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Change in a project-based organization: The mutual shaping of institutional logics and change programs

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ABSTRACT

Modern organizational transformations increasingly rely on change programs led by the introduction of new information technology. Managing these information technology-based change programs within project-based organizations presents unique challenges due to the division between ongoing business processes and temporary project activities. This study uses an institutional logics perspective to understand how a project-based organizational context shaped and was shaped by an information technology-based change program. Through a three-year longitudinal case study on the interaction between a project-based organization and its information technology program, our findings reveal that institutional logics prevailing in the project-based organization significantly influenced the program's implementation. In turn, the information technology program acted as a catalyst for change, creating a competitive environment where two primarily segmented logics—a project organizing logic and an asset management logic—competed for dominance. The conflict between these logics led to new beliefs, values, and practices being dominant, marking a shift in balance between the two logics. Our findings contribute to increasing understanding of the dynamic interplay between project-based organizations and information technology-based change programs, shedding light on their mutual evolution over time and offering a deeper understanding of transformative change within project-based organizations.

1. Introduction

Change programs led by the introduction of new information technology (IT) increasingly play an integral role in modern organizational transformations. These IT-based change programs (Lehtonen & Martinsuo, 2008, 2009) are composed of multiple, heterogenous IT components and information systems (IS) modules that are interrelated and implemented together as a set of IT projects combined in a program (Gregory et al., 2015; Wu et al., 2023). Such programs pose significant challenges as the ``change deals with people's behaviors and the socio-technical system, not only with tangible deliverables'' (Lehtonen & Martinsuo, 2009: 155). To deliver the program's desired outcomes, literature on this subject stresses the importance of aligning the program with its broader institutional context (Bos-de Vos et al., 2022) and managing the program-organizational context interface (Martinsuo & Kantolahti, 2009; Pellegrinelli et al., 2007).

In the case of project-based organizations (PBOs), embedding IT-based change programs in their organizational context is both important as well as challenging (Bakker et al., 2016; Bresnen et al., 2004; Cacciatori & Prencipe, 2020). PBOs are relatively permanent firms that organize most of their internal and external activities in projects (Sydow et al., 2004; Winch, 2014), such as those in construction, consultancy, and engineering (Bakker et al., 2016; Vosman et al., 2023). Within these organizations, there exists a division between business and project processes, in which the former are ongoing and repetitive, while the latter tend to be temporary and unique (Gann & Salter, 2000). This division suggests a significant challenge for IT-based change programs to align with both the organization's project portfolio and its broader business context (Cacciatori & Prencipe, 2020). This means that changes should be managed considering their impact on ongoing projects as well as the organization's strategic goals to effectively generate change in the initiating organization.

How a project-based organizational context shapes and is shaped by an IT-based change program remains poorly understood, as there have been few longitudinal studies on this topic (Jiang et al., 2018; Martinsuo & Hoverfält, 2018). The organizational context of PBOs undergoes evolution as projects are started and completed, organizations' needs evolve, and technological advancements change over time (Brunet et al.,

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2021; Miterev et al., 2017). Simultaneously, IT-based change programs also undergo evolution as their content, structures, and processes are continually adapted to reconcile conflicting aims and interests, and to engage all stakeholders (Pellegrinelli et al., 2007). As organizational contexts and IT initiatives continue to evolve, studying their dynamic relationship is crucial for understanding the mutual shaping of organizations and programs over time (Pellegrinelli et al., 2015; Turkulainen et al., 2015).

Given that the organizational context is constituted by the institutional logics prevalent within the organization (Farid & Waldorff, 2022; Friedland & Alford, 1991), we consider an institutional logics perspective as a useful lens to study the dynamics of beliefs and values as they are produced, reproduced and changed by actors in project-based organizations. Institutional logics can be described as ``shared beliefs and values in a community of individuals'' (Bévort & Suddaby, 2016: 33). These prevailing, taken-for-granted shared beliefs and values influence practice, continuity and change, notions of what is deemed legitimate and appropriate, and determine what problems to pursue and what solutions to prioritize (Smets et al., 2017; Thornton, 2002). By studying institutional logics, we can better illuminate the dynamic interaction between an IT-based change program and its project-based organizational context. We thereby build upon previous studies that used this perspective in project management studies (Farid & Waldorff, 2022; Söderlund & Sydow, 2019; Winch & Maytorena-Sanchez, 2020) with a longitudinal view on the evolution of institutional logics in PBOs.

Accordingly, we pose the following research questions: How does a project-based organizational context shape the implementation of an IT-based change program over time? And how might such a program, in turn, eventually drive change in a project-based organization? In answering these, we contribute to literature on the program-organizational context interface with insights into the intricate and evolving relationship between the organization and the strategic deployment of IT to drive transformative change within project-based organizations.

In this paper, we present the results of a three-year longitudinal single-case study on the interaction between a large, public infrastructure agency and its IT-based change program. Our findings revealed how institutional logics dominant in the public agency shaped the implementation of the IT program. The program, in turn, served as a catalyst for change in the public agency as it ushered in a pluralistic, competitive environment where two primarily segmented logics—a project organizing logic and an asset management logic—competed for dominance. The conflict between these logics led to new beliefs, values, practices, and artefacts being dominant, marking a shift in the balance between the two logics. Based on these findings, we contribute valuable insights into the dynamic interplay between PBOs and IT-based change programs in shaping their mutual evolution over time. In the following sections, we firstly explain the study's theoretical background on IT-based change programs, institutional logics, and change in PBOs. Secondly, we describe the research method adopted and then present our findings. Finally, we conclude with a discussion of the results and suggestions for future research.

2. Theoretical background

2.1. IT-based change programs in PBOs

An IT-based change program involves a temporary organization (Turner & Müller, 2003) where a set of interrelated IT projects is purposefully managed together to deliver change in the parent organization (Gregory et al., 2015; Lehtonen & Martinsuo, 2009). The object of such a program is the IT infrastructure, which consists of various IT components and IS modules that, in isolation, do not deliver value but derive their value from their integration (Ciborra, 2001). To realize the full value of this IT infrastructure, IT projects must be implemented simultaneously and in relation to each other (Teubner, 2018). Any attempt to change an IT infrastructure needs to take account of an ``installed base'' or the pre-existing information infrastructure (Grisot et al., 2014). Therefore, an IT-based change program not only delivers a technical artefact but must always be related to the parent organization's business context and prevailing practices of use (Osmundsen & Bygstad, 2022).

Past research highlights the importance of managing the interface between the change program and its parent organization (Lehtonen & Martinsuo, 2008, 2009). Establishing the program inside the parent organization requires creating legitimacy, which means creating support for the program and persuading others to accept its validity (Lehtonen & Martinsuo, 2008). As programs bring together various stakeholders with divergent and often conflicting needs and interests (Thiry, 2002, 2004), engaging all stakeholders is crucial to delivering the program's desired outcomes (Pellegrinelli et al., 2007). Also given that programs are long-term endeavors, stakeholders' needs may evolve, and the organizational context may change significantly throughout the course of the program (Martinsuo & Hoverfält, 2018).

The distinct features and challenges that characterize PBOs indicate that the implementation of change programs in PBOs differs from organizations that are not predominantly project-driven (Bresnen et al., 2004, 2005). Firstly, as programs often rely on project-based processes and procedures to implement change, distinct challenges may arise when it is precisely these project-based processes and procedures that require modification. As actors often undertake similar specialist roles in multiple projects (DeFillippi & Sydow, 2016), project practices are deeply embedded, which impedes the implementation and enactment of new practices. Secondly, the division between business and project processes in PBOs gives rise to a pluralistic environment, increasing stakeholder complexity (Bakker et al., 2016). Finally, the highly decentralized system of work in PBOs tends to create distinct domains of action, power, and influence (Bresnen et al., 2005), further complicating the creation of legitimacy across a distributed landscape of power and influence. As a result, implementing change programs in PBOs poses distinctive challenges that might differ from those in non-project-based organizations.

