not because we ourselves want it, but because a client is asking for it—then things suddenly become possible so much faster, since you secure commitment much sooner." – i7

Stakeholder involvement tensions reflect the trade-off between broad engagement and focused progress. Three interviews highlighted tensions surrounding stakeholder involvement. Some project leaders emphasized the importance of engaging stakeholders to gain support for their initiatives. In contrast, other interviewees noted that involving stakeholders can hinder progress, with some expressing a preference for smaller feedback groups. Quote 49 demonstrates the intentional limitation of stakeholder participation, while quotes 50 and 51 reflect concerns about the broader initial scope of stakeholder involvement, advocating for a focus on a smaller group due to the limited contributions from stakeholders.

(49) "In fact, we kept our interaction with that party very limited—just the bare minimum needed to ensure we could deliver what was required, and no more. It was unpleasant, but it was what it was." – i1

(50) "But if you look at what each individual actually contributes, it's absurdly little—in some cases, it's shockingly low. They want to be part of it, but whether they truly add value is very much in question. And you'll notice that in an organization like this, you wouldn't go up to a colleague and ask, 'Hey, why are you here?' because they're not contributing anything." – i2

(51) "In hindsight, I thought it was a fun project to tackle, and I think we made great progress—but looking back, wouldn't you want to discuss the big project in a smaller committee? Communicate it differently and manage it entirely as separate sub-projects, keeping people more compartmentalized." – i5

Unwillingness-to-change tensions highlight the psychological barriers some employees face during digital transitions. Three interviewees indicate a specific tension related to unwillingness to change in the context of a digital transition project, as literally illustrated in quote 52. Quote 53 goes into how, in their case, this tension was related to a lack of motivation to change due to a fear of the unknown and almost being able to retire. Finally, quote 54

illustrates how after trying and failing to include employees in a digital transformation initiative, there should be room for (older) employees to be completely shielded from the digital transformation initiatives.

(52) "People don't want to adapt." – i1

(53) "Then, in their opinion, their work becomes somewhat different, because they're no longer working in their own… well, yes, that has— I don't know if that's exactly learning—but they think they'll have to perform tasks other than what they do now? It's really a fear of the unknown, and given that they still have to slog on with the current client for a few more years, they're not necessarily intrinsically motivated to explore that unknown." – i2

(54) "(…) why they're not enthusiastic about it, and that you take that seriously by looking into how we can include you, then? And with some people, you know, in that case you really shouldn't even try. Then give them the reassurance that they'll never have to deal with digitization again—that there's always a way to solve it differently for that group." – i8

Short-term versus long-term tensions often force organizations to choose immediate operational success over future-focused digital initiatives. Four interviewees experienced tensions when short-term goals clashed with the long-term goals of the digital transformation project. Quote 55 illustrates how, despite having a long-term roadmap, requests keep coming from stakeholders with ad hoc changes that they believe can be implemented quickly, although this may be detrimental to overall project progress. Furthermore, interviewee 7 illustrates how you need to be profitable in the present while working on projects for the future (quote 56) and how eventually a choice was made by their organization to prioritize short-term profit over long-term digital transformation project efforts (quote 57).

(55) "Sometimes it's difficult to protect our own roadmap against the wishes of our direct customers—namely, our colleagues. We know where we want to go and have drawn up a long-term strategy, including for feature development. But you still very often hear people saying, 'Hey, but can you…?' and 'Can't you guys just quickly build this in?'" – i4

(56) "Right, because anything you do with an eye toward the future still has to be paid for by what we're producing together here and now." – i7

(57) "So, in the end, we gave priority to the day-to-day operation; we prioritized everyday operations and success in the present over anything else." – i7

The customer-doesn't-grasp-their-own-request tension arises when project initiators lack the necessary understanding to frame viable digital solutions. In three interviews, all related to different organizations, project managers noted the lack of understanding of the request made by project instigators. Projects were initiated without full knowledge of the context in which the project would take place, without a clear idea of the resources required to complete the project, or without knowing what solution they were asking for. As an example, quote 58

mentioned the need for a different approach with the project initiator to first give them the knowledge needed rather than getting started on the request which may be misinformed and not lead to the correct project outcomes. This is further illustrated in quote 59 where the interviewee specifically points to project outcomes for uninformed customers always mismatching the desired outcomes, as far as they were able to specify such outcomes with their limited knowledge.

