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Angaben zur Veröffentlichung / Publication details:

Gregory, Robert Wayne, Mark Keil, Jan Muntermann, and Magnus Mähring. 2015. "Paradoxes and the nature of ambidexterity in IT transformation programs." *Information Systems Research* 26 (1): 57–80. https://doi.org/10.1287/isre.2014.0554.

Paradoxes and the Nature of Ambidexterity in IT Transformation Programs

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Though information technology (IT) transformation programs are gaining in importance, we know little about the nature of the challenges involved in such programs and how to manage them. Using grounded theory methodology, we conducted a multiyear case study of a large IT transformation program in a major commercial bank, during which we encountered the interrelated themes of paradoxes and ambidexterity. Grounded in our case, we construct a substantive theory of ambidexterity in IT transformation programs that identifies and explains the paradoxes that managers need to resolve in IT transformation programs. The ambidexterity areas we identified are (1) IT portfolio decisions (i.e., IT efficiency versus IT innovation), (2) IT platform design (i.e., IT standardization versus IT differentiation), (3) IT architecture change (i.e., IT integration versus IT replacement), (4) IT program planning (i.e., IT program agility versus IT project stability), (5) IT program governance (i.e., IT program control versus IT project autonomy), and (6) IT program delivery (i.e., IT program coordination versus IT project isolation). What weaves these six areas together is the combined need for IT managers to employ ambidextrous resolution strategies to ensure short-term IT contributions and continuous progress of IT projects while simultaneously working toward IT transformation program success as a foundation for IT-enabled business transformation. However, in addition to this commonality, we find that the nature of paradoxical tensions differs across the six areas and requires slightly different management strategies for paradox resolution. Ambidexterity areas (1), (2), and (3) are associated with IT transformation strategizing and, in addition to balancing short- and long-term goals, require the mutual accommodation and blending of business and IT interests in the spirit of IT-business partnering to achieve IT-enabled business change and IT-based competitiveness. Ambidexterity areas (4), (5), and (6) are associated with IT program and project execution and, in addition to balancing short- and long-term requirements, require a recurrent and dynamic act of balancing "local" needs at the IT project level and "global" needs at the IT program level.

Keywords: information technology; transformation programs; ambidexterity; paradoxical tensions; balancing; blending; grounded theory methodology

1. Introduction

Information technology (IT)-enabled business transformation is a key mechanism for the challenging task of deriving business value from strategic IT investments (Venkatraman 1994). As business environments become more dynamic and digitized, i.e., driven by IT, this challenge becomes even more pertinent (Pavlou and El Sawy 2010). Achieving business transformation and competitiveness requires the organizational capability to implement IT transformation programs, defined as concerted IT-dependent strategic efforts to increase the ability of an organization to address its future business environment and compete more effectively with IT (Gregor et al. 2006, Piccoli and Ives 2005, Ross et al. 1996). Unfortunately, we know little about the nature of the challenges involved in IT transformation programs and how to manage them.

Since the early 1990s, research has defined key characteristics of IT transformation programs (Scott Morton 1991), highlighting their complexity, which frequently translates into tensions related to goals and priorities and paradoxical demands on what these programs should do and achieve. For example, IT

transformation programs typically involve organizational renewal and the concurrent development of one or more digitized platforms and related IT capabilities that are aligned with a competitive business and IT strategy (Weill and Ross 2009). Furthermore, they require the mutual accommodation of partly contrasting business and IT demands in the spirit of IT-business partnering (Guillemette and Paré 2012). In addition, IT transformation programs require the organization to be able to manage, coordinate, and prioritize between a wide range of joint business and IT projects, activities, goals, and partly conflicting stakeholder interests over an extended time period while considering internal and external developments (Jiang et al. 2014, Ribbers and Schoo 2002).

In summary, prior information systems (IS) research since the early 1990s has established why IT transformation programs are important (i.e., for achieving IT-enabled business transformation and competitiveness) and has identified their key characteristics (i.e., IT-business partnering, IT-based competitiveness, IT-enabled change, and IT program complexity). However, we still have a significant gap in our understanding of the specific managerial challenges and complexities involved in executing IT transformation programs (Besson and Rowe 2012).

We examined a large international bank's IT transformation program that was aimed at increasing the bank's IT-enabled competitiveness in a dynamic business environment. This initiative came to include the challenge of addressing strategic IT choices and activities that were triggered by a concurrent merger with a national competitor. Early in our examination of this case, we learned that IT managers had to address multiple paradoxical tensions, for example, in mutually accommodating business and IT interests and achieving both short-term goals related to operational IT contributions and the merger and long-term goals related to a fundamental revamping, or transformation, of the IT platform. This became the centerpiece and focus of our analysis, which we associated with the interrelated concepts of ambidexterity, tensions, and paradoxes.[1] Consequently, and by adopting the meta-theoretical *paradox lens* (Smith and Lewis 2011) that has been adopted by ambidexterity scholars, we embarked on a research journey to construct a substantive grounded theory of ambidexterity in IT transformation programs. We define IT transformation program ambidexterity as IT management's capability to resolve paradoxical tensions associated with IT transformation programs.

Considering the basic building blocks of what constitutes a theoretical contribution, including *what* elements should logically be considered as part of the explanation, *how* the identified elements are related, and *why* they are important (Whetten 1989, p. 491), as well as recent exemplars of building grounded theories in IS (Gregory et al. 2013, Levina and Vaast 2008), we draw on paradox and ambidexterity theory to address the following research question: What paradoxical demands and ambidexterity abilities are involved in IT transformation programs, how are they related, and why are there variations in leaders' strategies for paradox resolution?

Building a grounded IS theory about paradoxes and ambidexterity in IT transformation programs is important. First, the aforementioned unique characteristics of IT transformation programs highlight the need to resolve many paradoxes, including the accommodation of short-term IT requirements and long-term business transformation demands as well as the mutual accommodation of business and IT elements over time (Sauer and Yetton 1997). Second, though the importance of dealing with paradoxical tensions and the crucial role of ambidexterity in this context has been acknowledged (Pavlou and El Sawy 2010, Robey 1997, Sauer and Yetton 1997), to the best of our knowledge, there has been no in-depth empirical research into paradoxes and ambidexterity in IT transformation programs.

2. Theoretical Background

2.1. IT Transformation Programs

Whereas IT projects typically involve the development of a single IS and are narrowly focused on delivering a defined output within specific budgetary and time constraints, IT programs are much broader and typically encompass a coordinated set of interrelated IT projects, each with its own unique requirements but competing for limited resources (Jiang et al. 2014, Sapsed and Salter 2004). A key rationale for organizing work into a program is that the intended organizational benefits cannot be achieved by pursuing individual IT projects on their own (Jiang et al. 2014, Lycett et al. 2004, Ribbers and Schoo 2002). Within an IT program, prioritization, sequencing, and other types of coordination and control activities help ensure the alignment of individual project contributions to a set of strategic or long-term organizational objectives. IT transformation programs are particular types of IT programs that involve the

[1] Ambidexterity has been previously defined as "an organization's ability to pursue two disparate things at the same time" (Gibson and Birkinshaw 2004, p. 210). Research has established that this is a dynamic capability (O'Reilly and Tushman 2008) that is associated with resolving paradoxical tensions (Andriopoulos and Lewis 2009, Eisenhardt et al. 2010, O'Reilly and Tushman 2004, Smith and Tushman 2005, Tushman and O'Reilly 1996, Tushman et al. 2011). Paradox is defined as "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith and Lewis 2011, p. 382).

Table 1 Characteristics of IT Transformation Programs

Characteristic	Description	References
Achieving IT-based competitiveness	IT transformation programs serve the specific purpose of increasing the IT-based competitiveness of a firm and are therefore often observed in competitive and dynamic business environments. Within such competitive and dynamic business contexts, a key mechanism for achieving IT-based competitiveness is building an IT platform that provides stable core operations and the necessary foundation for competing with IT.	(Pavlou and El Sawy 2010, Weill and Ross 2009)
Triggering IT-enabled change	IT transformation programs typically involve substantial change. A particular characteristic of IT transformation programs, as opposed to organizational transformation programs in general, is that this change is enabled or triggered by IT. Thus, in IT transformation programs, "IT" is considered a major asset for leveraging organizational transformation, and the changes made to organizational IT itself are considered important for leveraging business change.	(Besson and Rowe 2012)
Dealing with IT program complexity	Executing IT transformation programs involves the complexity associated with managing a set of highly interrelated IT projects and aligning individual contributions to the strategic objectives at the program level. IT program management can be conceptualized as an integral part of an IT transformation process, i.e., the design, development, and deployment of changes to IT and the organization.	(Jiang et al. 2014, Ribbers and Schoo 2002)
IT-business partnering	Of the multiple ways in which IT functions may contribute to business inside an organization, a specific characteristic of IT transformation programs is that they require the IT organization to be an active partner with the business. The IT-business partnering perspective involves the need for IT and the business organization to be mutually accommodating and to adopt the mind-set that IT is an integral element to the business.	(Guillemette and Paré 2012, Sauer and Yetton 1997)

aim of achieving IT-based competitiveness by triggering IT-enabled change within the organization. These programs involve a high degree of IT program complexity and require IT-business partnering (Table 1).

2.2. Paradoxes

IT transformation programs entail paradoxes (Robey 1997). For example, in a study of enterprise resource planning (ERP) system implementation, Robey et al. (2002) examined the process of addressing learning paradoxes related to the need for change management. Robey and Boudreau (1999) argued that a paradox is one of the most common types of contradictions in the management of IT and organizations and that paradoxes require problem solving and creative thinking about how opposing elements can logically or meaningfully coexist. They further argued that tensions between apparently incongruous elements force the resolution of paradoxes. This topic is at the center of Smith and Lewis's (2011) review of paradoxes across a diversity of organizational contexts. They offered a definition of paradox that highlights both the notion of paradoxical tensions and the importance of resolving them. By paradoxical tensions, they refer to a combination of "elements that seem logical individually but inconsistent and even absurd when juxtaposed" (Smith and Lewis 2011, p. 382). We examine the paradoxical tensions that managers in IT transformation programs must address as part of our efforts to construct a grounded theory of IT transformation program ambidexterity.

2.3. Ambidexterity

Our understanding of the concepts of paradox and ambidexterity is that they are closely interrelated and should be viewed in combination. Because managers resolve paradoxical tensions, they contribute to an organization's ability to pursue disparate things at the same time, which is the focus of ambidexterity (Gibson and Birkinshaw 2004). Thus, ambidexterity capabilities are closely associated with the ability to resolve paradoxical tensions. In fact, Smith and Lewis (2011) observed that "recent ambidexterity research has adopted a paradox lens, stressing that overall organizational success depends on exploring and exploiting simultaneously" and that "ambidexterity creates demands for senior leadership to support these contradictory strategies simultaneously" (Smith and Tushman 2005, p. 388). Smith and Lewis (2011) described *exploring* in terms of ensuring long-term success and *exploiting* in terms of achieving short-term peak performance.