However, research on change program implementation (whether IT-based or not) in PBOs is notably scarce. In addition, only a few studies take a longitudinal perspective on programs or address the effects of eventual program outcomes on the organizational context, as concluded by Martinsuo and Hoverfält (2018) in their review of empirical studies on change program management. Therefore, we aim to address this gap with a longitudinal case study on the dynamic interaction between a PBO and its IT-based change program. We follow Martinsuo and Geraldi (2020), who argued for the use of institutional theory in studies on the interaction between temporary organizations and their contexts.

2.2. Institutional logics perspective

Institutional logics come into being through individual and collective actors' continuous construction, practice, and re-enactment of the logics (Lindberg, 2014). As such, institutional logics serve as scripts for action and function as a source of stability, conformity and heterogeneity, and thereby both enable and constrain actions through normative, social, and cultural forces (Martin et al., 2017; Reay & Hinings, 2009; Thornton & Ocasio, 2008). This also means that legitimacy often trumps efficiency (Battilana & D'Aunno, 2009). Institutional logics can develop on multiple different levels, such as whole industries, interorganizational networks, or individual organizations (Thornton & Ocasio, 2008).

When institutional logics are constantly re-enacted this creates stability and continuity within the field or an organization, and this can be referred to as path dependency (Beckert, 2010; Thornton et al., 2012). Incumbent institutional logics and past choices that support that logic constrain behavior and are a barrier to emergent change initiatives (Modell et al., 2007). So, to understand why it is difficult to enact change and introduce new ideas, logics, technologies and practices in an organization means to understand incumbent institutional logics and the

path dependent lock-in effects they create (cf. Thornton & Ocasio, 2008).

There are multiple sources of path dependency (Geels, 2004). One is rules and regimes, in terms of i) formal rules, like contracts and regulatory requirements; ii) cognitive rules like collected knowledge, which actors are unwilling to discard; and iii) normative rules, like shared perceptions and expectations of proper behavior by different professional roles. Another source of path dependency are costs embedded in existing artefacts, systems, processes, and infrastructure, where actors are unwilling to abandon those investments (Ibid.). Adopting a new institutional logic means having to spend additional resources (Gómez & Atun, 2013). Despite the potential practical and financial benefits, adopting new institutional logics, practices, and technologies is thus costly in terms of resources and legitimacy, especially if the new institutional logic clashes with other incumbent institutional logics in the field. Therefore, assimilating new logics that resemble incumbent logics is easier and cheaper, as they leverage information already known by actors in the field (Kirk et al., 2007; Modell et al., 2007; Sartorius, 2006).

Not all institutional environments have a firm set of logics that govern behavior. Some environments are institutionally pluralistic, where there is a multitude of different institutional logics present, which may or may not be competing for dominance in the field. These pluralistic environments can arise endogenously because current institutional arrangements no longer serve their purpose, or because of exogenous forces, such as new technologies or crises that change the needs and opportunities of the environment (Martin et al., 2017; Powell & Colyvas, 2008). Institutional change can be described as a shift from one dominant institutional logic to another (Reay & Hinings, 2009). With that said, competing institutional logics are not in themselves sources of change, but rather an antecedent or consequence thereof (Thornton & Ocasio, 2008). Parallel institutional logics can coexist, where contradictions and conflicts between these parallel institutional logics can lead to change (Besharov & Smith, 2014; Friedland & Alford, 1991; Jarzabkowski et al., 2009). The creative tension that arises between conflicting parallel institutional logics can be used by actors to either create, maintain, or destroy incumbent institutional logics (Martin et al., 2017). Reay and Hinings (2005) found that to drive change, or to withstand it, actors must use their relative power in the field, for example, by introducing new legislation, compensation, or sanctions. So, competing institutional logics are thus influenced by ongoing power struggles between actors associated with governance backing different competing logics.

A change in institutional logics is often incremental, and new practices and technologies are often adopted as an 'add-on' to existing practices (Kirk et al., 2007). Change between dominant and subordinate logics can be described either as a new logic coming in and subordinating the previous dominant logic and taking its place, or that there is a long protracted period of time where there is competition between different logics, where in the end one logic becomes dominant but the subordinate logics remain in an 'uneasy truce' (Goodrick & Reay, 2011; Reay & Hinings, 2005). The logics that are subordinate still exercise influence on behavior and on the dominant logic, and vice versa. In cases where logics were in fact competing, this competition was sustained by segmenting practices, where some practices are associated with one logic and other practices are associated with another logic. This segmentation enables conflicting logics to coexist (Goodrick & Reay, 2011).

When IT-based change programs are implemented, they can drive change in the initiating organization. Examining the dynamic interplay between institutional logics and the change program can shed light on how this occurs. In the next subsection, we explore what institutional logics are dominant in the context of PBOs and how they could shape the implementation of IT-based change programs in such organizations.

2.3. Institutional logics and change in PBOs

PBOs are often described to have high institutional complexity since they simultaneously adopt multiple, and at times, conflicting institutional logics (Frederiksen et al., 2021; Matinheikki et al., 2021; Qiu et al., 2019). Still, literature suggests project management principles serve as the dominant institutional logics governing behavior and influencing institutionalization and homogenization of practices in PBOs (Kadefors, 1995; Scott, 2012; Söderlund & Sydow, 2019). For example, project management practices, which place emphasis on coordination and control over flexibility and novelty (Lenfle & Loch, 2010; Urup, 2016), provide scripts essential for project success. Project owners often measure project success against the iron triangle, which means successes based on time, cost, and quality (Whyte & Mottee, 2022; Winch & Cha, 2020). Establishing objectives prior to the launch of a project and strictly adhering to these objectives are of significant importance for efficiently utilizing time and budget, which are key to ensuring success (Jałocha et al., 2023). These project management principles represent institutional logics that are held to be dominant in PBOs.

Revealing the dominant institutional logics in PBOs could provide insights into what constitutes their organizational context and how this context shapes the implementation of change programs. Context focuses attention and efforts, dictates core processes, and influences the decisions or perspectives that actors take regarding a particular issue or situation (Pellegrinelli et al., 2007). Recent literature suggests that institutional logics is a useful perspective for analyzing what constitutes organizational context (Farid & Waldorff, 2022). It offers a framework for understanding the references that shape and form behaviors, actions, and decision-making processes of actors and organizations (Friedland & Alford, 1991). It also represents belief systems (what goals or values are to be pursued) and associated practices (means for pursuing goals and values) (Reay & Hinings, 2005). Revealing the institutional logics dominant in PBOs could hence provide useful insights into the beliefs, values, and practices that shape the implementation of IT-based change programs in these organizations.

Surprisingly, what institutional logics are dominant within PBOs is still underexplored. Past research has mainly focused on understanding institutional logics in the context of the temporary organizations that are tasked to execute the project or program (see for example, Biesenthal et al., 2018; Matinheikki et al., 2021; Qiu et al., 2019; and Tonga Uriarte et al., 2019). Less attention has been paid to the parent, project-based organization that organizes most of its work through projects or project constellations (such as portfolios or programs) (Miterev et al., 2017). Addressing this gap is important because project and program management needs rest upon a thorough understanding of the context, which includes the parent, project-based organizational level (Söderlund & Sydow, 2019; Song et al., 2022).