(58) *"Here's a small example I can give: at the (…) water authority, the tender we just ran was also a dialogue procedure, with three occasions where you meet with (...). In the second round we told them, 'We don't think your initial request is the right approach. You're asking for one large framework agreement, but the very first assignment under it goes too far—you're already asking us to supply technology, even though we believe you're not yet in a position to fully assess that technology. We would rather begin with a consultancy assignment during the initial phase, so we can define everything together with you. Then, based on that joint understanding, we can determine the best way to meet your requirements.' That's how we handled it." – i3*

(59) *"The consumer isn't sufficiently equipped on their own to really understand what they should actually be asking, so they're falling behind—and as a result, everything you deliver always ends up being 'wrong.'" – i1*

4.2.2 Reframing of results and paradox assessment

Table 4 shows the tensions reframed as x vs y statements. These statements were then assessed against the paradox criteria: oppositionality, interdependence, simultaneity, persistence. If all of the criteria were met, the tension was classified as being a true paradox. In total, out of 24 tensions identified in the initial coding, 15 were found to be paradoxical.

Table 4

Tension reframe and paradox classification

Tension	Tension reframe	Oppositionality[1]	Interdependence[2]	Simultaneity[3]	Persistence[4]	True Paradox?
Age-related tensions	Experience (older staff) vs Renewal (younger staff)	✓	✓	✓	✓	✓
Goal setting & expectation management	Ambitious goals vs Realistic goals	✓	✓	✓	✓	✓
Underestimating resources/ resource contraints	Available resources vs Required resources	✓	✓	✓	✓	✓
Lack of top-management support	Needed top-down support vs Lack of sponsorship	✓	✓	✓	✗	✗
Sponsorship & coalition building	Securing sponsors vs Accessing resources	✓	✓	✓	✗	✗
Insufficient mandate	Full mandate for PL vs Limited mandate	✓	✓	✓	✓	✓
Stakeholder involvement	Broad stakeholder involvement vs Selective involvement	✓	✓	✓	✓	✓

Tension	Tension reframe	Oppositionality[1]	Interdependence[2]	Simultaneity[3]	Persistence[4]	True Paradox?
Intention vs contribution	Saying “I will…” vs Following through	✓	✓	✗	✗	✗
Lack of direction / decision making	Clear direction & decisions vs Indecision	✓	✓	✗	✗	✗
Vision through examples	Showing future examples vs Uncertainty	✓	✓	✓	✓	✓
Parallel structure implementation	Parallel structures vs Existing ones	✓	✓	✓	✓	✓
Short term vs long term	Short-term vs Long-term	✓	✓	✓	✓	✓
Process flexibility	Process flexibility vs Process stability	✓	✓	✓	✓	✓
Organizational silos	Siloed departments vs Cross-cutting collaboration	✓	✓	✓	✓	✓
One size fits no one	One-size-fits-all vs Tailored solution	✓	✓	✗	✗	✗
Technology-user alignment	Technical perspective vs End-user perspective	✓	✓	✓	✓	✓
Cost scrutiny	(…)	✗	✗	✗	✗	✗
Stakeholder interest conflict	Divergent stakeholder interests vs Shared objectives	✓	✓	✓	✓	✓