The distinction between exploration versus exploitation is well known from research on organizational learning. Levinthal and March (1993) argued that "[t]he basic problem confronting an organization is to engage in sufficient exploitation to ensure its current viability and, at the same time, to devote enough energy to exploration to ensure its future viability. Survival requires a balance, and the precise mix of exploitation and exploration that is optimal is hard to specify" (p. 105). Before that, March (1991) laid out a very broad notion of the two terms: "Exploration includes things captured by terms such as

search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution" (p. 71). Balancing exploration and exploitation is frequently referred to as *the* organizational ambidexterity problem (Raisch et al. 2009). Furthermore, it has been conceptualized as a dynamic capability based on the insight that achieving organizational ambidexterity may involve sensing environmental threats, seizing opportunities, and dynamically reconfiguring resources accordingly (O'Reilly and Tushman 2008).

IS research has also examined organizational ambidexterity. Im and Rai's (2008) study of ambidexterity in IT supply chain relationships found that a balance between strategic exploratory and exploitative knowledge sharing is needed in this context. Their study also found that this is enabled by contextual ambidexterity, i.e., the behavioral capacity of leaders and teams to simultaneously demonstrate alignment and adaptability (Gibson and Birkinshaw 2004). Further IS studies have focused either on the exploration-exploitation dichotomy (Xue et al. 2012) or the alignment-adaptability dichotomy (Napier et al. 2011, Ramesh et al. 2012, Tiwana 2010). Thus, with the exception of the study by Im and Rai (2008), we lack empirical studies that examine ambidexterity from the perspectives of both strategizing and strategy implementation in combination. IT transformation programs are highly suited for the study of ambidexterity because they involve both strategizing and strategy implementation. Furthermore, the nature of ambidexterity in this context remains unexplored to date.

2.4. The Interrelationship Between Paradox Resolution and Ambidexterity

A central debate in the ambidexterity literature is how organizations accommodate contrasting demands. Smith and Lewis (2011) offer a *paradox lens* to understand how managers resolve paradoxical tensions to achieve organizational ambidexterity. Their study proposes a *dynamic equilibrium model* that explains how paradoxical demands recurrently become salient and trigger managerial responses to confront these demands simultaneously to seek accommodation. The outcome of this iterative paradox resolution process is achieving both short-term performance (requiring exploitation) and long-term success (requiring exploration) at the same time, i.e., achieving organizational ambidexterity. With this integrative view of recurrently resolving paradoxical tensions and gradually achieving ambidexterity, we examine a case involving the management of an IT transformation program. Based on our case, we embark on a research journey to construct a grounded theory of IT transformation program ambidexterity. As a basis for our theorizing, we discuss key theoretical assumptions in the following section.

2.5. Theoretical Assumptions

We assume that organizational capabilities (e.g., organizational ambidexterity) and outcomes (e.g., short-term and long-term success) are shaped by underlying discursive practices and influencing actions of senior leaders who engage in activities such as highlighting goals and strategies, defining how they are going to operate, and responding to questions about who is going to be responsible for what and within which time horizon (Eisenhardt et al. 2010, Smith and Lewis 2011, Smith and Tushman 2005). We also assume that senior leaders' cognitive and behavioral capacities can be employed to address conflicting demands and thus help shape organizational ambidexterity (Raisch et al. 2009). We furthermore assume that IT management and leadership plays a crucial role in leveraging the use of IT and developing IT capabilities in dynamic environments (Bharadwaj 2000, Mata et al. 1995, Peppard and Ward 2004).

3. Research Methodology

This is a grounded theory building study that follows the principles of emergence, according to which concepts earn their relevance through the systematic generation and conceptualization of data (Glaser and Strauss 1967). In the spirit of engaged scholarship (Van de Ven 2007), we started this research project by identifying and formulating a relevant research problem that was currently experienced by practitioners in leading organizations, i.e., IT transformation program management. As a result of engaging informally with key industry informants, we defined our initial research intent very broadly to shed light on why IT transformation programs are challenging and how they are executed. The specific research objective and question formulated in the introduction of this paper materialized *during* the research process in parallel to shaping our understanding of what emerged from the data through conceptualization based on theoretical sensitivity (Glaser 1978). We purposefully tolerated confusion and data complexity at the beginning of the research process to allow relevant findings to emerge, giving utmost care to avoid forcing existing theory onto our interviewees and data (Urquhart 2013). Adopting a conceptualist grounded theory methodology fit well with our theory building research objective, and it allowed us to answer the call for more theories that are grounded in unique IS contexts (Birks et al. 2013).

Through an established research relationship with our case organization, we secured access to a revelatory case (Yin 2009, p. 48). This provided us with

the unique opportunity to examine a long-term IT-dependent strategic initiative of a large commercial bank geared toward increasing IT-enabled firm competitiveness in a dynamic business environment. Leveraging our unique access to the site and guided by Charmaz's (2006) description of intensive interviewing, we gathered rich data and captured practical experiences from *C*-level executives to the levels of operational personnel over a period of 2.5 years. The experiences we captured cover a period of nine years (referred to as year 1 to year 9 in §4) in the 2000s and 2010s. As our detailed description of the nature and evolution of our field engagement in Appendix A emphasizes, the key theme of managing multiple pairs of contrasting demands emerged over time. Drawing on techniques of grounded theorizing (Glaser 1978, Urquhart 2013) allowed us to construct a core category of IT transformation program ambidexterity.

3.1. Overview of Collected Case Data and Emergence of the Key Theme for Analysis

Primary data collection involved the continuous collection of data slices (predominantly interviews but also observations during day-long site visits) by the lead author on a regular biweekly and, at times, weekly basis during years 7, 8, and 9 of our case timeline. In addition, two of this paper's authors were able to build on the experiences through a longitudinal case study with the same case organization in years 4, 5, and 6 of a core banking IT reengineering project that is part of the historical background of the present case. The 89 mostly open-ended and intensive interviews conducted for this paper during years 7 to 9 covered all hierarchical levels, from senior executives to project team members, lasted between one and two hours each, and resulted in over 300,000 words of manually and immediately transcribed material. Together with the additionally collected secondary data slices (Table 2), the entire data set was sorted, organized, and centrally managed in Atlas.ti (Muhr 2008). This integrated case study database formed the basis for systematically coding our data and engaging in grounded theorizing, which we explain next.

We entered the research site and our case organization with very little preconceived understanding of the particular challenges and management strategies involved in IT transformation programs (Glaser and Strauss 1967). We had some predetermined ideas, for example, that it must be challenging to execute interdependent projects in combination so that overall program objectives are fulfilled, but it was only after multiple months in the field that the key theme of paradoxes and ambidexterity started to emerge from our data (see Appendix A for more details). We paid particular attention to record events and to understanding how they evolved over time from the viewpoints of our interviewees and based on the secondary data that we received. The resulting rich process description of our case formed an important basis for analyzing how IT managers in our case dealt with paradoxes and for constructing our core category.

3.2. Coding Data and Constant Comparisons

Our coding process proceeded from open and selective coding (i.e., substantive coding) to theoretical coding (Glaser 1978, Urquhart 2013). We started by engaging in *open coding*, "which is coding the data in every way possible" (Glaser 1978, p. 56) and involves coding different incidences into as many tentative categories as possible. In our case, we generated hundreds of initial codes and associated tentative categories (e.g., IT portfolio decisions, IT platform design). Second, *selective coding* focuses the subsequent analysis on the categories related to the core category and builds on the "concept-indicator model, which directs the conceptual coding of a set of empirical indicators" (Glaser 1978, p. 62). In our case, based on *constant comparisons* between what was emerging from our data and existing theory, we identified the key theoretical gap about the nature of IT transformation program ambidexterity, which is directly related to our data, and we made this our core category. We started to link indicators to identified concepts (e.g., IT efficiency, IT innovation) within each of the tentative categories from the open coding stage (e.g., IT portfolio decisions). In the analysis section, specifically §4.2, we present a selected list of indicators for each category or area of IT transformation program ambidexterity. Third, we engaged in *theoretical coding*, which is the task of conceptualizing how the substantive codes and concepts relate to each other "to be integrated into a theory" (Glaser 1978, p. 72). Scrutinizing our data, we identified different types of relationships between the examined concepts, including positive relationships (e.g., focusing on particular types of IT innovations promising future IT efficiency gains) and negative relationships (e.g., overemphasizing IT innovation in a way that impedes the achievement of short-term IT efficiency goals). Guided by Glaser, who stated that in theoretical coding "it is also worthwhile to look at the codes of other disciplines for new and sophisticated theoretical ideas" (Glaser 1978, p. 73), we started searching for theoretical ideas in the general management literature. We were inspired by a reading of theoretical ideas about paradoxes, tensions, contradictory choices, balancing, and the ambidextrous manager, among others (Eisenhardt et al. 2010, Smith and Lewis 2011, Smith and Tushman 2005, Tushman and O'Reilly 1996) that seemed closely related to what we were observing in our case. Subsequently, we theorized the nature of IT transformation program ambidexterity.

Table 2 Primary and Secondary Data

Data	Description		
	Position/role of interviewee	Responsibilities/involvement in program	No.
Primary data: 89 interviews	Senior IT leader (including *C*-level)	Responsible for the overall IT strategy in alignment with business that guides program work; responsible for making senior management decisions related to IT platform design, IT resource changes, and other key program decisions.	10
	IT leader	Responsible for aiding senior managers and preparing decisions in the areas of IT strategy, platform design, and resource change; responsible for supervising program work on a (bi-)weekly basis; responsible for making operational program decisions (e.g., staffing, organizational design).	15
	Business/IT program or project leader	Responsible for managing the program or a subprogram/project/subproject. Because staffing usually involved leaders from both the business and IS organization, in most cases, we interviewed both.	32
	Business/IT domain expert	Program members with specialized expertise in a particular business domain or IT area, such as the packaged software standard, hardware, and subject matter expertise in a particular domain (e.g., banking, lending, investments, sales).	9
	IT consultant/partner	External personnel either permanently or temporarily involved in the program from consultancy firms, the cooperating software vendor, the acquired bank, or former program members who left the organization.	7
	Cross-topic/lateral IT leaders	Program members responsible for cross-topics in the program such as delivery management, centralized program control, change management, project management organization, process integration and related business topics, and merger-related synergies.	16
		Total number of people interviewed	64
		Total number of interviews (many people were interviewed two to four times at various points in time)	89
Primary data: Additional fieldwork	In addition to the primary interviews, extensive notes were taken during field visits based on, for example, working with the SharePoint program server (a corporate user ID and access were granted at all times), attending a project management meeting as a silent listener (which occurred twice), giving interim results presentations and recording the feedback, informal discussions with program members over scheduled lunch and coffee sessions, or unscheduled spontaneous conversations and observations in the open plan project space.		
Secondary data	In addition to the primary data described above, over 150 files involving huge sets of slides containing strategy and program documentation, organization charts, internal top management communication, steering committee meeting slides, and freely available external press releases and news about the program and associated IS strategy were collected and analyzed for triangulation purposes.		

3.3. Theoretical Sampling

During this iterative coding process, early substantive coding results allowed us to see the direction in which to take our emergent theory, guiding our process of *theoretical sampling*, i.e., knowing what to focus on next to construct the emergent theory by purposefully selecting the next data slices to be collected and analyzed (Glaser 1978). As explained by Glaser (1978), "different kinds of data give the analyst different views or vantage points from which to understand a category and to develop its properties." These different views are what he referred to as "slices of data" (p. 151). In our case, sampling for the next view or data slice meant different things at different points in time during the research, for example, interviewing a particular informant or considering views conveyed through secondary materials or notes from our own field observations. Urquhart (2013) explains theoretical sampling as "deciding on analytic grounds where to sample from next" (p. 42). We employed both *substantiation* and *extension* in our theoretical sampling.