In summary, research into change program implementation highlights the importance of managing the interface between the program and its organizational context. Institutional logics provide a perspective for examining the constitution and dynamics of this context. Studying the shifts in institutional logics is useful for understanding the dynamics of beliefs, values, and practices in PBOs implementing new IT, shedding light into how a project-based organizational context shapes the implementation of IT-based change programs, and how such programs, in turn, can drive change in PBOs. In the following sections, we present our case study on the interaction between a PBO and its IT-based change program. Using this case, we explain how institutional logics dominant in the PBO shaped the change program and how the program, in turn, prompted a shift in balance between the dominant institutional logics in the PBO.

3. Case and methods

As institutional logics are made visible through material and immaterial practices, language, and symbols, a qualitative research design using more immersive data collection methods is appropriate (Reay & Jones, 2016; Smets et al., 2014). To study how institutional

logics unfold over time, we conducted a longitudinal single-case study as it allowed for prolonged involvement and close access to events and practices as they unfolded in real-time (Langley et al., 2013). Our aim was to select a case in which the phenomena of interest were present to a high degree and easily observable (Pettigrew, 1990). We sought a project-based organization in a highly institutionalized setting that recently initiated an IT-based change program so we could observe the course of the program from an early stage to its conclusion.

We hence purposefully selected InfraOrg, a public transport infrastructure agency in the Netherlands that recently initiated an IT program (ITP). Public infrastructure agencies are known for being strongly project-based and relatively conservative (Matinheikki et al., 2019; Schraven, 2015; Söderlund & Sydow, 2019). They operate in highly institutionalized settings, as actors in construction projects often share strong common beliefs of what should be done and how things should be accomplished (Flyvbjerg, 2017; Scott, 2012; Söderlund et al., 2017). Professional role distinction is strong in the sector, where roles embed norms and values that create prescriptive behavior (Kadefors, 1995). The construction sector is also highly regulated and regulatory requirements homogenize behavior (Scott, 2012; Söderlund et al., 2017). InfraOrg and its IT program are thus highly suited for the case study, which specifically examines the interaction between InfraOrg and its IT program, focusing on how institutional logics prevalent in InfraOrg shape the implementation of the program, and how this program might, in turn, generate change in the organization.

3.1. Case organization and IT program

InfraOrg owns, operates, and manages the largest set of public transport infrastructure assets in the Netherlands. As a PBO, the organization has two main areas of operation: asset management and project management. In 2019, InfraOrg launched an IT program (ITP) to increase integration between these two main areas of operation by transforming the practices and infrastructure pertaining to the management of asset information.

Asset management is divided into seven geographical regions, each headed by administrative executives who make decisions on regional development based on ministry policies. Each regional unit acts as an autonomous 'state' with authority over its own asset management methods and processes. At the local level, asset managers in regional districts attend to the daily upkeep and conservation of assets within their area. Their tasks include monitoring the condition of assets through inspections and surveys, and managing the documents (e.g., inspection reports, design drawings, and inventory reports) as they are produced or revised due to these tasks. When construction or maintenance works are needed, the regional units commission the organization's project-based line to organize construction and maintenance projects, and the regional units then act as internal clients (see Fig. 1). The project-based line consists of specialists in purchasing and contract management, project management, process management, and technical management. Senior project managers manage a portfolio of projects grouped in terms of asset type (e.g., bridge, tunnel, or sea lock) and discipline (e.g., cables and pipes, industrial automation, and hydraulic engineering). All projects are commonly outsourced to building contractors and suppliers. For each project, a temporary organization composed of a team of InfraOrg specialists is formed to procure and manage the project and supervise the contractor. Although InfraOrg is a 'relatively permanent' organization whose core business is to deliver transportation services and not projects per se (Winch, 2014), it operates as a PBO in which majority of the work is organized in construction and maintenance projects of different sizes and complexities, and having their own determinate timelines (Sydow et al., 2004; Winch, 2014). This is reflected in the organization's policy commonly referred to as ``The market, unless'', which suggests that the default option is to outsource work as projects unless special circumstances apply.

The organization's policies for IT reflect the compartmentalization of project management and asset management. Each regional district uses its own set of software with limited communication abilities, making asset data retrieval for projects difficult. Projects have a budget for gathering and storing asset information in their own system, which is then shared with contractors for estimating project costs and risks. During the course of a project and at project delivery, contractors deliver asset data in read-only file formats. Districts input the data into their own software after validation by project teams.

InfraOrg's ITP is therefore aimed to integrate asset information from the project-based and asset management lines into a single asset management platform. To accomplish this, the organization needed to design three new IT components and implement them in the parent organization. Thus, three IT projects were started. Additionally, two pilot projects were started to develop these IT components in the context of two separate infrastructure construction and maintenance projects. These pilot projects thus have double objectives of delivering

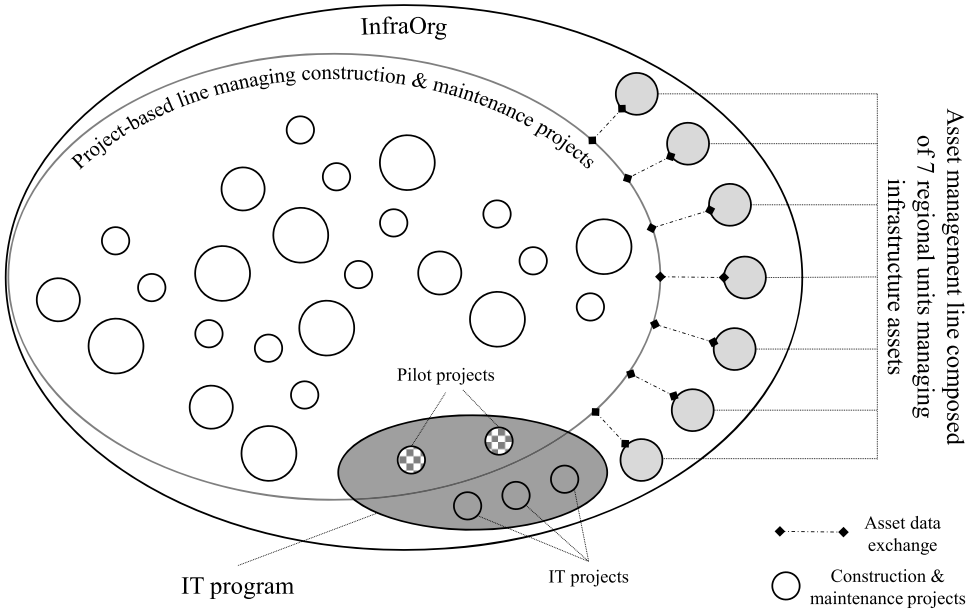

Fig. 1. Case organization and IT-based change program.

infrastructure assets and developing IT components. Through this program, InfraOrg aims to strategically transform asset data management across the organization and enable data-driven construction, maintenance, and asset management.

3.2. Data collection

Since empirical analysis of instantiated logics need to be derived from the perceptions of organizational actors and defined in their direct context (Ocasio et al., 2017; Winch & Maytorena-Sanchez, 2020), it was very important to gain in-depth access to the IT program and conduct field observations (Smets et al., 2014). After contacting InfraOrg in the latter half of 2019, the first author was installed in the organization as a temporary employee, given an internal email address and access to the organization's intranet. The initial observations starting from November 2019 were of meetings about an infrastructure project participating as a pilot project in the program. Then, from May 2020 to December 2022 (program conclusion), more participant observations were conducted of all the regular meetings of a group of ITP managers. These managers were members of a new organizational sub-unit formed to manage the IT projects (henceforth referred to as ITP group). Two main types of meetings were observed: 1) bi-weekly meetings with the typical agenda of discussing ongoing activities and sharing any concerns and experiences, and 2) quarterly meetings with the typical agenda of demonstrating intermediate results/products and collaboratively developing a schedule for the next quarter. During the first observed meetings, the researcher was introduced to the participants as an external employee, who will be researching the implementation of IT at the organization throughout the course of the ITP. At the start of the fieldwork, the researcher focused on actors' interpretations of the program's strategy and their individual and collective motivations for decisions and actions. As tensions developed among the ITP managers, the researcher also paid closer attention to these tensions and the differences of opinions among these managers.