Tension	Tension reframe	Oppositionality[1]	Interdependence[2]	Simultaneity[3]	Persistence[4]	True Paradox?
Goal misalignment	Divergent stakeholder aims vs Aligned objectives	✗	✓	✓	✓	✗
Management-team conflicts	MT collaboration vs Internal conflicts	✓	✓	✓	✓	✓
The customer doesn't grasp their own request	Clear customer request vs Unclear customer request	✓	✓	✓	✗	✗
Customer-driven catalyst	Customer-demanded initiatives vs Internally driven innovations	✓	✓	✓	✗	✗
Unclear value proposition	Clear value proposition vs Unclear value proposition	✓	✓	✓	✓	✓
Project discontinuation	Project continuity vs PL dropping out	✓	✓	✗	✗	✗
Unwillingness to change	Voluntary adoption vs Active resistance	✓	✓	✓	✓	✓

Note. The "Cost scrutiny" theme reframe was left blank on purpose as it lacks oppositionality

4.2.3 Categorization according to Dynamic equilibrium model

Next, Smith and Lewis's (2011) Dynamic Equilibrium Model is used to categorize tensions after they've been reframed and assessed for their paradoxical nature (see Section 4.2.2). This model identifies four domains: Performing, which involves balancing short-term efficiency with long-term goals; Learning, which covers tensions between current knowledge and future experimentation; Belonging, which deals with identity and inclusion dynamics; and Organizing, which addresses conflicts over structure and authority. The categories of tension and the corresponding paradoxical tensions found in this study are outlined in Table 5.

Table 5

Classification of paradoxical tensions to tension categories

Tension category	Tension
Organizing	Process flexibility vs Process stability
	Parallel structures vs Existing ones
	Siloed departments vs Cross-cutting collaboration
	Full mandate for PL vs Limited mandate
Learning	Showing future examples vs Uncertainty
	Technical perspective vs End-user perspective
Belonging	Experience vs Renewal
	Broad stakeholder involvement vs Selective involvement
	MT collaboration vs Internal conflicts
	Voluntary adoption vs Active resistance
Performing	Ambitious goals vs Realistic goals
	Available resources vs Required resources
	Divergent stakeholder aims vs Aligned objectives
	Clear value proposition vs Unclear value proposition
	Short-term vs Long-term

4.5 Strategies for managing paradoxical tensions

Table 6 shows the coping mechanisms interviewees employed to deal with tensions in their digital transformation projects. A total of 45 coping mechanisms were found which could be assigned to specific tensions mentioned by the interviewees. Out of these, 27 are linked to tensions deemed paradoxical.

Table 6

Coping mechanisms per interviewee

Solution	Interviewee	Linked to tension
Choose your battles wisely; determine if something is within your control, take action if it is, and otherwise don't waste unnecessary time or energy on it.	8	
Speak to stakeholders beforehand, convince them, and discover their personal interests.	8	Stakeholder interest conflict
Practice strong stakeholder management: find out what motivates someone and identify the question behind the question.	8	Sponsorship & coalition building
Win others over with humor, self-deprecation, transparency, and vulnerability.	8	Sponsorship & coalition building
Create a coalition of the willing: find allies who share your vision.	8	Sponsorship & coalition building
Sketch the future and show how it works – people need to experience it to understand it.	8	Vision through examples
Speak out, explain the "why," give inspiring guidance, and don't endlessly push something that isn't working.	8	Age-related tensions
Escalate when necessary and let leadership make a decision when interests clash.	8	Management-team conflicts
Have an open dialogue, share your perspective, and dare to end a stuck process.	8	Management-team conflicts
Start small and create urgency so people see that something is happening.	8	Unwillingness to change
Give innovators and early adopters room to set the pace.	6	Unwillingness to change
Annually determine which projects are the stepping stones to the future.	6	Goal misalignment
Expect a wave motion of diverging and converging over time.	6	Lack of top-management support