Substantiation is when the indicators associated with an emerging tentative category (e.g., indicators related to the concepts of IT standardization and IT differentiation obtained from interviews with IT program managers) provide the analytic grounds to collect further indicators for the substantiation and definition of a particular category (see the discussion about depth in Urquhart 2013). For example, we purposefully conducted interviews with internal and external specialists in IT platform design who were involved in the transformation program to reveal additional indicators about the tensions between meeting both IT standardization and IT differentiation demands at the same time and strategies to address these tensions.

Extension involves purposefully sampling on analytic grounds to explore the boundaries of an emerging theory (see the discussion about breadth in Urquhart 2013). We used extension to identify the range of categories that, in combination, could explain our emerging core category of IT transformation program ambidexterity. For example, indicators obtained

from IT program and project managers about our case organization's strategy to build an "efficient, integrated, standard IT platform" led us to collect and analyze additional data from senior IT managers and strategists to understand the relationships and differences among such concepts as IT integration, IT standardization, and IT efficiency. Through these efforts, we obtained a more nuanced understanding of the differences between these concepts, which led us to theorize additional categories (e.g., "IT platform design," including the concept of "IT standardization").

Overall, the long duration and intensity of our research involvement in the field (Appendix A) greatly enabled theoretical sampling in this rather complex undertaking of theorizing such a broad topic as IT transformation program ambidexterity. In addition, the previously described process of coding was used, constant comparisons were made in parallel to the engagement in the field (Appendix A), and the theoretical sampling described above was employed. All of these different elements of intertwined data collection and analysis facilitated each other.

After approximately 80 interviews, we realized that new data slices were not adding substantially to our emerging theory, the first indication of reaching the stage of *theoretical saturation.* Consequently, we started with the process of *theoretical integration* and writing up the results (Glaser 1978). In parallel, we conducted nine further interviews to ensure we reached the saturation point. Furthermore, to ensure that our grounded category had *grab*, we conducted a one-hour research results presentation in front of a group of 35 interviewees from our case organization and transcribed the feedback for subsequent analysis.

4. IT Transformation Program Ambidexterity

In this section, we provide a brief summary of our case, introduce our grounded core category of IT transformation program ambidexterity, and present the in-depth case analysis from which it emerged.

4.1. Brief Synopsis of Our Case

We examined a long-term strategic effort of a large commercial bank (hereafter referred to as "Bank1") to implement a combined business and IT strategy focused on increasing IT-enabled competitiveness in a dynamic business environment through a strategic IT transformation program. In particular, Bank1 was facing fierce competition in the banking industry, with limited possibilities for organic growth, and it wanted to improve its cost-income ratio (CIR). Triggered initially by Bank1's IT management and shaped by advances in the market for packaged banking software, Bank1 developed a strategic plan (during years 3 and 4 of our case) for increasing long-term IT-enabled cost competitiveness. The strategic plan encompassed the development of a new IT platform through a major IT transformation program. However, the dynamic business environment, characterized during years 1 to 4 of our case by market turbulence and industry consolidation, created a window of opportunity for a merger with a national competitor of comparable size, which Bank1 seized (during year 4). Thus, the organization's top management team decided to address its competitive problems by pursuing both IT transformation and the merger (in the transition to year 5). This led to an emerging goal conflict for IT management (starting in year 5) because the IT transformation the top management team had planned before the merger (during years 3 and 4) focused on large IT investments to achieve long-term competitiveness, whereas the merger—from the standpoint of IT—focused on short-term IT integration cost synergies. Overall, meeting disparate demands and maintaining the primary strategic focus on IT transformation turned out to be very difficult (from years 5 to 8 in our case). Online Appendix B (available as supplemental material at http://dx.doi.org/10.1287/isre.2014.0554) provides an overview of key events in our case according to the case timeline, and Figure 1 (see §4.10) provides a schematic overview of the program organization when it had been fully developed.

4.2. Theorizing IT Transformation Program Ambidexterity

Our case data, which covers many aspects of executing and managing an IT transformation program, pushed us toward a grounded theorization of IT transformation program ambidexterity. In Table 3, the different areas of ambidexterity that we identified in our case are defined and conceptualized based on a selected list of codes and indicators from our case data. Note that each ambidexterity area involves competing demands denoted by A and B (e.g., for IT portfolio decisions: (A) demand for IT efficiency and (B) demand for IT innovation). For each ambidexterity area, Table 3 lists selected indicators for each of the competing demands and indicators for the combination and paradoxical interrelationship of the two demands (A&B). The latter highlight the need to resolve paradoxical tensions and, in some cases, points to paradox resolution strategies. We explain our grounded theorization of IT transformation program ambidexterity through the following in-depth case analysis from which it emerged.

4.3. Setting the Stage for IT Transformation

During years 1 and 2 of our case, Bank1's IT management derived several key lessons from examining and

Table 3 IT Transformation Program Ambidexterity

Ambidexterity area	Definition/meaning	Selected codes/indicators: (A) or (B) emphasizes focus on either one of the two demands, while (A&B) highlights the need to resolve paradoxical tensions and balance (A) and (B)
IT portfolio decisions	The ability to achieve both (A) *IT efficiency*, i.e., focus on reducing operational IT costs and expenditures, and (B) *IT innovation*, i.e., focus on investing in IT innovations for enabling IT-based business opportunities	(A): Constant pressure on IT to run Bank1 efficiently and contribute to the efficiency ratio (A): Firm's cost-income ratio/productivity as key IT benchmark (A): Regular efficiency-based control of IT investments (B): IT acting as a strategic partner in identifying new IT-based business opportunities (B): A major change in the technological environment triggering IT innovation (B): Crucial role of IT innovations for future banking revenue growth (A&B): Conflict between short-term IT efficiency targets and long-term innovation needs (A&B): Strategy focused on combining IT efficiency with IT-driven business innovation (A&B): IT investments to meet longer-term innovation and shorter-term IT efficiency goals
IT platform design	The ability to achieve both (A) *IT standardization*, i.e., focus on harmonization and consistent use of IT, and (B) *IT differentiation*, i.e., focus on customization and flexible adaptation of IT to business needs	(A): Shift from self-developed complex systems to standardized IT components (A): Advocating a mind shift from developing to configuring (A): Designing a simple, lean, standardized, and homogenous IT platform (B): Adapting IT to specific emerging business requirements irrespective of IT standards (B): Need to enable timely solutions to new business requirements (B): Enabling time-to-market in new product development (A&B): Distinguishing between the core and the periphery of the IT platform (A&B): Combining customer-facing front-end variety with back-end process homogeneity (A&B): Establishing a front-to-back-end mindset in discussing IT platform design decisions
IT architecture change	The ability to achieve both (A) *IT integration*, i.e., focus on reusing and integrating existing IT components, and (B) *IT replacement*, i.e., focus on fundamental IT renewal and leaving legacy systems behind	(A): Cross-boundary IT coordination and integration to reuse valuable IT assets (A): Acquisition and integration of existing IT resources that are critical for the business (A): Realizing synergies through IT integration and a focus on IT reuse (B): Preparing the organization for a major enterprise IT paradigm shift (B): Future-looking orientation in replacing and transforming existing enterprise IT (B): Eliminating IT waste—getting rid of legacy systems (A&B): Avoiding recurrent replacement of IT components to foster IT integration (A&B): Replacing IT components with new ones that can be more easily integrated (A&B): Ensuring sufficient focus on fundamental IT renewal to avoid ongoing replacements
IT program planning	The ability to achieve both (A) *IT program agility*, i.e., being responsive in the IT program to strategic and contextual changes, and (B) *IT project stability*, i.e., ensuring a stable foundation for IT project execution	(A): Recurrent need for adapting the IT program plan because of external influences (A): Agility to respond to new requirements (e.g., market, business, technology change) (A): Struggling to maintain IT program planning stability to execute IT projects (B): Ensuring IT project stability so project teams can succeed (B): IT projects view constantly moving program targets as a key problem (B): Reflecting upon degree of required and acceptable change (A&B): Balancing the degree of IT program plan change over time for temporal stability (A&B): Program roadmap refinement within limited time intervals, but recurrent over time (A&B): Shifting from constant to periodical "moving of targets" and program replanning
IT program governance	The ability to achieve both (A) *IT program control*, i.e., ensuring program-level alignment between IT project goals and solutions, and (B) *IT project autonomy*, i.e., giving IT projects in the IT program sufficient leeway to address local requirements	(A): Ensuring a holistic program view on controlling multiple interrelated IT projects (A): Aligning work activities across interrelated IT projects with IT program goals (A): Cross-project interdependencies requiring program-level control (B): Business units exerting pressure on IT projects to address their local demands (B): IT projects gravitating toward autonomy to address local business domain needs (B): Workarounds in individual IT projects to resist centralized IT cross-project control (A&B): Tensions between IT project autonomy and IT program control (A&B): Leaders spanning the boundaries between project- and program-level interests (A&B): Negotiations over which control activities should be centralized vs. decentralized
IT program delivery	The ability to achieve both (A) *IT program coordination*, i.e., focus on synchronizing releases and ensuring continuous IT delivery, and (B) *IT project isolation*, i.e., enabling delivery teams in IT projects to deliver components for releases	(A): Specifying the sequence of project tasks and activities (A): Ensuring cross-project coordination of interdependent deliverables over time (A): Heterogeneity of IT project deliverables in a release requiring coordination (B): Ensuring critical mass of resources dedicated to next deadlines (B): Ensuring short-term delivery success requiring IT project isolation (B): Short-term performance (releases) reducing program uncertainty (A&B): Implementing an IT delivery management role to balance coordination and isolation (A&B): Balancing short-term with long-term resource allocation in view of prioritization (A&B): Image of a relay race for coordination of IT components produced in isolation

analyzing a variety of past IT projects as well as the Bank's overall enterprise IT architecture. Specific challenges that were identified included (1) constraints imposed by legacy banking systems, (2) a heterogeneous technology mix, (3) monolithic systems that lacked flexibility, (4) data and software redundancy, (5) technology solutions near the end of their life cycle, (6) high project risks and costs, (7) an undesirable ratio of run-the-bank (IT operations) versus change-the-bank (IT development) costs, and (8) low

flexibility and long time to market. As a result of the above, Bank1's IT management, with the support from business executives, concluded that a major transformation of Bank1's enterprise IT architecture and internal legacy systems environment was needed.

4.4. Envisioning a Digital Banking Platform

During years 3 and 4, Bank1's IT management began to address the identified problems. A vision for a strategic IT transformation program was developed:

> *We wanted to improve our cost-income ratio* (*CIR*) *. . . this could only be achieved with extensive process streamlining and reengineering, driven by a major IT transformation. The idea was born to service all of our banking business units in the long term through a single integrated platform.* [*C*-level IT manager]

The view that Bank1's overall firm competitiveness and foundational business architecture could be improved through an IT transformation program highlights key characteristics of IT transformation programs, which oftentimes enable and drive business change, may lead to improved IT-based competitiveness, and involve the mindset of IT acting as a partner to the business (Table 1).

The reference above to a "*major IT transformation*" highlights the emphasis of Bank1's IT management on fundamental *IT replacement*. Furthermore, interviewees stressed the urgent need to reduce the operational IT costs of running the business, which is related to *IT efficiency*, and the aforementioned challenge of an unfavorable CIR. Finally, as the above reference to a "*single*" platform highlights, strong emphasis was also placed on *IT standardization*.