In total, about 194 h of participant observations spanning 38 months were undertaken (Table 1). Because of the covid-19 pandemic, most of the meetings took place online via MS Teams, which were not recorded. Throughout the fieldwork, two types of field notes were made: observational (cited in the text as [FN#]) and reflective notes. To help place these observations in a wider context (Lofland & Lofland, 1995) and improve their validity by triangulation with additional data sources and methods (Miles & Huberman, 1994; Yin, 2013), we also collected and examined supplementary material composed of digital archival records. These were composed of internal emails sent to the first author, and publicly accessible memos, presentations, and strategy reports (Table 2). These archival records, specifically the email conversations, contained rich descriptions of the IT program's strategy and day-to-day operations, including statements that motivate why certain actions were or were not undertaken, and included or excluded in the strategy of the program. Such statements were very useful in our thematic analysis as they provided insights into the beliefs and values that guided the strategy of the program.

Table 1
Data collection timeline.

IT program phases	Observed meetings
January 2019–February 2021 *Phase 1: Accommodating plurality in the new IT program*	6 Meetings (3 h each) of pilot projects participating in the program 20 Meetings (2 h each, online) of the ITP group on the strategy and operational implementation of the ITP
March 2021–January 2022 *Phase 2: Uncovering conflicts in InfraOrg's pluralistic environment*	35 Meetings (2 h each, online) wherein the ITP group shared knowledge on, concerns and experiences with ongoing activities 6 Meetings (6 h each, online) wherein the ITP group presented the progress of the IT projects, and collaboratively planned their next tasks
February 2022–December 2022 *Phase 3: Influencing the inception of a new organizational identity*	12 Meetings (2 h each, 9 hybrid meetings, 3 meetings on location) of the ITP group on ongoing activities 2 Meetings (3 h each, online) wherein the ITP group planned the completion and handover of the IT projects

Table 2
List of secondary data.

Cited in the text as	Digital archival records	Number
[DE#]	Emails (all replies to a conversation count as one email)	78
[DR#]	Memos, presentations, and reports	131
[DM#]	Meeting minutes	22
	Total	231

We also held feedback sessions every four months with each of our four key informants to review case narratives for the purpose of enhancing the confirmability of our findings (Gibbert et al., 2008; Miles & Huberman, 1994). We selected four key informants who represented different organizational levels: a strategic-level manager of the ITP group, a tactical-level project advisor from a pilot project involved in the program, and two members of the ITP group responsible for the implementation of the new IT at the operational level. The sessions were held online and one-on-one with the first author and each key informant, and would typically begin with the researcher sharing an overview of events and a summary of initial findings from the past four months, followed by a discussion between the researcher and an informant on the accuracy of these findings. These feedback sessions played an important role in clarifying observations and creating a detailed narrative of events in chronological order (Miles & Huberman, 1994).

3.3. Data analysis

The data analysis contained two parts, which were not strictly sequential but more iteratively executed. First, we created a chronological detailed case narrative to identify periods/phases of the IT program as ``temporal brackets'' (Langley et al., 2013), serving as comparative units of analysis, distinguished from a flow of longitudinal data and separated by ``identifiable discontinuities'' in this flow of data (p.7). As logics ``represent frames of reference that condition actors' choices for sensemaking, the vocabulary they use to motivate action, and their sense of self and identity'' (Thornton et al., 2012: 2), we specifically chose identifiable discontinuities in our case as failure events. Such events compel actors to make sense of their activities, voice their motivations for what they think should be done next, and collectively decide on a proper course of action. Creating a detailed case narrative also allowed us to immerse ourselves in the data and prepare us for the coding process (Reay & Jones, 2016).

Second, we conducted a thematic analysis (Braun & Clarke, 2006), as this is a useful method to identify, describe, and organize rich themes and detailed data patterns. Using the qualitative data analysis software ATLAS.ti, we began coding our data by identifying logics from pieces of text that show behavior or beliefs guided by particular logics (Reay & Jones, 2016). This first round of coding was inductive and centered on actors' interpretations of the program strategy, statements that justified their decisions and actions, and their expectations of their roles and those of others. Similar categories were grouped to induce patterns of behaviors and beliefs. Identifying these patterns and labelling them took several coding rounds, where each pattern was refined further and further as a team: the authors who had a smaller role in data collection took an outsider perspective on the patterns that were identified by the first author during critical discussions on emerging themes (Deken et al., 2018). In these successive rounds of coding, the analysis became more abductive, moving between the data and extant literature to increase

understanding of both empirical data and theory (Van Maanen et al., 2007). We reviewed literature on institutional logics in project management, asset management, and the public sector and its agencies (for example, Farid & Waldorff, 2022; Frederiksen et al., 2021; Jay, 2013; Schraven, 2015). This review allowed us to identify multiple constructs (e.g., time, strategic imperatives, goals/purposes, structure) that comprise a logic and enable comparisons across logics (Reay & Jones, 2016). These constructs also helped elevate our labels to a more conceptual level (Dubois & Gadde, 2002). Tables 5, 6 and 7 in the findings (Section 5) provide examples of our coding structure.

After several rounds of analysis, we identified two patterns of behaviors and beliefs as two different institutional logics that guided the IT program, which are summarized and contrasted in Table 3. The first logic, which we label as project organizing logic, was identified as the actors' default or standard way of implementing projects and programs, and of deciding on their next steps or outputs. The second logic, which we label as asset management logic, was advocated by actors as a different way to organize and define new goals of the projects. We then compared the prominence of these two logics throughout the course of the program, which revealed the shifts in dominance between them. For example, we observed how, after each major failure event, actors increasingly expressed dissatisfaction and objections with the standard way of executing the projects. These actors also increasingly advocated for different ways of approaching their tasks, thereby increasing the prominence of the asset management logic within the organization. In the next section, we describe and compare these two logics in more detail.

4. Dominant logics in InfraOrg and its IT program

Through the combination of the project-based line and the asset management line, InfraOrg embodies two dominant institutional logics in its organizational core: a project organizing logic and an asset management logic (see Table 3). These two logics differ in their strategic imperatives and, hence, in determining which issues, problems and solutions gain attention and legitimacy.

Although both logics are dominantly portrayed in InfraOrg, the project organizing logic is more central to the organization's functioning because the largest bulk of work—i.e., construction and maintenance of assets—is executed through projects managed by the project-based line. With a project organizing logic, which is dominant in the project-based line, the strategic imperative is to realize one-off projects within a set time, budget, and quality through the efficient utilization of project resources. This logic is materialized in national norms and regulations for design and construction, which provide uniform working methods that are perceived to be reliable and ensure predictable outcomes. For example, the approach to contract management is almost entirely based on a methodology called System-Oriented Contract Management. This methodology prescribes a mix of assessments that project teams can use to monitor the contractor's progress of work. For its implementation, InfraOrg invests in employee training and development. There is even a special software that contract managers use to follow this methodology.