Solution	Interviewee	Linked to tension
Engage in dialogue and acknowledge that diverse contributions are necessary.	6	Cost scrutiny
Set clear frameworks and goals instead of just empowering.	6	Lack of direction/decision making
Introduce value thinking: deliver value and bill proportionately.	6	Unclear value proposition
Standardize to create flexibility.	6	Process flexibility
Don’t focus only on technology; involve operators and pay attention to implementation.	3	Technology-user alignment
Assemble a separate team focused on operators.	3	Technology-user alignment
Avoid a big bang; choose a phased approach.	3	Technology-user alignment
Attend the sessions, contribute, and actively assess.	3	Stakeholder involvement
Set aside what is not needed now and give people focus.	3	Lack of direction/decision making
Think beforehand about the consequences of your approach.	3	Goal setting & expectation management
Consider all aspects beforehand and integrate them into your structure before starting.	1	Goal setting & expectation management
Solve it with both parties, outside the formal setting, and be open about each perspective.	1	Stakeholder interest conflict
Do a simple joint activity to determine where you stand and where you want to go together.	1	Goal misalignment
Convince the organization to look at value from their own objectives.	1	Stakeholder interest conflict
Communicate clearly from the top what the priorities are so everyone acts accordingly.	1	Lack of top-management support
Bring experienced people and beginners together so they learn from each other.	1	Age-related tensions
Determine in advance who you need, clarify expectations, and provide guidance during the process.	1	
Narrow your scope to make implementation feasible.	2	Goal setting & expectation management

Solution	Interviewee	Linked to tension
Limit the number of participants to those who truly contribute.	2	Stakeholder involvement
Provide direction but allow people the freedom to make their own choices.	7	Organizational silos
Focus on stakeholder involvement instead of only performance targets.	7	
Have a thorough closing conversation with all stakeholders.	7	Goal setting & expectation management
Start small and expand to enable faster action.	7	Goal setting & expectation management
Look for shared energy instead of tension.	7	
Let customer demand be the accelerator.	7	Customer-driven catalyst
Jointly define the minimum required to go live to increase motivation.	4	Underestimating resources/resource constraints
Find willing colleagues who dare to start and gather project references.	4	Sponsorship & coalition building
Create frameworks to enable freedom and distribute responsibilities.	4	Process flexibility
Budget generously to absorb setbacks.	4	Underestimating resources/resource constraints
Solve it by setting up a parallel new group.	5	Parallel structure implementation
Follow your own path and seek support from those who understand the bigger picture.	5	Insufficient mandate
Appeal to people through the “I,” not through the “we.”	5	Stakeholder interest conflict

Note. A number of the cells in the “Linked to tension” column are empty since the direct link between the proposed coping mechanism and a specific tension could not be established.

4.6 Critiques by interviewees on paradoxical tension categories

Not every interviewee has experienced every tension in their digital transformation projects, or they found that the tension definition was too closely related to a tension mentioned earlier in the interview. Table 6 illustrates the tension prevalence among all interviewees. The learning & belonging tension is the least experienced tension, with only 3 interviewees recognizing this tension in their project. Two more interviewees note how they find no difference between the Learning & Belonging tension and another tension mentioned before in the interview. The most prominent tensions experienced were Belonging & Organizing and Learning & Performing, with all of the interviewees being able to give an example for these tensions. Notably, only interviewee 1 was able to relate to all the tension questions in the interview.

Table 7

Tension prevalence among interviewees

Tension	I1	I2	I3	I4	I5	I6	I7	I8	Total
Learning	✓	✓	✓	✓	✓	✓		✓	7
Organizing	✓	✓	✓		✓	✓	✓	✓	7
Belonging	✓	✓	✓	✓		✓		✓	6
Performing	✓	✓	✓	✓		✓	✓	✓	7
Learning&Performing	✓	✓	✓	✓	✓	✓	✓	✓	8
Learning&Belonging	✓	✓		O	✓			O	3
Organizing&Learning	✓	O	✓	✓	✓	✓	✓	✓	7
Organizing&Performing	✓		✓	✓		✓	✓	✓	6
Belonging&Performing	✓	✓	✓	✓	✓		✓		6
Belonging&Organizing	✓	✓	✓	✓	✓	✓	✓	✓	8
Total	12	10	11	10	9	10	9	10	

✓ = Tension experienced

O = Experiences no difference compared to an earlier tension.