Workshops and negotiations with a short list of software providers (including the provider eventually selected, referred to as SP hereafter) yielded concrete ideas for IT transformation:

> *We had a vision. Compared with a car, SP had one of the world's best motors* [*referring to a standard packaged solution*], *but in the banking business, they didn't have a good chassis and gearbox. We had a good gearbox, a workflow system based on a service-oriented architecture* (*SOA*), *and a very good chassis, a frontend system and architecture that had won several prizes, and our proposition was that combining their motor with our chassis, gearbox and so on would lead to a win-win situation.* [senior IT manager]

In summary, IT management's efforts to explore a possible alliance with a leading IT market player were focused on building a digital banking platform with the future potential of becoming established as an industry-wide banking technology standard. Thus, the strategic vision of Bank1's IT management involved an element of community-level *IT innovation* in the spirit of not just adopting and implementing a banking software standard but also reinventing this standard in the process of appropriation and value cocreation with the potential strategic alliance partner SP. Aware of the industry's tendency toward digitalization and IT-based competition in retail banking, Bank1's IT management was focused on becoming a business partner and enabling future IT-based competitiveness through a major program of transforming the firm's IT architecture and associated processes (Table 1).

4.5. Toward "IT Transformational Merger"

During year 4, with the business case for Bank1's IT vision explained above yet to be negotiated and approved, a merger with a competitor in the market (Bank2) was announced by Bank1's top management. As a result, Bank1's IT management, having committed itself to the above explained vision and feeling enthusiastic about becoming a business partner, started to grow nervous because of the uncertainty involved in a prospective merger that could potentially threaten its strategic planning efforts.

One of Bank2's key strategic IT assets was a banking platform that was technologically more advanced than Bank1's proprietary set of silo IT systems. A member from the merger planning team stated that

> *We realized that the IT platform of Bank*2 *was potentially a huge asset.*

The outcomes of this strategic IT asset evaluation in the early stage of merger talks created even more uncertainty for Bank1's IT management, as an eventual merger with Bank2 had the potential to lead to a loss of power for Bank1's IT department.

This was when Bank1's IT management came up with the surprising idea of combining seemingly opposing goals through what became known as "*IT transformational merger*." The term was coined to denote the combination of embarking on a merger with another bank that owns competitive IT resources and blending this merger process with the process of transforming to a new IT platform that was under the command and control of Bank1's IT management. The goal was to simultaneously focus on building a new target IT platform in the spirit of *IT replacement* while also quickly realizing synergies from the merger by emphasizing *IT integration*. Thus, the merger was envisioned in year 5 to serve as a "*catalyst*" for IT transformation, as explained by the *C*-level IT transformation leader of Bank1's top IT management team:

> *I view the merger as rather complementary to the paradigmatic transformation we have been working on with SP already for a long time . . . viewing the transformation plans in the foreground, the merger announcement was actually well received and served us as a catalyst . . . it played an ace into our hands. That way, we could simultaneously achieve synergies while transforming.*

IT management's rhetorical strategy to convince the business of this ambidextrous idea included the sales pitch that an IT transformational merger would be a more efficient pathway—considering short-term goals and the constant pressure on IT to reduce costs due to *IT efficiency* demands—to achieving a strategic goal of interest to both business and IT, namely, transforming Bank1's IT to a new target IT platform. The new IT platform would possibly also involve some degree of *IT innovation*, providing a better foundation for IT-enabled competitiveness. In fact, convincing the organization to leave some maneuvering room for focusing on *IT innovation* in addition to *IT efficiency*, which obviously played an even more important role in the merger context, was viewed by Bank1's IT management as critical. The IT transformational merger idea symbolized that, and at the beginning of year 5, Bank1's IT management initiated work on an implementation plan for the IT transformational merger. A senior IT manager explained:

> *Driven by the acquisition business case, this insight was leveraged to develop a joint strategic IT transformation and merger integration plan.*

With regard to IT platform design, a strong focus continued to be on *IT standardization* because the to-be integrated IT platform of Bank2 was built on standard application software. A senior IT manager described the evolution of events early in year 5:

> *. . . our internal transformation planning became more focused on integrating Bank2's standardized IT platform.*

In summary, because of the high competitive value of Bank2's IT platform and its compatibility with the vision previously developed with SP, Bank1's management eventually viewed merger-driven *IT integration* as an opportunity for *IT replacement* and its planned IT transformation program.

The rhetorical strategy of Bank1's IT management to build organizational commitment around the idea of an IT transformational merger seemed well suited to achieve both *IT integration* and *IT replacement* at the same time. This idea also seemed suitable, in principle, for obtaining the commitment of the business to *IT innovation*, in addition to the usual emphasis on *IT efficiency*, particularly within the context of the potential merger. However, how to exactly combine *IT efficiency* and *IT innovation* in the portfolio of IT decisions had yet to be worked out. In addition, there still seemed to be an overwhelming focus on *IT standardization*, almost neglecting the diversity of Bank1's business, which also included more demanding advisory banking services for which purposes *IT differentiation* was needed.

4.6. Negotiating the IT Transformation Business Case

Bank1's IT management sensed the importance of focusing on developing a very strong business case for IT transformation during year 5, in parallel to the IT transformational merger planning explained above. In this way, Bank1's IT management would be prepared to implement an IT transformation program without the involvement and cooperation of Bank2 while remaining sufficiently flexible to implement the idea of an IT transformational merger if the merger were to actually materialize, which was still uncertain.

Regardless of whether IT transformation would be blended with the merger, Bank1's IT management placed a strong planning focus on suggesting business value improvements through IT transformation. It was reasoned that business value could best be achieved by leveraging the transition to a new IT platform as a change trigger for a longer-term transformation of the business itself (Table 1). Reflecting on year 5 of our case, in which a feasibility study for transitioning to SP software was conducted at Bank1, a senior IT manager explained:

> *. . . then we decided to conduct the SP feasibility study. While this was being done, we also realized that transforming Bank1's IT platform could be a well-received change trigger for transforming the entire core banking business, including process and product standardization . . . if we hadn't received support for that idea from business stakeholders, we probably would have opted for a brute force merger and IT integration strategy.*

During negotiations between Bank1's IT management and internal business clients concerning the target IT platform, there was also a large degree of organizational resistance to overly focusing on *IT standardization*. In part, this had to do with the complexity of advisory banking services that involved the need to tailor solutions to important clients and the strategic priority to ensure a sufficient level of differentiation in the market. For this reason, *IT standardization* needed to be balanced with *IT differentiation* to actually satisfy the diversity of the business and associated IT requirements. In an attempt to address this paradoxical challenge, Bank1's IT management tried the typical sales pitch revolving around the idea of modular decomposition and flexible recombination. One of Bank1's SP specialists explained:

> *Flexibility can only be achieved by increasing standardization in the first place. That's a lesson learned from other industries: If we wouldn't standardize so much on the basis of modular components design, then we wouldn't be able to achieve such high degrees of flexibility, as for example, with cars, where so many different variants are produced within short timeframes and product cycles are short.*

This rhetorical strategy of creating an analogy to other industries and selling the modular design of SP worked to some extent to win over business stakeholders. Another senior Bank1 IT manager explained another strategy, namely, to keep discussions with business units focused on peripheral IT platform components for which higher degrees of *IT differentiation* and divergence from *IT standardization* would be allowed:

> *What is challenging is negotiating the boundaries of the IT platform*: *What do you want to discuss and what do you not want to discuss? What are the components that you are willing to grant higher degrees of freedom, and where do you permit more discussion? To me, the answer is that when we talk about core systems of the platform, we must standardize as much as we can and weave the components together. Ideally, everyone builds upon one single core system. And with regards to satellite systems that are only loosely coupled to the core we can allow more best-of-breed solutions.*

Winning the support of key business stakeholders for the IT transformation plans also required thinking about a harmonious and synergistic combination of *IT efficiency* and *IT innovation* for the overall IT portfolio. Contradictions between the two demands were commonplace in discussions between business and IT leaders, typically driving Bank1's IT management to lean strongly toward *IT efficiency*. A senior IT manager explained:

> *We have heated discussions about the tension between IT efficiency and IT innovation on a recurrent basis together with our business counterparts. On the one hand, we are encouraged over and over again to include innovative IT investments into our portfolio, but on the other hand, the reality of constant cost pressure always raises the question how much innovation* [*and associated new IT investments*] *we are allowed to focus on.*

Thus, the short-term pressure to focus on *IT efficiency* (i.e., the reduction of operational IT costs) made it very difficult for Bank1's IT management to make strategic long-term investments in the spirit of *IT innovation*. In addition to the risk that such investments might not pay off in the future in terms of new business value, there was the risk that they would increase IT portfolio complexity and lead to higher IT expenditures, which could potentially be detrimental to ensuring *IT efficiency*.

Despite this tension, Bank1 was exploring many ideas for *IT innovation* based on analyzing the business models of consumer IT rivals that were starting to enter the realm of traditional banks by positioning themselves at the direct interface to bank customers (e.g., PayPal). One of the key lessons from these exploration activities was that real-time processing of large amounts of external unstructured customer data was becoming increasingly important to develop more customer-centric digital banking products and services that helped ensure a direct connection between the bank and its customers. Bank1's IT management recognized a potential for synergistically blending *IT efficiency* with *IT innovation*. A senior IT manager explained:

> *The new insight for us is that efficiency and innovation don't contradict themselves. In sum, it is, of course, an efficiency story, but everyone has now understood that. Particularly in the area of IT infrastructure, there are certain innovations that are mature, for example, grid computing technology . . . if you use these kinds of innovations, you considerably increase your performance and open up new business opportunities that require real-time processing of massive amounts of data.*

Despite these valid attempts at combining the two above-mentioned paradoxical demands in the IT transformation program, we also learned from some of our interviewees that this paradox was particularly challenging for Bank1's IT management to address, considering the increasing shift toward consumer IT and IT (banking) innovations sweeping in from the outside.

In summary, negotiating the business case for the IT transformation program driven by Bank1's IT management was extremely critical to move forward, with or without the merger. Winning the support from business and Bank1's top management during year 5 of our case was enabled by synergistically blending *IT efficiency with IT innovation* and accommodating *IT standardization* needs with business demands for *IT differentiation* (Table 3).

4.7. Decision Problem: Transform and Merge Simultaneously?

During year 5 of our case, Bank1's IT management still had to start preparing the transition from strategizing and planning for IT transformation to the actual execution of the plans at the program and project working levels. Table 4 summarizes the focus of activities and IT transformation program ambidexterity up to approximately year 5 of our case, before the program and project work had started. However, a key challenge remained that was brought to the attention of Bank1's IT management in the transition from year 5 to year 6 of our case. In particular, the merger process had just started, and it was not entirely certain yet whether the merger would be completed. Bank1's IT management asked itself, What if, for whatever reasons, the merger would never be completed? Conversely, what if the merger would be completed, but at such a speed and market-driven velocity that it would undermine the IT transformation plans altogether? Finally, and in need of more immediate managerial attention and decision making, What should come first? To what

Table 4 Summary of Key Case Analysis Findings—Part 1

Abstraction to problem domain	Ambidexterity area	Examples of observed strategies management for paradox resolution	Identified patterns across the three areas	Associated characteristics of IT transformation programs
Strategizing areas for managing IT transformations	IT portfolio decisions: *IT efficiency* & *IT innovation*	Strategic alliance with IT vendor SP aimed at combining assets to cocreate value Investing in IT, e.g., big data analytics, that helps address both demands	Balancing short-term and long-term business and IT requirements Mutual accommodation of business and IT interests	IT-business partnering Achieving IT-based competitiveness Triggering IT-enabled change
	IT platform design: *IT standardization* & *IT differentiation*	Flexible recombination of standardized IT components according to differentiated business needs IT manager(s) formulate an important distinction between standardized IT platform core and flexibility in ensuring distinctive functionality at the periphery of the platform		
	IT architecture change: *IT integration* & *IT replacement*	Formulation and refinement of the idea of an IT transformational merger enables pursuit of IT replacement as well as IT integration goals in the context of the merger		

extent would it be possible, given the organizational constraints and limited capacities, to transform and merge simultaneously?