InfraOrg's project managers, process managers, technical managers, and contract managers have training and experience in enforcing such norms. Temporary project teams, composed of these specialists, are established to prepare the contract and manage the contractor of each project. As was further explicated by a technical manager:

> The main tasks of the head of the technical management department include providing the right quality personnel to projects, delivering standard modules for structures and network configuration with the right quality to projects, and promoting uniformity between projects and the uniform implementation of norms and guidelines. [DR9]

On the other hand, with the asset management logic that is dominant in the asset management line, the goal is to conserve assets and prolong their service life. Regional asset managers ``reason from the outside in'' [DR302], which means their strategic imperative is based on the maintenance needs of assets and the development needs of the region, for example, in terms of capacity, accessibility, and sustainability. As an asset manager explained:

> The seven regional units develop the desired program for each year. The programming department of each region coordinates the development of the network demand… The regions jointly assess whether the demand can be optimized for each region. Afterward, they submit the optimized demand to the project-based line. [DR8]

Asset managers, mainly bureaucrats, continually negotiate with local stakeholders and policymakers about which construction and maintenance works and development plans would be executed in the coming years. Policymakers at the national level then negotiate how much budget will be allotted to the regional units for the realization of agreed works and development plans. There is little uniformity between districts in how asset management is conducted, which is materialized in the IT infrastructure used for asset management. These include various databases for storing asset information (such as topographical and geographical data with administrative features, such as legal documents, management plans and manuals), an engineering documentation management system for accessing and managing technical documents and drawings, various geographic information systems for managing operations and maintenance processes, and various software for managing quality and performance information of assets (such as results of condition measurements, inspection results (functional, safety, condition), malfunctions, and maintenance history). Districts have unique versions of these software with their own taxonomies and ontologies, leading to a vast amount of data with varying quality, type, structure, and location.

The project organizing and asset management logics were thus respectively segmented into the project and business divisions in InfraOrg. This segmentation enabled the coexistence of these conflicting logics, as each organizational line oversaw separate processes within the

Table 3
Instantiations of dominant institutional logics in InfraOrg.

	Project organizing	Asset management
Time	Temporary (one-off projects)	Enduring (permanence of assets)
Placement	Project-based line	Asset management line (regional units)
Strategic imperatives	Supply-driven; efficient utilization of project funds; keeping within set time, budget, and quality	Demand-driven; actions defined based on assets' maintenance needs; conserving functions of existing assets
Goals/ Purposes	Action-oriented/Aim is to intervene through construction and/or renovation	Stasis-oriented/Aim is to conserve assets & prolong their performance through regular monitoring of conditions
Structure	Temporary teams established to work on a single infrastructure project, comprised of specialists in project management, contract management, process management & technical management; dynamic composition of teams where members continually join & leave throughout the course of a project	Almost unchanging teams—composed of bureaucrats & headed by administrative executives—tasked to manage an almost fixed set of assets belonging to each regional district; each district has freedom & authority over its own methods & processes, including the structure of its own enterprise systems
Artifacts (carriers)	Professional roles (e.g., project managers, contract managers and technical managers); national norms & regulations for project management, process management and infrastructure design; procurement rules; contracts	Local stakeholders; political agreements on service (performance) levels; unique versions of regional software for asset management

organization. In the next findings section, we describe how an IT-based change program was shaped by these prevailing logics, and how this program, in turn, generated change in the balance of these logics in the project-based organization.

5. Three phases of institutional change

In the next paragraphs, we describe the shift between two institutional logics prevalent in InfraOrg through the events of its IT-based change program (see Table 4), as the organization went through three phases of change.

5.1. Phase 1: accommodating plurality in the ITP

January 2019 marked the start of InfraOrg's IT program (ITP), which aimed to implement three new IT components that together would link and integrate asset data in the existing information infrastructure and make them accessible to projects and contractors. These three interrelated IT projects were: (i) the Object Type Library (OTL), (ii) an Asset Information Needs Repository (AIN Repository), and (iii) an asset management platform (AM platform). The OTL contained uniform content and relationships (ontology), and hierarchical structure and terminology (taxonomy) for each object (i.e., asset type, such as road, bridge, tunnel, flood barrier, lock, or weir). It would link all asset information across the organization and its projects, thereby streamlining the flow of data. Since public procurement regulations prevent prescribing proprietary software, InfraOrg had to develop this new open data standard as none existed at the time. In a past IT project from 2012, InfraOrg had mandated contractors involved in their projects to use the OTL structure. In total, about 22 large infrastructure projects were required to implement the standard. According to one of our key informants, ``I think the reasoning behind [the scaling up] was, if we go big, then the contractors had to go along and then there's no going back'' [KI1]. However, the implementation of the OTL in the projects was unsuccessful. The contractors found it too complex, and it was unclear both internally and externally how objects' attributes should be correctly input since the OTL only specified input values without context or explanation behind these values.

Learning from past failed attempts to implement the OTL, the ITP group thus aimed to simplify the OTL and clarify how attributes should be correctly entered by linking them to the asset information needs of regional districts. A fundamental input for this is the AIN Repository, a database of asset information requirements for each object (asset type) and its characteristics (attributes). Asset information requirements were dictated by asset managers of regional districts for the conservation and management of infrastructure assets. Through this repository, users (e.g., a project team or contractor) can gain insight into a needed piece of information's purpose through an extensive overview of related information concepts. Information concepts are used in operational and tactical asset management processes and products. Objects in the OTL should be linked to the AIN Repository to provide clarity and context as to how the attributes of objects should be correctly entered (for example, what, how detailed, in what form, and how often). Once asset information is structured through the OTL, project teams can use the AM Platform, which was meant to replace many of the 150 different systems that InfraOrg currently uses to store, manage, and access its asset data. Through the platform, projects can access and filter information they need, and automate validation of asset information delivered by contractors.

When the main strategy of the ITP was being drafted around August 2019, the board of executives of the ITP group imbibed a strong project organizing logic, as observed in three strategy characteristics. First, the ITP was organized as a collection of IT projects, with predetermined deliverables that must be completed within an agreed deadline (end of 2022). The implementation of the OTL, AIN Repository and AM Platform were treated as distinct, albeit related, projects. A mix of professionals with training and experience in IT/IS development and professionals with asset management and contract management backgrounds were hired as ITP managers. These managers headed the projects and together decided on incremental deliverables and milestones. Second, the deliverables were predetermined. The choice for implementing the OTL, AIN Repository and AM Platform was made at the start of ITP. This contrasts with a bottom-up, demand-driven approach: looking at what users need and then deciding on which solutions should be offered and developing the products from there. Instead, the ITP group's managerial executives were bound to chosen investments made previously, for example, the mandated use of the OTL by contractors in 22 InfraOrg construction projects. Third, the predetermined deliverables—OTL, AIN Repository and AM Platform—were geared towards achieving uniformity across information management practices of both the project-based line and the asset management line. Akin to the project organizing logic, the ITP group focused its attention on solutions that are based on enforceable standards and norms to ensure asset data reliability. However, this approach would require regional units to recognize the legitimacy of the OTL, AIN Repository and AM Platform and adopt them in their practices before uniformity can be achieved.

To gain the commitment of regional asset managers to adopt the IT components, the managerial executives planned to involve some asset managers in the implementation process. Some importance was given to identifying users' needs and tweaking the innovations based on these needs. This was reflected in the draft strategy document of the program: ``The program aims to develop tools to support asset managers in their asset data management needs.'' [DR122] A pilot project (Pilot A) was thus started to identify users' needs and determine which IT capabilities should be built into the AM Platform. The plan was to develop a first version of the platform that would be ready for use by Pilot A's project team and its contractors. This pilot represented an impression of the asset management logic that valued a more demand-driven approach.

In summary, the project-based context of InfraOrg dominantly influenced the strategy of the ITP in this phase. The goals, structure and preferred solution pursued by the ITP were influenced by the project organizing logic dominant within InfraOrg (as represented in Table 5).

Table 4
Timeline of events in ITP.