5. Discussion

5.1 Answer to the central research question

The aim of this paper was to answer the central research question: "What are the key tensions experienced by project managers in incumbent firms when implementing digital transformation initiatives and which strategies do they employ to handle these tensions?". As illustrated in chapter 4, table 4, 25 tensions have been identified, 15 of which are deemed paradoxical. Table 6 in chapter 4 shows 45 suggested coping mechanisms proposed by interviewees to deal with these tensions.

5.2 Theoretical implications: Tensions experienced

This study has several findings that align with earlier work by Iivari (2021a). For example, Iivari describes the tension "Rigid vs flexible method enactment," which corresponds to the tension Process Flexibility vs Process Stability found in this study. Both highlight the need to strike a balance between adhering to predefined procedures and being adaptable. However, the tension in the context of digital transformation projects extends beyond what Iivari (2021a) describes, as their flexibility pertains to teams following a strict Kanban/Scrum methodology, while this study situates it within a broader organizational change. Another similarity can be found between Iivari's (2021a) "Management control vs team autonomy" tension and the "Lack of direction/decision making" and "Mandate for project leader" tensions. All these tensions suggest a struggle related to either having too little guidance (no clear decision-maker) or too little formal authority (no real mandate). Notably, however, Iivari's (2021a) tension is classified as a paradoxical tension, whereas in this study, both the "Lack of direction/decision making" and "Mandate for project leader" tensions are noted as not being paradoxical tensions in the context of a digital transformation project.

Despite some clear overlap between the studies, several findings are also unique to this research. The "stakeholder involvement" does not correspond to any of the paradoxical tensions identified in the Iivari (2021a) study. Additionally, the tensions related to employee age are also absent from their research. Their "team homogeneity vs heterogeneity" tension addresses skill- and role-based diversity in agile software teams without referring to a generational mindset. The tension in this study reflects how veteran employees clash with digital-native hires who are more open to experimentation. This represents an explicitly socio-demographic divide not present in the Iivari study.

Furthermore, this paper also aligns partially with other research on the topic. Earlier work by Wimelius et al. (2020) establishes that the focal organization in their study struggles with inner vs. outer renewal contexts, where tensions surface when internal goals and capabilities misalign with external pressures. This is similar to the “customer-driven catalyst” tension found in this study. Additionally, their “Established vs renewed technology use” tension, which addresses an organization's need to maintain day-to-day operations on an established platform while adopting practices for a new platform, is also experienced by participants in this study and aligns with the “parallel structure implementation.” The “Technology-user alignment” specifically mentions the impact of their study on structures, processes, and cultures, which would align with the aforementioned tension. Finally, Wimelius et al. (2020) identify the “deliberate vs emergent renewal practices” tension; tensions between deliberate (formal) and emergent practices that users develop to cope with or leverage new technology. Although this tension may relate to some of the tensions in this study, out of the three tensions identified in Wimelius et al. (2020), “deliberate vs emergent renewal practices” appears to be the least experienced among the interviewees in this study.

This study sheds more light on how digital transformation projects heighten the classic tension between traditional stage-gated approaches and agile methods. Stage-gated models focus on detailed planning, formal reviews, and predictable timelines, prioritizing process stability. In contrast, agile methods require ongoing adaptation, iterative delivery, and responsiveness to changing requirements. This contrast is reflected in the Process Flexibility versus Process Stability paradox, where project managers must balance the rigidity of predefined phases with the need for experimentation and course correction. Similarly, the tensions “Lack of Direction/Decision Making” and “Insufficient mandate” highlight the struggles between hierarchical, stage-gated control and agile’s decentralized team autonomy. As mentioned earlier, established companies often rely on deterministic, stage-gated frameworks but recognize their limitations in accommodating digital transformation’s fluidity. By adopting agile practices without fully giving up stage-gate governance, they create new paradoxes, forcing project managers to constantly navigate the space between predictability and adaptability..