In the second part of our case narrative and analysis below, we shed light on how our case organization dealt with the challenges of implementing an IT transformation program in the context of a merger, touching on the remaining ambidexterity areas (Table 3) that we have not explained so far. However, before Bank1's IT management could focus entirely on program- and project-level execution, it had to cope with additional challenges related to external influences in IT programs.

4.8. Preparing the Transition from Strategizing to Program Execution

Merger talks that had started during year 4 and triggered the IT transformational merger idea during year 5 did not advance as well as expected toward the end of year 5 and the transition to year 6. Nevertheless, the previously explained positive outcomes of negotiating the IT transformation program business case (see §4.6) provided Bank1's IT management with a sense of power and strength. Against the backdrop of the yet uncompleted merger and lack of authority of Bank1 over Bank2 (a formal merger agreement and financial settlement of the merger had yet to be reached between the two banks), the *C*-level leader of the IT transformation program explained:

> *Bank2 said*: *understood, nice, but we cannot give you our IT platform unless our systems are defined as the basis for the target platform . . . when we couldn't reach an agreement, we concluded that we could not wait any longer, and so we decided that we would start marching ahead with our transformation plans on our own.*

A struggle for power and survival in the context of the approaching merger situation was preeminent, and tensions were in the air. An important part of the merger negotiations was centered on defining the future IT platform of the merged organization. On one hand, it was clear that Bank2 had valuable IT assets that Bank1 wanted to acquire through the merger. On the other hand, Bank2's IT platform also had certain limitations that Bank1's IT management discovered during planning activities for a post-merger scenario. Bank1's IT management also wanted to maintain some degree of close cooperation with SP to be at the top of the latest industry standard for banking software in the spirit of *IT innovation*.

What followed was a mobilization of resources and an IT transformation program ramp-up with a team that grew to over 500 members within just a few months, from early to midyear 6 of our case. A poster was placed in the open plan office containing a picture of a large tower and the text "*build the IT to last*,"

illustrating the determination of Bank1's IT management to actually transform internal IT.

In the same year, only a couple of months into the IT transformation program and coming as somewhat of a surprise for large parts of the IT program organization, the merger talks were resumed by Bank1's top management (in the third quarter of year 6). This created pressure for Bank1's IT management to switch back to the previously explained idea of an IT transformational merger. A senior IT manager explained:

> *We had to ask ourselves whether our transformation plans were sufficiently aligned with the merger plans.*

A group of senior IT managers negotiated a cooperation agreement with Bank2 in the transition from year 6 to year 7 to provide a foundation for merger-related *IT integration*.

In summary, in the transition from IT transformation strategizing (Table 4) to IT transformation program execution (explained in the following), Bank1's IT management found itself in a continuous struggle to accommodate short-term external influences (e.g., those related to the merger and changes in strategic plans) and long-term strategic IT demands (e.g., *IT replacement* and *IT innovation*).

4.9. Balancing IT Program Agility and IT Project Stability

Bank1's IT management already knew in midyear 6 (when merger talks were resumed) that program activities would need to be aligned with merger-related requirements and that the strategic vision of an IT transformational merger had to be carried into the program's organization.

However, during year 6, and before it was clear whether the merger talks would be resumed, an IT transformation program organization with a standalone focus on Bank1 had already come into existence, and several hundred people had already started working on IT transformation program activities. A senior IT manager and member of the core banking IT project, the critical first project to be executed as part of the IT program, sensed a potential threat at that time when the merger talks resumed:

> *Those things that happen at the boundaries of the program, for example, how the merger relationship evolves, are not allowed to change the core program targets and master plan because a key success factor for fundamental IT renewal is stability. To achieve that, the IT organization needs to be resilient and act with determination. Many IT projects suffer from too many changes and scope creep.*

Accordingly, in the time period immediately following the announcement of resumed merger talks in midyear 6, Bank1's IT management wanted to maintain a strong focus on *IT project stability*.

However, the business leaders of Bank1 in charge of the merger exerted pressure to advance more quickly with cross-bank IT integration and to change the IT program plan accordingly, pointing to the need for *IT program agility*. However, they also recognized that the merger and program plan changes created much uncertainty for Bank1's IT members. Eventually, Bank1's IT management was temporarily able to ensure *IT project stability* and focus their teams on achieving the first major milestone in the IT transformation program.

The beginning of year 7 of our case marked a transition toward emphasizing *IT program agility*. An IT leader at Bank1 explained:

> *We realized that we had to make adaptations* [*to the IT program plan*] *in light of our strategy to combine IT transformation with merger-related asset reuse. I told everybody that they would have to be talking about a joint program very soon.*

One of the critical events we observed in our case was carrying out merger-related negotiations between the two banks over cross-bank *IT integration* issues that would affect the activities across all IT projects. In the summer of year 7, some project activities were temporarily interrupted based on the outcomes of merger-related *IT integration* planning.

The top *C*-level IT executive of the IT transformation program commented on the outcome of negotiations in midyear 7 between the banks, which involved a reassessment of combining *IT integration* with *IT replacement*:

> *We came up with a checkered cube that depicted the decisions about in which areas to build upon our own transformed systems versus where to build upon Bank2's IT platform.*

Following these outcomes of strategic replanning, and to foster *IT program agility*, so-called IT program roadmap refinement workshops were carried out for the first time to be performed on a regular basis from year 7 onward. Plans and activities laid out in the revised roadmap were to take effect one year later, after the first major IT program delivery milestone scheduled for midyear 8. In an act of balancing, the precise points in time for redirecting plans and activities according to the revised IT program roadmap were chosen carefully to ensure *IT project stability*, at least temporarily over defined time periods. A *C*-level IT executive explained:

> *At the end of the day, it's a balancing act between agility and stability. At multiple points in time during the program, you need to ensure the capacity to react to short-term changes, but at the same time, it is necessary to ensure stability.*

In summary, the IT program roadmap and its recurrent refinement through regular workshops was an important management strategy to get key business stakeholders and IT program members at one table and identify needs for change. Thus, regular IT program roadmap refinement workshops helped balance *IT program agility* with *IT project stability* and were a useful tool overall to balance short-term needs with long-term goals.

4.10. Balancing IT Program Control and IT Project Autonomy

In parallel to the above-explained balancing act, executing the examined IT transformation program also involved another key challenge related to IT program governance. This section is devoted to explaining that challenge.

The focus explained earlier of IT transformation starting during year 6 at the core (i.e., core banking IT project) before diffusing to other areas (e.g., lending IT project) created a situation in which the core banking IT project leaders perceived that they had the autonomy to define their own project goals independently from other involved IT projects. As a result, the core banking IT project had also built up its own project management office (PMO), focusing on overseeing the work activities of the multiple involved subprojects. Meanwhile, other PMOs had been established within the other IT projects (the examined IT program consisted of seven IT projects in total). Overall, we observed a strong drift in year 6 toward *IT project autonomy*, and despite a number of individual *IT program control* initiatives, there was a lack of cross-project IT program leadership to enforce them.

To confront this problem, top business and IT leaders decided to replace the overall IT program managers (one from business and one from IT) during year 6. The new IT program management team started to tighten the reigns over the activities performed in IT projects, emphasizing *IT program control*. This created pressure for IT project PMOs to relinquish certain responsibilities that required an integrative, cross-project view (i.e., at the program level).

An IT program control unit (PCU) was implemented as a cross-project function (see Figure 1 for an organization chart of the IT program at this point in time), and a seasoned manager who was considered a decisive leader was hired to lead the PCU. A member of the newly founded PCU explained:

> *By creating the PCU, there was a stronger unit that could act in a more integrated and powerful manner throughout the entire program, not necessarily more popular among individual projects than before, but more frequently serving as a single point of contact and controlling more effectively.*

In the months that followed, tensions and conflicts recurrently emerged between the newly founded PCU and IT projects.

Around midyear 7, the tensions between executing *IT program control* by the PCU and *IT project autonomy* intensified. The new PCU leader, who had been in office for over half a year, argued:

> *It's not only crucial that everyone does his thing well* [*meeting local requirements in individual projects*], *but they* [*also*] *need to build something that in the end fits together like a puzzle . . . that needs to be controlled.*

IT program control not only led to tensions but also caused frustration, as one IT project manager noted:

> *It's a big mistake trying to centralize processes and decision-making too much, I mean taking away the responsibility from the project managers . . . the projects are where the action is, and that isn't changing.*

As tensions and conflicts continued to escalate, the successful execution of the IT transformation program was at stake. The PCU leader, along with the IT program organization, was increasingly considered a source of tensions. Sensing that these tensions and conflicts were hampering the IT program from progressing, Bank1's IT management replaced the PCU leader. The new PCU leader directed his team toward a more balanced style, with a compromise between prescribing (related to IT program control) and moderating (emphasizing loose IT program control and focusing more on IT project autonomy). A key PCU member explained:

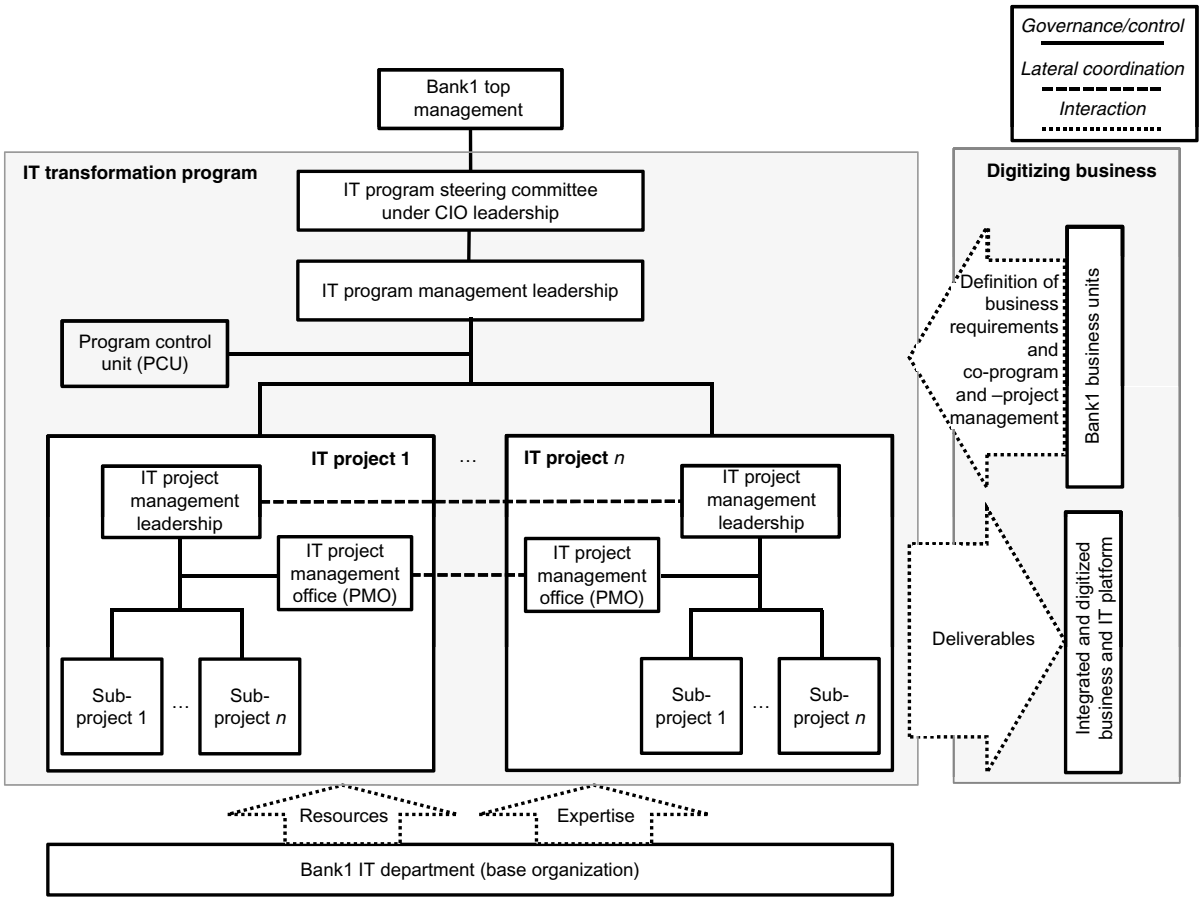
> *To me, it is a continuous balancing act between the two extremes moderating and prescribing. Neither of the two extremes works. If you focus exclusively on the latter, you lose the commitment from individual projects, and in the long run, the tensions become so enormous that you don't work together anymore. On the other hand, as PCU, I cannot rely exclusively on moderating because we also have our own interests that are associated with senior program management and program sponsors, and we also need to make sure that we standardize and control certain things.*

In addition, individual IT project leaders helped devise compromises between the interests of IT projects and the cross-project control needs at the overall IT program level. One of these boundary spanners explained:

> *We always have to make sure that we maintain an appropriate balance between the absolutely legitimate interests of the overall program management team and PCU, and on the other hand, avoid getting in the way of project execution, which requires taking decisions, getting work done, and fulfilling business domain requirements.*

In summary, control balancing on behalf of the PCU leadership as well as boundary spanning on behalf of individual IT project leaders to negotiate compromises both helped achieve *IT program control* while ensuring sufficient *IT project autonomy*.

Figure 1 IT Program Organization Chart (Year 6 of the Case)



4.11. Balancing IT Program Coordination and IT Project Isolation

Toward the end of year 7 of our case, the first major release scheduled for midyear 8 was approaching, and the program entered the final stage of delivery. A new challenge started to emerge regarding the *IT program coordination* of deliverables across different IT projects. Initially, our case organization did not consider *IT program coordination* to be any different from *IT program control*, so the PCU was given the responsibility of *IT program coordination* in addition to *IT program control*, a responsibility that it also assumed (see the previous section). The PCU leader at that time explained:

> *The challenge we face is that there are many cross-project topics and interdependencies, both temporal task and system interdependencies, so we need to coordinate both the point in time when solution components are delivered as well as what exactly is going to be delivered. We needed a mechanism to do that on a regular basis.*

After gaining initial experiences with *IT program coordination* and reflecting on them, Bank1's IT management realized, in the transition from year 7 to year 8 of our case, that balancing *IT program coordination* and *IT project isolation* required a unique set of skills, tasks, and responsibilities. As a result, Bank1's IT management decided to create a new organizational role that was focused on managing this balance in the area of IT program delivery. The PCU leader himself fostered this insight and explained:

> *We need a horizontal release perspective. That also implies a certain degree of prioritization . . . at the moment, the priority lies on release X1, then comes X2, etc. But that can't imply that now I only focus on building the functionality to be delivered in X1. It's like a triathlon where I won't win if I already exhaust myself at the first swimming activity. On the other hand, I do need to get to the other side of the lake in order to continue with the next activity, which means there is a certain sequence and schedule I need to adhere to, and I need to think beyond the individual release and oversee the next ones.*

As explained above, the trade-off is between, on one hand, short-term resource allocation aimed at isolating individual releases to enable the implementation teams to produce deliverables and, on the other hand, the long-term resource prioritization and management of interdependencies across releases. This

trade-off became salient in our case through tensions between those working on current and successor releases, respectively:

> *We shouldn't lose sight of the successor topics* [*work related to a release that comes after the one currently being worked on*]. *There must be a balancing in my opinion. Each team and project must commit itself to deliver under consideration of the long-term perspective, not just short-term.* [IT project leader]

Thus, the IT transformation program initially experienced difficulties in balancing *IT program coordination* with *IT project isolation* because delivery teams working in isolation across different IT projects were focused too much on their individual deadlines, which were tied to the specific release they were working on, rather than simultaneously coordinating their work with interrelated work scheduled for later releases that had already started in parallel. An IT program delivery manager for two of the releases explained:

> *I have experienced tensions between the short-term tactical view on what must be produced now* [*for the immediate next release*] *and what is important from a long-term and overarching perspective* [*for other subsequent releases*]*...the deadly argument* [*to focus on short-term releases*] *was*: *If the first release is not successful, we don't even have to think about the next ones. We need to make sure everyone is committed* 100 *percent to the long-term perspective and thinks about what comes next, in which order, and how, etc.*

The IT delivery management role referred to above was put in place to ensure the successful delivery of functionality in accordance with the IT program objectives. Its purpose was to devise suitable compromises between *IT program coordination* of releases and *IT project isolation* to produce those releases.

A key task for IT program delivery management was to manage interdependencies by communicating technological and organizational interdependencies among the components being delivered and by ensuring that involved individuals from the delivery teams talked to each other and negotiated a shared understanding. Moreover, IT program delivery managers were provided, to some extent, with rights and responsibilities to reallocate IT project resources from one delivery team to another to ensure that both short-term and subsequent long-term releases had sufficient resources to deliver IT solution components.

In summary, balancing *IT program coordination* and *IT project isolation* was greatly enabled by implementing a new IT delivery management role with dedicated resource prioritization rights, cross-functional coordination responsibilities, and sufficient oversight over components being delivered across release dates and delivery teams. Table 5 summarizes the key findings across §4.9–4.11.

Overall, Bank1's IT management learned over a period of multiple years how to address six different sets of paradoxical demands and tensions associated with IT transformation programs (Table 3) that reflect the complexity involved in such contexts (Table 1).

5. Discussion and Theoretical Integration

The key theoretical contribution of this paper is a grounded theorization of IT transformation program ambidexterity that identifies and explains the paradoxes and the nature of ambidexterity in IT transformation programs. In this section, we discuss and integrate our key findings.

We identified six areas of ambidexterity in IT transformation programs (Table 3): (1) IT portfolio decisions (i.e., IT efficiency versus IT innovation), (2) IT platform design (i.e., IT standardization versus IT differentiation), (3) IT architecture change (i.e., IT integration versus IT replacement), (4) IT program planning (i.e., IT program agility versus IT project stability), (5) IT program governance (i.e., IT program control versus IT project autonomy), and (6) IT program delivery (i.e., IT program coordination versus IT project isolation). What weaves these six areas together is the combined need for IT managers to employ paradox resolution strategies to ensure short-term IT contributions and the continuous progress of IT projects while simultaneously working toward IT transformation program success as a foundation for IT-enabled business transformation.

5.1. Avoiding the Drift Toward Exploiting IT for Efficiency Gains

We found that in the examined IT context, the pressure on short-term performance contributions of the IT function is particularly pronounced, which is associated with the manifested viewpoint of IT being an important contributor to operational efficiency gains in the conduct of business. Our findings suggest that exercising ambidexterity in IT transformation programs is an important IT capability for balancing short- and long-term demands (cf. Pavlou and El Sawy 2010) but that enacting IT ambidexterity in this context is also challenging. As shown in our case analysis, there is an organizational tendency to drift toward short-term IT demands (see §4.4–4.8). The pressure for short-term IT efficiency gains, for example, by focusing on IT integration and synergy realization, was experienced strongly by IT managers in our case. Breaking the vicious cycle of organizational drift toward exploiting IT (with a concomitant lack of new IT-based value creation) was found to be difficult. A defining moment for resolving the paradoxical tensions between short-term IT efficiency and

Table 5 Summary of Key Case Analysis Findings—Part 2

Abstraction to problem domain	Ambidexterity area	Examples of observed management strategies for paradox resolution	Identified patterns across the three areas	Associated characteristics of IT transformation programs
Program- and project-execution areas for managing IT transformations	IT program planning: *IT program agility* & *IT project stability*	Regular IT program roadmap refinement workshops to balance between longer phases of stability and short moments of reassessment to foster agility	Balancing short- and long-term IT program and project requirements	Dealing with IT program complexity
	IT program governance: *IT program control* & *IT project autonomy*	The cross-project IT program control unit engaged in control balancing behavior and experimented with different control styles and degrees Individual leaders from IT projects started to act as middlemen between IT program management and IT projects, negotiating compromises between diverging interests at different levels	Balancing between "local" needs at the IT project levels and "global" needs at the IT program level	
	IT program delivery: *IT program coordination* & *IT project isolation*	Establishment and definition of a new cross-functional IT delivery management role focused on coordinating releases over time		

longer term IT innovation and replacement contributions (Table 3) was winning key business stakeholders over to work jointly toward the long-range objectives of IT-based business transformation in the spirit of IT-business partnering (see §4.6 and Table 1).

Our findings also suggest that resolving the paradox between IT standardization and IT differentiation is of particular importance for effective IT-business partnering and enacting IT ambidexterity in the other two strategizing areas (Tables 3 and 4). Building a sophisticated IT platform that enables IT-based competitiveness for digital business may ensure business commitment to jointly engage in both IT innovation and IT replacement, fostering ambidexterity in the two respective areas (Table 3). These findings shed new light on the interrelationship between ambidexterity and the task of building competitive IT platforms that provide a foundation for business execution, a challenge that has previously only been described but not conceptualized (Ross et al. 2006, Weill and Ross 2009).

In addition to illustrating the interrelationships between the three strategizing areas for managing IT transformations (Tables 3 and 4), these findings highlight a unique characteristic of ambidexterity in IT transformation programs: for managers of IT transformation programs to resolve paradoxical tensions, an IT-business partnering approach is needed (as opposed to IT being a support function or assuming the role of reactive IT provider). These findings extend prior IT management research that has emphasized the importance of the IT-business partner role for enabling IT-based business transformation and innovation (Clark et al. 1997, Guillemette and Paré 2012, Venkatraman 1997). In particular, our findings illustrate that resolving paradoxes, including IT efficiency-IT innovation, IT standardization-IT differentiation, and IT integration-IT replacement, is intertwined with the need for mutual accommodation of business and IT interests, which has been described in the IT transformation domain literature (Sauer and Yetton 1997).