Phase 1	01/2019	Start of IT-based change program (ITP): learning from past failed projects, and defining three interrelated IT projects: (1) the Object Type Library; (2) the Asset Information Needs Repository; and (3) the Asset Management Platform
	08/2019	Drafting of the ITP's main strategy: setting the budget, deliverables, and planning, and involving asset managers in the ITP
	11/2019	Start of Pilot A: developing the asset management platform in a bridge renovation project
Phase 2	03/2021	Termination of Pilot A: asset management platform was not delivered on time
	04/2021	Start of Pilot B: redeveloping the asset management platform in a highway renovation project
	08/2021	Start of data chain test: attempting to link the asset management platform with existing information infrastructure in regional districts
	12/2021	Data chain test results published: increasing conflict between proponents of project organizing logic and asset management logic
	01/2022	Termination of Pilot B: increasing concerns about delivering the asset management platform on time and with the expected quality
Phase 3	02/2022	ITP directors decided to halt all product developments: searching for additional financing to extend the ITP
	06/2022	InfraOrg board decided not to extend the ITP
	09/2022	Start of new change program for asset management: InfraOrg professionalizing asset management
	12/2022	End of ITP

Table 5
Representative statements indicating institutional logics supported by InfraOrg actors during Phase 1.

Date	Representative statement	Description	Label	Institutional logic supported by statement
02/2019	*ITP board: The preferred next course of action for the ITP should take account of three things: should fit with the focus of the program plan, preferably quickly delivered, and should consider the needs of infrastructure projects. [DM2]*	In drafting the ITP's strategy, the ITP board focused on the needs of infrastructure projects.	Goals/ purposes	Addressing the needs of projects should be the focus of the ITP.
06/2020	*ITP executive: The implementation of ITP consists of subprojects, each with dedicated project leaders and advisors. [DE4]*	The ITP implementation was organized as projects.	Structure of ITP	Projects form a legitimate way to implement the ITP.
11/2019	*Pilot A project plan: The plan is to inventory the needs, including the requirements from infrastructure projects, but from the perspective of asset management. Thereby, the people in the primary process (infrastructure projects) will have the most important voice. [DR15]*	Pilot A should take the perspective of asset managers, but the priority lies with the needs of infrastructure projects.	Prioritization of goals/ needs	Pilot A can pursue the needs of asset managers, but must keep a focus on the needs of projects.
09/2020	*Strategy document: A good asset management rests upon up-to-date, complete, and reliable asset information. Information that is already delivered by infrastructure projects… The aim of the ITP is to enable reuse of this information for asset management. [DR123]*	A good asset management is achieved by efficient reuse of information from infrastructure projects for asset management purposes.	Preferred solution	Efficient reuse of information already collected in projects would best achieve the aim of the ITP.

However, commitment from asset managers was also needed for the implementation of the ITP. Through the main strategy and a pilot project involving asset managers, the ITP board thus tried to accommodate both project organizing and asset management logics in the new program.

5.2. Phase 2: uncovering conflicts in the organization's pluralistic environment

The beginning of Phase 2 was marked by the first failure of the ITP. Around March 2021, the implementation of the AM Platform in Pilot A was put on hold because it was not finished in time for the start of the project. The main problem was linking the regional software to the AM Platform. Nevertheless, around the same time, a second pilot project (Pilot B) was launched with the aim of further developing the AM Platform without links to the regional software. The project team working on this pilot wanted to ensure the completion of the AM Platform within the scheduled time frame. Pilot B's technical manager emphasized that they were dealing with a complex infrastructure project that does not allow for trial and error typically associated with pilot projects. On the other hand, asset managers expressed their requirement for a tool with this specific capability of linking to the regional software. One of the asset managers involved in Pilot B hoped that the focus of the pilot would be to explore how infrastructure projects could organize information to enable linking with their asset management software.

This tension of competing demands represented the conflicting strategic imperatives of the project organizing logic and the asset management logic. The project team valued an approach that was predictable and that aimed to produce a reliable product. On the other hand, regional asset managers valued an approach that took their needs into account and where they can negotiate which IT capabilities would be developed. Due to this tension of competing demands, a conflict arose among the ITP managers, which led to a two-way split in the ITP group. Some members explored what projects needed, while others approached their work from the perspective of asset managers. This split in the interests and approaches of ITP managers continued throughout the course of the pilot project.

Parallel to Pilot B, beginning in the latter half of 2021, ITP managers worked together to test the link between regional software and the AM Platform. The test results showed that most regional software could be linked to the AM Platform, except for one software that used a significantly different asset management taxonomy. Furthermore, most of the software had to be tweaked to successfully link them to the AM Platform. Some ITP managers viewed this as a failure, arguing that, although the AM Platform technically works, it did not yet address the needs of asset managers.

In contrast, ITP managers with an IT background regarded the test results as a success. They believed that the AM Platform worked from a technical perspective. However, they acknowledged that the necessary conditions required to fully utilize the platform were not yet established. One of them stated this clearly: ``In 30 years of IT, when you make an architecture, all you talk about is data chain [test]… In IT you have multiple data chain [tests].'' [FN42] Another similarly remarked: ``If you want to ask the end-users, then you should do a Users Acceptance Testing.'' [FN42] During the program, multiple meetings were held to clarify objectives. However, at the beginning of each week, lengthy debates would ensue over a sentence or term that had been written down the previous week. Some ITP managers wanted to engage end-users, specifically regional asset managers, to tailor the software to meet their requirements, while others with an IT background prioritized proving the technical viability of the AM Platform and quickly delivering results. Despite multiple discussions, the ITP managers were not able to reconcile their opposing views during this phase.

In January 2022, Pilot B terminated further implementation of the AM Platform. During one of the observed meetings, the project team expressed concerns about the prospect of achieving the intended quality

of the platform within the deadline and announced that they were backing out of the pilot. The project team also felt that the implementation required much more effort on their part compared to what they were made to expect going into the pilot. ITP managers expressed their extreme disappointment with the project team's decision to back out during another observed meeting. They responded to this setback by voicing out their opinions on what went wrong in the pilot through emails and discussions in observed meetings. For example, in an email to the whole ITP group, one of the ITP managers questioned whether the solutions being developed were truly serving the intended users and whether the priorities were in line with the overall objectives of the organization. Replying to this email, another ITP manager expressed disagreement and emphasized that the priority should lie in developing products that can be implemented in projects. These ITP managers portrayed the conflicting strategic imperatives of the project organizing logic and the asset management logic. With only a year left in the ITP, the ITP managers competed to gain more support for their own perspectives.

Summarizing, this phase was marked by increasing conflict between proponents of the project organizing logic and the asset management logic. The call for a more demand-driven approach that paid more attention to the needs of regional asset managers and took account of the various information management practices in regional units had taken hold in a larger part of the ITP group. The pursuit of asset management values also called for a different approach to the implementation of the ITP (shown in Table 6).

5.3. Phase 3: influencing the inception of a new organizational identity

At the start of the last year of ITP, the ITP group hoped to receive more finance for an extension of the ITP as it became more apparent that the deliverables will not be finished within the agreed deadline. However, obtaining additional financing was highly uncertain. Based on an informal conversation with a key informant, the ITP had a poor reputation within InfraOrg, and rumors went around that projects became wary of participating in the program because of the experienced setbacks in both pilot projects. Their poor reputation also became known among the ITP managers and during an observed meeting, they voiced their concerns about the ITP's choice of deliverables and strategy of working in projects with set deadlines when the needs of the users were still not clearly defined. The perceived failure of the ITP in timely developing the set deliverables was used by some ITP managers as a springboard to advocate for the needs of regional asset managers. One ITP manager expressed this as a major learning point based on their experience with the ITP, advocating for the structural involvement of asset managers in the projects.

The managerial director of ITP decided during this time to put a hold on all new developments. An ITP manager expressed during an observed meeting that the problems underlying the unsatisfactory information exchange between projects and regional units were insufficiently understood. Instead of developing new IT tools that enable the efficient reuse of information collected from projects for asset management purposes, the deliverables must be geared towards addressing yet unknown problems. Although a couple of managerial executives working under the ITP director still advocated to continue the development of the OTL and the AIN Repository, other managerial executives and most ITP managers were convinced that the program must first develop a better understanding of the needs of users before going further.