Finally, this study reflects how digital transformation projects heighten the classic tension between traditional stage-gated approaches and agile methods. Stage-gated models focus on detailed planning, formal reviews, and predictable timelines, prioritizing process stability. Meanwhile, agile methods require ongoing adaptation, iterative delivery, and responsiveness to changing requirements. Despite not being asked specifically about this, several respondents reported on tensions related to these two methods. The contrast is seen in the Process Flexibility versus Process Stability paradox, where project managers must balance the rigidity of predefined phases and roles with the need for experimentation and flexibility. Similarly, the tensions “Lack of Direction/Decision Making” and “Insufficient mandate”. This highlights the struggles between hierarchical, stage-gated control and agile’s decentralized team structure. Incumbent firms often rely on deterministic, stage-gated project management but recognize their limitations in accommodating the fluidity of digital transformation. By adopting agile practices without fully giving up stage-gate governance, they create new paradoxes, forcing project managers to navigate the area in between managers to navigate the space between predictability and adaptability constantly.

5.3 Theoretical implications: Tension coping strategies

In total, interviewees described 45 distinct mechanisms for handling tensions in digital transformation projects. Out of these, 27 link specifically to paradoxical tensions (Table S). These coping mechanisms can be organized under four broad paradox resolution strategies identified by Smith and Lewis (2011) and Wimelius et al. (2020); avoiding/denial, splitting, temporal/viral cycling and bridging/integration. Being advocated responses to specifically paradoxical tensions, the focus will be on the 27 coping strategies for dealing with the paradoxical tensions only.

Regarding avoidance and denial, several interviewees admitted to minimizing tensions by excluding or limiting stakeholder participation. By doing so, they reduced the immediate friction and the cost of confronting the underlying "stakeholder involvement" paradox. Interviewee 1 deliberately kept interactions with a particular stakeholder group very low. Similarly, interviewee 8 advocates keeping employees nearing retirement out of harm's way when it comes to digital transformation projects. Even with previous literature considering avoidance as harmful (Smith & Lewis, 2011), this study's findings demonstrate that selectively avoiding certain stakeholders can function strategically as a 'pressure valve', making it a rational short-term approach when it's challenging to integrate multiple sides of a paradox simultaneously. Nevertheless, managers need to understand that containment often defers resolution, which tends to increase strain in the long term.

Next, splitting; compartmentalizing, or separating contradictory elements to manage each independently instead of holding them in contradiction, can also relate to this study. Interviewee 5 established a parallel new group alongside the existing organization, planning to merge them if the new way of working proves successful. Furthermore, interviewee 3 suggests an incremental rollout instead of a big-bang launch, effectively separating current operations from future operations to ease the transition for the end user. These observations indicate that splitting is often used as a temporary strategy between old and new modes to integrate new tools, methods or processes without discarding earlier ones, rather than as a permanent separation. The data in this paper suggests that splitting should not be viewed solely as an attempt to avoid complexity, but as a deliberate test in isolation before rolling it out in the wider organization, making it a transitional tactic. This approach reinforces Smith and Lewis's (2011) view of splitting by highlighting its role in orchestrating change when unrestricted time is allowed within the limits of temporal control.

Third, temporal/viral cycling involves switching between competing demands, whereby one demand is prioritized before shifting attention to the other demand, rather than trying to hold both simultaneously. This acknowledges that priorities may need to swing back and forth as long as the paradox exists. Interviewee 6 illustrates the existence of a cycle of diverging and converging of digital transformation effort responsibility between a central entity and the employees through the projects, addressing the lack of top-management support tension. This is in line with the temporal/viral cycling solution proposed by Smith & Lewis (2011). In practice, adopting a temporal/viral cycling approach allows project managers to deliberately alternate focus between centralized direction and distributed ownership, ensuring that neither extreme dominates for too long.

Finally, Bridging/integration refers to efforts to bring both poles of the paradox together, seeking synergies rather than choosing one side at a time. This approach involves reframing the tension so that elements formerly seen as contradictory become mutually reinforcing. Several interviewees have described solutions in line with this. Interviewee 8 suggests speaking to stakeholders in advance and uncovering their underlying interests to come to a mutually beneficial solution, thereby bridging the stakeholder interest conflict tension. By adopting this bridging approach, project managers can not only resolve stakeholder conflicts but also cultivate a collaborative environment where seemingly opposing priorities reinforce one another, ultimately driving more resilient digital transformation initiatives.