Summarizing the above, fighting the drift toward exploiting IT for efficiency gains requires the mutual accommodation and blending of business and IT interests (Table 4). This requires IT managers who excel at coming up with persuasive, integrative, and even blended solutions that convince the business organization that a combination of both demands can be achieved at the same time, without a focus on one of the two demands necessarily sacrificing the achievement of the other (Table 4). In the area of IT portfolio decisions, this involved, for example, finding innovative IT investment opportunities that simultaneously led to IT efficiency and provided a better foundation for IT innovation and new IT-based business opportunities (Table 4). In the area of IT platform design, this involved, for example, designing a standardized core IT platform with differentiated satellite IT components that are coupled to the core and can be flexibly changed without hampering core IT standardization (Table 4). In the area of IT architecture change, we found a similar combination approach of blending IT integration with IT replacement to simultaneously build on existing competitive IT resources while replacing old IT components that hampered IT-based competitiveness, for which the notion of IT transformational merger was coined within our case organization (Table 4). Thus, in all of these strategizing areas, IT managers were able to find integrative blended solutions that accommodated apparently paradoxical demands.

5.2. Avoiding the Drift Toward Executing Individual Stand-Alone IT Projects

The three program- and project-level execution areas of IT transformation program ambidexterity are also related to each other and exhibit certain patterns (Table 5). Prior IS ambidexterity research has focused either on examining IT project portfolio decisions at the top IT management level (Xue et al. 2012) or IT project management at the systems development level (Ramesh et al. 2012, Tiwana 2010). However, the crucial *middle layer* between day-to-day IT project execution and high-level strategic IT planning, which is particularly relevant in fundamental IT transformations, has remained unexamined to date (Ribbers and Schoo 2002).

We find that resolving paradoxical tensions in the three interrelated program and project execution areas (Table 5) and balancing the involved contrasting demands over time is important for ensuring the short-term progress of IT projects and releases on one hand and working toward long-term IT transformation goals and program success on the other hand. In addition to this commonality with the above discussed strategizing areas for achieving ambidexterity, i.e., balancing short-term and long-term demands (cf. Smith and Lewis 2011), our findings highlight the specific characteristics of paradox management across the three different areas (Table 5).

In particular, our case analysis (see §4.8–4.11) illustrates an overarching pattern that is associated with IT program and project execution: they require a recurrent and dynamic act of balancing between *local* operational needs at the IT project and subproject levels and *global* (or systemic) needs at the strategic IT program level (Table 5). Our findings illustrate that the IT project manager typically operates under the mindset of leading an autonomous, temporary organizational unit and group of people focused on systems development to address the needs of a certain business domain or unit (Table 3, IT program governance) (cf. Tiwana 2010). With a focus on time-consuming systems development work that is highly sensitive to changes in requirements, IT projects need stability for project execution (Table 3, IT program planning), and IT teams working on short-term releases and complex IT problem-solving work must be sufficiently isolated from the rest of the organization to avoid being overwhelmed with interdependencies (Table 3, IT program delivery) (cf. Ramesh et al. 2012). Our analysis shows that these local demands at the project level contrast with the overarching demands at the global program level and, in some cases, can even lead to conflicts within the program's work organization (see §4.10) (cf. Gregory et al. 2013, Jiang et al. 2014).

There are multiple reasons for the observed shift toward the short-term execution of individual IT projects. One reason is related to how IT projects typically view themselves (i.e., as autonomous, temporary units). Another reason is the complexity involved in IT projects (Table 1) (cf. Xia and Lee 2005). For example, the uncertainty that is typically involved leads IT project teams to focus on short-term results and increase their chances of *organizational survival* (see §4.11). Through our on-site field research activities, we witnessed several instances in which IT projects were canceled and IT resources were redirected (see §4.9), illustrating the uncertainty involved in IT project execution. This led IT project managers to begin delivering on a project's goals and objectives as quickly as possible.

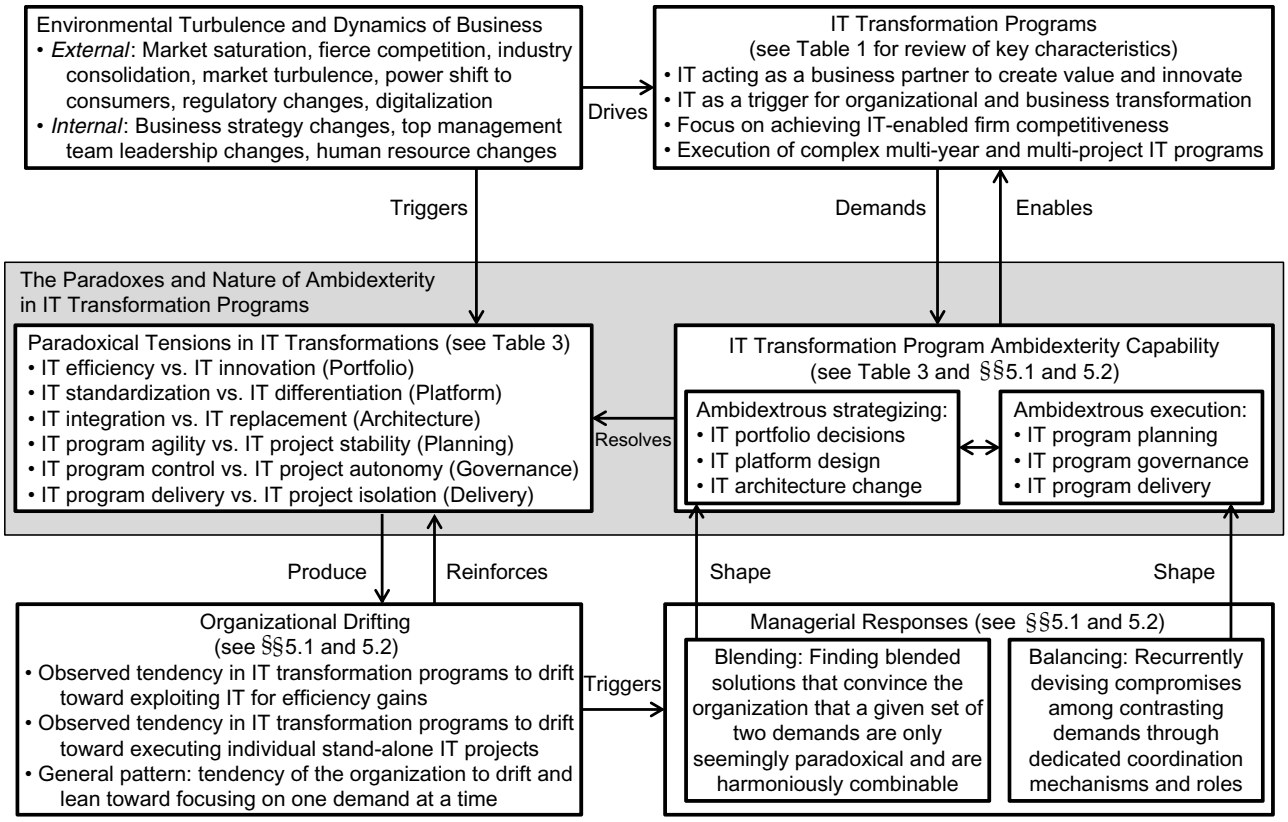
Fighting this tendency toward a focus on IT projects requires a delicate balancing act (cf. Gregory et al. 2013). This can be achieved by implementing coordination mechanisms and roles that recurrently devise compromises and by helping ensure that shifting temporarily toward one of the two demands is done purposefully and that, over time, both demands are met (Table 5) (cf. Ramesh et al. 2012). In the area of IT program planning, regular roadmap refinement workshops helped balance longer phases of IT project stability with shorter periods of reassessment and change to foster agility (Table 5). In the area of IT program governance, the cross-project IT program control unit engaged in control balancing behavior while also experimenting with different control styles and degrees (Table 5) (cf. Gregory et al. 2013). Finally, handling paradoxical demands in the area of IT program delivery required an integrative delivery management role fully dedicated to the coordination of releases over time (Table 5).

In summary, fighting the tendency toward a focus on the execution of individual stand-alone IT projects requires recurrently finding the right balance between IT project- and program-level interests. This task entails a significant coordinative effort that contributes to the complexity of IT transformation programs (Table 1).

5.3. An Integrative Model of Ambidextrous IT Transformation Program Management

In Figure 2, we present an integrative, abstracted model that builds on the theory development in this paper and the theoretical integration efforts presented so far in this section, along with comparisons with other extant literature in the field of management (Smith and Lewis 2011). The model illustrates the dynamic nature of IT transformation program ambidexterity. In particular, paradoxical tensions triggered by the dynamic business environment and characteristics of IT transformation programs produce the

Figure 2 An Abstracted Integrative Model of IT Transformation Program Ambidexterity



phenomenon of organizational drifting, i.e., the tendency of an organization to gravitate to either one of the two salient paradoxical demands. This drift triggers managerial responses for resolving paradoxical tensions and is consistent with Smith and Lewis's (2011) general observation that confronting paradoxical tensions involves iterating between choosing one of the two demands at one time while working toward an accommodation and integration of the two demands. We identify two general variations of resolving paradoxical tensions, which we refer to in the model as *blending* and *balancing*. Through the managerial responses of blending and balancing, the IT transformation program ambidexterity capability is shaped and paradoxes are resolved. However, dynamics in the external environment and intraorganizational changes relevant to the process of IT transformation program execution lead to the recurrent emergence of paradoxical tensions and organizational drift. In turn, these influences trigger continuous balancing and blending processes that develop, alter, and refine the IT transformation program ambidexterity capability.

5.4. Implications for Research

Our grounded core category of IT transformation program ambidexterity (Table 3) and model (Figure 2) extends organizational and IS ambidexterity research by shedding light on the nature of ambidexterity in the hitherto unexamined context of IT transformation programs. Our findings emphasize that IT transformation program ambidexterity is a multifaceted concept with multiple areas in which paradoxical demands need to be managed simultaneously. Through our research, we identified six separate and distinct areas of IT transformation program ambidexterity (Table 3), in contrast to prior ambidexterity studies that have tended to focus on more abstract distinctions between exploration exploitation or alignment adaptability (e.g., Im and Rai 2008, Napier et al. 2011, Ramesh et al. 2012, Tiwana 2010). Our context-specific and more granular theorization of IT transformation program ambidexterity may trigger the search for similarly nuanced depictions of the nature of ambidexterity in different organizational and IS contexts.

The grounded theorization of IT transformation program ambidexterity that we advanced also has integrative value because it weaves together previously dispersed findings and offers a more nuanced perspective. Our findings in the area of ambidextrous IT portfolio decisions extend the study by Xue et al. (2012) by explaining the relationship between IT efficiency and IT innovation. Xue et al. (2012) study argues that IT asset portfolios may be more oriented

toward IT efficiency or IT innovation. However, the paradox in the relationship between the two is not explored, which may have important implications for IT portfolio decisions. We suggest that in the era of consumer IT and digital business, the choice between IT efficiency and IT innovation is not an either-or decision but more of a both-and decision, for which reason our theorization of the involved paradox may be particularly valuable.