Around June 2022, the decision was made by the InfraOrg board to not extend the ITP. The rest of the program's duration would be spent planning for handing over parts of the deliverables and gathering learning points into a report, which was also to be handed over to the main organization. At the wider organizational level, new initiatives had started that aimed to professionalize asset management in the organization. One of these initiatives was a larger asset management program that aimed to bring the organization's asset management line up to

Table 6
Representative statements indicating institutional logics supported by InfraOrg actors during Phase 2.

Date	Representative statement	Description	Label	Institutional logic supported by statement
03/2021	*Pilot B project plan: The aims of the AM Platform are (1) to integrate information from the regions into one digital environment to be used in the tender of the infrastructure project; and (2) to enable smooth information exchange between contractor, project, and the regions. [DR16]*	Goal of Pilot B was to serve the needs of both the infrastructure project and the asset managers in the regions.	Goals/ purposes	The needs of both project and asset management should be pursued.
06/2021	*ITP manager: The [taxonomy] framework was established a fortnight ago by [InfraOrg employee] but nothing has been arranged for its implementation… The regional district heads have consented to this, but they each want to have individual conversations with [another InfraOrg employee] regarding the asset types that should be incorporated in the framework. [DE21]*	Implementation of the taxonomy framework was negotiable and should be driven by the demands of asset managers.	Associated practices	Asset managers had a choice on the enforcement of a uniform taxonomy framework.
12/2021	*ITP managers: Should we make it work technically or let it work well? If someone says it works technically, and then I reply, is it useful to me? … But most importantly, is it usable in a practical sense? It is not yet.* *In [one regional software] it is [represented as] two lines, in another software it is a point, and in another it is one line. What choice will you make? The end-user must determine how the information should look like… Unfortunately, many choices were made, and the software were adjusted to ensure technical compatibility. [FN41]*	ITP's deliverables should not only technically work, but should also serve the needs of asset managers by involving them in the development process.	Interpretation of success	Involving asset managers was just as important as delivering results.

Table 7
Representative statements indicating institutional logics supported by InfraOrg actors during Phase 3.

Date	Representative statement	Description	Label	Institutional logic supported by statement
03/2022	*ITP manager: We need to structurally involve regional asset managers in the process. Now, individual asset managers are incidentally involved through the pilots. We must think of a way to make their involvement more structural. [FN310]*	ITP manager advocated for structural involvement of asset managers.	Associated practices	Asset managers should be involved in the process.
07/2022	*InfraOrg board: The ambition is to align our asset management with the international ISO standard by 2025… Thereby, the board is tasked to contemplate on the organization of asset management, and explore how asset information can be kept up-to-date and draft a strategy for implementation and management. [DR116]*	InfraOrg board aimed to professionalize asset management, and to focus on the organization of asset management.	Goals/ purposes	InfraOrg should focus on the needs of asset management.
11/2022	*ITP board: One of the lessons learned was to engage the user. The development of a system was the guiding principle [for the ITP], instead of taking the user's needs as a starting point. [DR125]*	Transformation programs should be guided by user's needs, instead of the delivery of predetermined outputs.	Point of departure	Change programs should be user driven, instead of product-led.

international ISO standards by the end of 2025. The strategy for this new asset management program was formulated with advice from the managerial director of the ITP, who was also assigned as one of the executors of this new program. Additionally, the InfraOrg board approved a new plan to allocate more budget to the seven regional units to create more positions within each unit that were centered on asset information management.

Finally, in December 2022, the ITP was concluded. However, features of the program remained, albeit under the new initiatives of the organization. For example, the new asset management program took over further works for the OTL and the AIN Repository. Seemingly, new material practices and infrastructure supported the rise in centrality of the asset management logic in the organization (shown in Table 7).

6. Discussion

The findings above illustrate how a project-based organizational context shaped the implementation of an IT-based change program over time, and how this change program eventually drove change in the PBO. Using temporal brackets—represented by the three phases of change in InfraOrg and its ITP—we described how the project organizing logic dominant in InfraOrg initially shaped ITP's goals, structure, and associated practices. However, as the change program progressed, the delivery of the promised IT tools fell short. This led proponents of the more peripheral asset management logic to advocate for different goals and methods. Below, we explain how the balance between the two competing logics shifted throughout three phases of change in InfraOrg.

Before the start of the ITP, there were two clear-cut factions in InfraOrg—the project-based line and the asset management line—which had their own professional roles, work tasks, responsibilities, and institutional logics. Having these two autonomous factions with two opposing institutional logics within the same organization was unproblematic at this stage, as they were in different places and had different areas of responsibility. In accordance with Goodrick and Reay (2011), a form of segmentation of practices was possible. But, as the ITP aimed to combine the two factions into one cohesive system, these opposing logics, and their associated values and practices, came in direct conflict with each other, and segmentation was no longer viable. The introduction of the ITP is thus an example of how a pluralistic, competitive institutional environment arose within InfraOrg through exogenous forces, as similarly reported in previous studies (Martin, 2007; Powell & Colyvas, 2008).

The information infrastructure supported the segmentation as the two factions used separate information systems, tools, and policies. This infrastructure functioned as a source of path dependency for both factions, where the logics they adhered to were embedded in material practices and artefacts (cf. Geels, 2004). However, while these two paths and logics were heavily embedded and invested in within each faction, the parallel existence of both paths went against the overarching institutional logic of the field, which is of efficiency in time and costs (Eriksson & Westerberg, 2011). As both factions needed similar asset information but collected it separately and did not share it with each other, the set-up was inefficient with little synergy between the two factions. Therefore, implementing the ITP meant abandoning the investments made in the previous information infrastructure and making new investments to support the new information infrastructure, confirming previous findings suggesting that establishing new practices requires spending additional resources (Gómez & Atun, 2013).

The establishment of the ITP group incurred investment costs, but also provided legitimacy to the project that the ITP was something the organization felt was very important. The ITP group are powerful actors as they were provided power and resources to implement the ITPs. They designed the ITP and the overall strategy, planned its implementation, and decided on its goals according to their preferred project organizing logic. They thus had a great relative power to overtly push for the project organizing logic and design the ITP to go against the competing asset

management logic. However, the actors representing the asset management logic that worked in the regions also had some power over the ITP group and actors in the project-based line, as they had the knowledge, insight, and ability to share (or not to share) asset information that project actors or contractors need. The asset management line's path dependence supporting their asset management logic also made it difficult for them to consider the project organizing logic as its basic features were so different. Both groups thus had power and motivation to challenge the opposite logic and promote their own preferred logic. Also, because the system intended to streamline the information between the asset management line and the project-based line, a total suppression of the asset management logic was never feasible.

To garner support from the asset managers, the supporters of the project organizing logic tried to involve some asset managers in the implementation process and to identify their needs. Through these efforts, some values and goals from the asset management logic were embedded within the ITP strategy and is an example of how adapting features from competing institutional logics can be a way of ensuring institutional logic dominance for the project organizing logic (Kirk et al., 2007; Modell et al., 2007; Sartorius, 2006).