5.4 Implications for practice

This study resulted in several insights that could help future project leaders in digital transformation projects. First, project managers and organizations engaged in digital transformation projects should first ensure the continuous commitment of senior leadership. The cases in this study demonstrate that fluctuating leadership priorities and fragmented governance structures can undermine project continuity. Furthermore, building coalitions across different age groups and functions helps overcome resistance based on age biases and departmental silos. By matching experienced staff with digitally savvy newcomers, offering targeted training, and creating cross-department pilot teams, project leaders can build a coalition of people who are committed to change. Showing quick wins through proof-of-concept prototypes or best practices is more convincing than sharing abstract plans; concrete examples of how users will benefit reduce scepticism and speed up adoption.

5.5 Limitations & future research

One challenge that surfaced repeatedly in the interviews was the blurring of tensions between the organization as a whole and the digital transformation project. Since these projects happen within the context of a larger organization, it can be hard to distinguish where the project boundaries begin and end. This might have led some interviewees to talk about tensions within their organizations rather than specifically within the digital transformation project. In some cases, this became clear during the interviews, and the interviewees were instructed to focus on their experiences in digital transformation projects. It is, however, possible that some answers were about broader organizational issues rather than specifically related to the digital transformation project. This contextual ambiguity also influenced how some interview questions were interpreted in subsequent phases of data collection.

In addition to the tension between organizational and project boundaries, it became apparent during the interviews that some questions were difficult to understand. Although interviewees were provided with the interview questions in advance to address this issue raised in the test interview, not all of them took the time to read the questions before the interview. As a result, many requested examples, which they could not receive, as this would be considered influencing their answers. These misunderstandings compounded the contextual blurring mentioned previously and may have affected the depth of responses.

Furthermore, some tensions were only mentioned by one of the candidates, or, in some cases, tensions may have been implied but not articulated clearly by the candidate. As a result, the interviewees' remarks were not included in the results section, as the paper required a tension to be mentioned by at least two candidates. Examples of these tensions are “bottom up vs top down initiatives” and “experts feeling left out.” Future research could take the results of this study and verify them against a larger sample, which could lead to these new tensions solidifying through multiple candidates.

Finally, the difficulty in distinguishing between project-specific and organization-wide paradoxes also affected our classification of paradoxes. Classification of paradoxes is difficult, as sometimes in the context of a project something may not be a paradox while in the context of the entire organization it may be. The “One size fits no one” tension—which was excluded for not being a true paradox in the context of a digital transformation project—may well be a paradox in the context of the organization as a whole. However, because of the clearly defined beginning and end of a project, the criteria for being a true paradox are not met. In the context of the project, a choice is made for either one or the other.

6. Conclusion

This paper set out to explore the tension experienced by project managers responsible for leading digital transformation projects in incumbent firms. Specifically, it aimed to identify which tensions emerge in practice and how project managers navigate competing demands. The findings highlight a range of tensions such as short-term versus long-term focus, autonomy versus control, user needs versus technical priorities and misalignment between intention and contribution. A number of tensions were found to be paradoxical in nature, conforming to the oppositionality, persistence, simultaneity and interdependence criteria. Project managers employ various approaches to manage these tensions, including parallel structures, building coalitions of the willing, leveraging customer-driven initiatives and communicating vision through examples.

This study contributes to paradox theory by applying it in the context of digital transformation project management and identifying tensions that extend beyond established works. Practically, the findings offer guidance for project managers and organizations seeking to avoid the pitfalls of paradoxical tensions in digital transformation projects. Ultimately, recognizing and navigating paradoxical tensions is crucial to successfully managing digital transformation. By acknowledging their impact and using tailored approaches to address them, project managers can boost adaptability, drive innovation, and ultimately achieve more sustainable results.

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Appendix 1:

Short explanation of Tensions:

1. **Learning Tensions:**
    - Efforts to adjust, renew, change, and innovate foster tensions between building upon and destroying the past to create the future

2. **Organizing Tensions:**
    - Structuring and leading foster collaboration and competition, empowerment and direction, and control and flexibility

3. **Belonging Tensions:**
    - Identity fosters tensions between the individual and the collective and between competing values, roles, and memberships

4. **Performing Tensions:**
    - Plurality fosters multiple and competing goal as stakeholders seek divergent organizational success

5. **Learning & Performing Tensions:**
    - Building capabilities for the future while ensuring success in the present

6. **Learning & Belonging Tensions:**
    - Conflicts between the need for adaptation and change and the desire to retain an ordered sense of self and purpose

7. **Organizing & learning Tensions:**
    - Organizational routines and capabilities seek stability, clarity, focus, and efficiency while also enabling dynamic, flexible, and agile outcomes

8. **Organizing & Performing Tensions:**
    - Interplay between means and ends, employee vs. customer demands, high commitment vs. high performance

9. **Belonging & Performing Tensions:**
    - Clash between identification and goals as actors negotiate individual identities with social and occupational demands

10. **Belonging & Organizing Tensions:**
    - Tensions between the individual and the aggregate, individuality vs. collective action

Appendix 2:

Explanation of paradoxical tensions sent beforehand:

Paradoxical Tensions

Paradoxical tensions are conflicting but connected elements that exist together within organizations and continue to persist over time. They often seem contradictory but are interdependent, meaning both sides are needed to maintain balance and drive progress.

Key Characteristics:

1. **Contradictory Yet Connected**: These tensions involve elements that make sense on their own but appear inconsistent when viewed together. For example, needing both stability (routine) and change (innovation).
2. **Persistent**: These tensions don't go away permanently. They keep coming back and need to be managed continuously.
3. **Both/And Approach**: Instead of choosing one side over the other (like in a dilemma), managing paradoxical tensions involves accepting and balancing both sides to harness their combined benefits.

Example of Paradoxical Tensions:

- **Delegation and Control**: To empower employees, managers need to delegate tasks. However, they also need to maintain control to ensure tasks are done correctly. Both delegation and control are necessary for effective management.

Appendix 3:

Interview guide:

First, take the subject through the goal of the interview and explain what exactly is meant by paradoxical tensions.

Open questions:

- Can you describe your overall experience with digital transformation projects? What were the main goals and outcomes of these projects?
- What were the most significant challenges you faced during these projects?
- Can you discuss any conflicting demands or paradoxical tensions you encountered while managing digital transformation projects?

Next, take the subject through the tensions categories. Explain each category and explain that there can also be a paradox between any of the categories.

Categorized tensions questions:

Learning tensions:

- Have you experienced paradoxical tensions related to learning during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Organizing tensions:

- Have you experienced paradoxical tensions related to Organizing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Belonging tensions:

- Have you experienced paradoxical tensions related to Organizing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Performing tensions:

- Have you experienced paradoxical tensions related to Performing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Combination of tensions:

Learning & Performing Tensions

- Have you experienced paradoxical tensions between Learning & Performing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Learning & Belonging Tensions

- Have you experienced paradoxical tensions between Learning & Belonging during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Organizing & Learning Tensions

- Have you experienced paradoxical tensions between Organizing & Learning during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Organizing & Performing Tensions

- Have you experienced paradoxical tensions between Organizing & Performing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Belonging & Performing Tensions

- Have you experienced paradoxical tensions between Belonging & Performing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.

- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Belonging & Organizing Tensions

- Have you experienced paradoxical tensions between Belonging & Organizing during digital transformation projects? If yes, please provide examples of these paradoxical tensions.
- Can you provide specific examples of what your strategy for handling these paradoxical tensions was?

Open questions:

- Are there any other conflicting demands or paradoxical tensions you encountered while managing digital transformation projects that we have not yet covered?