Overall, the project organizing logic was dominant over the asset management logic in phase one (as represented in Table 5), and there was not much open conflict between the two logics and their proponents. The two logics existed in a type of 'uneasy truce' (Goodrick & Reay, 2011; Reay & Hinings, 2005). In phase two, however, tensions surfaced (as exemplified in Table 6). Due to these tensions, a split happened amongst the ITP managers where some chose to adhere to the project organizing logic and others to the asset management logic. Here, conflicts between individual actors and perspectives became considerably more overt. As it became clear that the ITP would not be delivered within time or budget, proponents of the asset management logic increasingly began to question the very foundation of the ITP in an overtly and almost confrontational manner. By directly questioning the legitimacy of the project organizing logic and how this was used to structure the ITP, this can be seen as an attempt to move the asset management logic into a more dominant position within the organization. By using the tensions between the two conflicting logics, a delegitimization of the project organizing logic and a shift in dominance began to take place (cf. Martin et al., 2017).

The subsequent rumor that started spreading delegitimized the ITP even further. By continuing to openly voice criticism and using the failure of the ITP to undermine the project organizing logic, actors created space and legitimacy for the asset management logic that addressed many of the problems in the ITP that were caused by the project organizing logic. Once it became clear that it was no longer serving InfraOrg to continue on the trodden path of the ITP and the project organizing logic, despite the considerable investments made, the decision was made to terminate the ITP. Consensus around what such a program must accomplish had shifted to the asset management logic. In addition, by establishing an asset management program, and by professionalizing asset management within the organization, investments supporting the new dominant institutional logic were put in place. With the InfraOrg board now backing the asset management logic, it is becoming more widely embedded in the organization (as shown in Table 7).

All in all, these findings respond to our research questions by showing how a project-based organizational context shaped the implementation of an IT-based change program over time, and how such a program, in turn, eventually drove change in a PBO. The case of InfraOrg resembles the phases of institutional change as described by Reay and Hinings (2005): how one dominant logic is replaced by another competing institutional logic. There was a similar restructuration of the organization to support the foundations of the new logic, in terms of new values, practices, and control. By questioning the legitimacy of the ITP design and strategy, the ITP managers and asset managers were able to challenge the narrative and purpose surrounding the ITP and thereby subordinate the project organizing logic and push for dominance of their asset management logic.

7. Conclusions

In this paper, we have sought to better understand the mutual constitution of a project-based organizational context and an IT-based change program over time. Using an institutional logics perspective, our study sheds light on the dynamic relationship between a change program and its organizational context, which is constituted by dominant institutional logics. In this section, we first outline the implications of the study for theory and practice. Following this, we reflect on the limitations of the study and suggest avenues for future research.

7.1. Implications for theory and practice

Our study contributes to the literature on change program management in three significant ways. First, our identification of institutional logics dominant in InfraOrg adds novel insights into what constitutes organizational context in PBOs. As mentioned in the theoretical background, little is known about the institutional environment in parent, project-based organizations, as past research has mainly examined institutional logics in the temporary organizations that are tasked to execute the project or program (Martinsuo & Ahola, 2022; Söderlund & Sydow, 2019; Song et al., 2022). We explained how work in projects and programs was guided by beliefs and values that placed importance on the efficient utilization of resources and the implementation of uniform working methods, which we labeled as the project organizing logic. We also described how the structure and priorities of the change program were shaped by this logic, steering the program towards the delivery of predefined outputs within set budget, quality, and duration. Accordingly, these findings supplement earlier research that explores how project organizing implies particular sets of beliefs, values, and practices that differ from functionally organized organizations and fields (Fortin & Söderlund, 2023; Söderlund & Sydow, 2019).

Second, we find that not only did the organizational context shape the change program, but that the change program also eventually shaped the organizational context. Taking a longitudinal perspective, our study demonstrated how the ITP shifted the balance between conflicting institutional logics in InfraOrg. By bringing together various stakeholders with divergent and conflicting interests, a shared space was created where proponents of both logics engaged in a competitive dialogue. Consequently, the IT program served as a catalyst for change, where the conflict between the two logics led to new beliefs, values, and practices becoming more dominant in InfraOrg. Past research has argued that programs must remain responsive to their changing environment, for example, by adapting to evolving users' needs and changes in the organizational context (Pellegrinelli et al., 2007; Thiry, 2004). As such, most studies have focused on how to align program design and management approaches with the contextual environment (Martinsuo & Hoverfält, 2018) and on integrating various interfaces between the project, program, and organization (Turkulainen et al., 2015). Our research thus extends extant literature on this topic by investigating the impact of the change program on its initiating organization.

Finally, our study also contributes key insights into an overlooked set of change programs. As Martinsuo and Hoverfält (2018) concluded, most studies on change programs have focused on successful programs, and only a minority have focused on terminated or failed programs. Although the ITP could be interpreted as a failure—none of the predetermined deliverables were delivered on time nor implemented in the organization—we showed how it still triggered a change in the organization, albeit incremental. This supports previous findings that programs lead to change in very different, unplanned ways (Martinsuo & Kantolahti, 2009; Pollack, 2012). We therefore echo the call of Laine et al. (2016) for future studies to examine the unintended outcomes of change programs and to take a broader view of the impact of these

programs on their contexts.

For practice, the paper highlights important aspects to keep in mind when implementing IT in PBOs. By understanding how to enact change to achieve consensus and support from the bottom up, change implementation will hopefully be easier in the future and costly mistakes can be avoided. In other words, it is important to gather support from constituent business lines—in addition to the main business line—from an early stage of an IT-based change program. This approach can establish cooperation from minor business lines to secure their necessary input for major change initiatives. Moreover, considering the subversion of the project organizing logic in InfraOrg, these findings call into question the continuing emphasis of project management on control over flexibility and novelty (Lenfle & Loch, 2010), and the measure of project success in terms of the ``iron triangle'' of cost, quality, and schedule (Whyte & Mottee, 2022; Winch & Cha, 2020). To adequately respond to disruptions caused by IT, PBOs must rethink how projects and programs are organized (Gregory et al., 2015; Ika & Munro, 2022; Whyte & Mottee, 2022). Rather than steering IT-based change programs toward the delivery of new IT tools within set budget, quality, and duration, there should be a greater emphasis on understanding the intricacies of the organizational context within which these programs operate.

7.2. Limitations and future research

Our research has several limitations. First, as our study primarily relied on real-time observations of events in a single case study, it is important to acknowledge potential biases inherent in observational methods. Observations may be influenced by observer subjectivity, selective attention, and the observer effect (Miles & Huberman, 1994). Although we mitigated these biases by triangulating our observational findings with other data sources and methods (Yin, 2013), future research should consider employing a diverse array of methods to further validate and expand upon our findings.

Furthermore, the description of each logic presented in this paper represents the dominant logics within each logic type as they are portrayed in this single case. The pluralistic nature and tightly legislated and bureaucratic environment (Aalto & Kallio, 2019; Kadefors, 1995; Saz-Carranza & Longo, 2012) affected the institutional change process, which means that environments with different institutional prerequisites could have additional insights to provide. Future research could consider conducting comparative studies across various organizational contexts to explore how institutional logics and their interactions manifest differently in diverse settings. This approach would enhance our understanding of the generalizability of the findings presented here and further contribute to our knowledge of IT-based change programs in PBOs.

Finally, while we have used institutional logics to illuminate the dynamics in beliefs, values, and practices, our longitudinal study's scope was limited to the duration of the IT program. We acknowledge the possibility that the shift in dominance between the project organizing logic and the asset management logic may be temporary. As Reay and Hinings (2005) have argued, sustaining a shift in dominant institutional logics within an organization requires a restructuration of the wider institutional field. Although the project organizing logic has become less dominant within InfraOrg, the construction sector in which InfraOrg operates remains highly project-based. Establishing the asset management logic needs to be accompanied by a shift in dominant institutional logics at the industry level. We encourage further empirical research that takes a multilevel perspective to institutional change, connecting change at the organizational level to changes at the broader field level. Such research could yield insights into how organizational change programs can lead to changes that have an impact at the level of the industry and the society.

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Declaration of competing interest

The authors declare that they have no conflict of interest.

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