Our findings in the areas of ambidextrous IT platform design and IT architecture evolution (Table 3) extend prior works that have focused on explaining IT standardization and IT integration without, however, theorizing on the involved paradoxes (Ross et al. 1996, 2006; Weill and Ross 2009). Finally, our findings in the areas associated with dealing with the tensions between IT program demands and IT project demands (Table 3) extend previous research that has started to explore the unique challenges involved in IT transformation program management without, however, theorizing on the involved paradoxes (Ribbers and Schoo 2002). In IT transformation programs, managers must address all six identified paradoxes, which shape the ambidexterity capability in this context.

The findings from this study also highlight that IT transformation program ambidexterity is a dynamic capability that becomes particularly relevant when environmental and strategic dynamics produce both paradoxical demands and organizational drifting that triggers management strategies for paradox resolution. In so doing, our study contributes to the emergent body of IS literature that focuses on dynamic IT capabilities. For example, past IS research on the dynamics of IT strategizing, including the coevolution of business and IT strategies, has argued that strategizing, as a dynamic capability, is associated with ambidexterity and agility (Baker et al. 2011, Sambamurthy 2000, Sambamurthy et al. 2003). Our theoretical contribution to this literature is to explain the dynamic process of developing the ambidextrous IT transformation program capability and its importance in dynamic competitive environments. In so doing, we extend the work of Pavlou and El Sawy (2010), who examined IT-enabled competitiveness and argued that ambidexterity might be the missing link to understanding the process of achieving IT-enabled competitiveness in dynamic environments. Our findings not only provide support for that assertion but also offer detailed insights into how this may be achieved in practice.

Our work also offers important implications for paradox and ambidexterity research in the field of management more generally. In particular, our findings call for more in-depth longitudinal research on the microfoundations of organizational ambidexterity that simultaneously builds on paradox and ambidexterity theory and weaves these two streams of research together (Raisch et al. 2009, Smith and Lewis 2011). Engaging in this type of research may go a long way toward building theory about how organizational capabilities are shaped in dynamic environments. Our findings suggest that building dynamic capabilities is intertwined with paradox management and ambidextrous leadership at the microfoundational level (Eisenhardt et al. 2010, Eisenhardt and Martin 2000). In particular, we find that enacting organizational-level ambidexterity is inextricably linked to the individual- and group-level processes of engaging in management strategies for paradox resolution.

Additional important implications for ambidexterity research can be found in the distinction that we propose between *blending*, referred to here as finding blended solutions that convince the organization that a given set of two demands is only seemingly paradoxical and is in fact harmoniously combinable and *balancing*, referred to here as recurrently devising compromises among contrasting demands through dedicated coordination mechanisms and roles. In particular, extant ambidexterity research typically refers to the combination of exploration and exploitation as an act of balancing without any clear definition of this concept (Raisch et al. 2009). Research in other areas has been more specific about the definition and meaning of the concept of balancing in a specific context (Gregory et al. 2013), suggesting that ambidexterity and paradox scholars would benefit from building more nuanced and context-rich explanations of balancing mechanisms. Similarly, ambidexterity and paradox research may benefit from a deeper elaboration of blending mechanisms and how they differ from balancing mechanisms. Research about blending mechanisms may expand on our work and that of others (Eisenhardt et al. 2010, Smith and Tushman 2005) to generate further insights into how executives can shape cognitively sophisticated "single solutions" (Eisenhardt et al. 2010) to resolve paradoxical tensions.

5.5. Limitations and Future Research

A limitation of this study is that our examination of paradoxes was confined to pairs of two contrasting demands. Thus, we did not consider the possibility of the existence of more complex situations of paradoxical triangles or even quadruples. We also consider it a limitation that it is not a longitudinal study in its entirety—we only observed events in our case for approximately two years longitudinally, whereas our overall case analysis spans a period of many more years (nine years in total). Finally, we do not rule out

the possibility that extending our analysis to multiple different case contexts might have yielded additional dimensions that we could not currently find because of the specific characteristics of our single case.

An important avenue for future research is to examine in greater detail the necessary skills and abilities of ambidextrous leaders exercising IT transformation program ambidexterity. A more systematic account is needed of the management strategies for paradox resolution involved in executing IT transformation programs. Our study provides some rich insights into this topic, but it has not been the focus of our theorizing efforts in this paper.

Shedding more light on the individual- and group-level factors of paradox management and ambidexterity may provide an important foundation for understanding in greater depth how the IT transformation program ambidexterity capability is shaped. Ideally, examining ambidextrous leadership in this context would be performed longitudinally and through a combination of interviewing and ethnographic observations. Furthermore, our view of ambidexterity in the context of IT transformation programs evokes an image of the management of such programs as a multiple-balancing act, suggesting that both the management tactics and organizing principles of IT transformation programs should be important topics for future studies. Another important avenue for future research is to explore the nature of paradoxes and ambidexterity in other contexts and to examine whether some of the paradoxes we identified and conceptualized in this paper are transferrable and useful to explain ambidexterity in other contexts, whether IT, business, or both. We also envision more extensive theory building efforts that extend our work to explain why, and under what conditions, balancing and blending mechanisms are needed to resolve paradoxical tensions involved in managing across different contexts.

Our work also offers important implications for future research on IT project and program management. As noted by one of our reviewers, most research on IT project management looks at projects in isolation, typically defining success in terms of meeting requirements, deadlines, and budget constraints at the project level. However, when projects form part of an overall program, our understanding changes regarding what constitutes project success as well as what activities contribute to overall program success. More research on IT programs in general and IT transformation programs in particular could thus contribute to a better understanding of the complexities and mechanisms involved in ensuring successful deployment of IT resources in organizations.

Finally, connected to the discussion on strategizing above, our study might also provide insights into the challenge of business—IT strategic alignment. The strategic alignment literature has emphasized the achievement of alignment primarily through strategic planning activities and structural arrangements (Baker et al. 2011, Chan and Reich 2007, Henderson and Venkatraman 1992). Our study suggests that the pursuit of a long-term and wide-ranging IT transformation program can advance business—IT strategic alignment emergently through recurrent resolutions of paradoxical tensions and emergent ambidexterity capabilities.[2] Consequently, future research on alignment might benefit from taking a longitudinal micro-level approach and studying IT transformation programs as a generative source of strategic alignment.

6. Conclusions

We knew that managing IT transformation programs is extremely challenging—our grounded theory explains why: it requires that organizations develop ambidextrous capabilities to address contrasting demands and resolve paradoxical tensions across multiple areas (see Table 3 and Figure 2). Finding the appropriate management solutions to achieve IT transformation program ambidexterity is a dynamic process that requires a concerted effort on behalf of business and IT managers. Resolving paradoxes and exercising ambidextrous leadership plays a crucial role in achieving IT-enabled competitiveness in dynamic and digitized business environments. We hope readers will view this study as a catalyst to explore, explain, and prescribe IT ambidexterity in different contexts, as the need to manage paradoxes and address concurrent disparate demands is likely to continue to pose challenges, particularly in the digital age.

Furthermore, we also encourage more scholarly engagement in the construction of grounded theories in substantive areas of IS research that would benefit from novel theory building efforts, particularly where general theories do not (fully) apply, existing theories are incomplete, or an unexplored research area offers particular potential for grounded theories to produce revelatory insights.

Supplemental Material

Supplemental material to this paper is available at http://dx.doi.org/10.1287/isre.2014.0554.

Acknowledgments

The authors would like to thank the senior editor, the associate editor, and three anonymous reviewers for their constructive feedback and guidance. The entire review panel

[2] We thank one of our anonymous reviewers for making this observation.

has been very engaged and helpful throughout the review process, and the paper has benefited greatly as a result. The authors would also like to thank their case organization and its members for their extraordinary commitment, without which this research project would not have been possible.

This work was developed in association and partnership with the E-Finance Lab at Goethe University Frankfurt. Any opinions, findings, conclusions, or recommendations expressed in this paper are those of the authors and do not necessarily represent the views of the E-Finance Lab or its supporting partners. The authors are indebted to the participating universities and gratefully acknowledge the financial support of their industry partners.

Appendix A. Nature and Process of Field Engagement

The foundation for being successful with the intensive interviewing method is developing engaged relationships with key informants in practice. In our case, we were fortunate to be able to build on a long-standing relationship with a company that was institutionalized in the form of a partnership between the company and a scientific research lab associated with a university. The first author and primary data collector for this study started his academic career in this established institutional context and developed an engaged relationship with this company through several preceding studies, providing the basis for intensive data collection. From these prior studies and engagements with our case organization we learned that Bank1's IT management had been working for a long time on the strategic repositioning of IT under the senior *C*-level leadership of Bank1. These activities, and their outcomes, served as a trigger for the strategic IT transformation planning reported in this case study and provided the focus for our initial data collection activities.

We interviewed senior business and IT leaders who were directly involved in these planning activities, some of them from the very beginning. Questions asked include the following:

"When did you get involved in this IT transformation program?"

"What are the goals and objectives of the program?"

"What tasks and roles have you fulfilled or which aspects did you focus on?"

"What were the results of your activities and how did they influence your organization's strategic IT planning efforts?"

"What was the reasoning behind embarking on a major strategic IT transformation as opposed to taking a more evolutionary approach to meeting the organization's future IT needs?"

"How did the strategic IT planning efforts coevolve with other strategic planning efforts in your organization?"

In addition to engaging key informants from our case organization in reflective deep conversations about these and related follow-up questions that emerged instantly *in the moment* in probing what informants were saying, we also collected a large amount of archival documents with rich complementary descriptions (e.g., an extensive slide deck that summarized the program's goals and objectives, how it fits into the overall strategy of Bank1, the results of planning activities done as a prelude to kicking off the program, etc.). Furthermore, we asked more specific questions related to the management of the examined IT transformation program, particularly to those directly involved in the program with particular managerial roles and responsibilities. Examples of questions asked include the following:

"What were the key challenges that you faced in managing your part of the program?"

"What challenges in or outside the program impacted your work and how?"

"What management strategies did you employ to tackle these challenges?"

"Did you experience any difficulties in coordinating your work with other parts of the program and if so, why?"

As a result of these initial intensive interviewing efforts, we learned that business and IT managers had to deal jointly with many contradictions, tensions, and contrasting demands. A specific characteristic of our case that stood out and jumped to our attention in thinking about the statements about contrasting demands was the concurrent merger with a national competitor that affected the examined IT transformation program every now and then during the multiyear process, until eventually becoming an integral program component. What emerged more generally from these early intertwined data collection and analysis efforts was the observation of mutually accommodating business and IT interests and achieving both short-term goals (e.g., associated with the merger in terms of short-term synergy and cross-organizational systems integration efforts, or associated with releasing new system elements for the future IT platform within planned timeframes) and long-term goals (i.e., the strategic effort of increasing IT-enabled competitiveness in an increasingly digitized and dynamic business environment through a truly transformative change with lasting impacts).

In parallel to writing up the preliminary findings from our case study for a conference submission, we continued to examine these initial research findings in greater depth and decided to make the theme of ambidexterity (and the closely related theme of paradoxes in organizations) the centerpiece and focus of our analysis. As a result, the people we decided to interview next changed to reflect this decision of framing our research (e.g., making sure to interview both business and IT managers, making sure to interview senior people with sufficient perspective to be able to reflect with us about contrasting demands, and management strategies employed to meet them). The questions we asked to key informants in this advanced stage of our intensive interviewing process focused on honing in on specific tensions that emerged from scrutinizing our data through the lens of a paradox/ambidexterity theoretic lens. Typical questions asked include the following:

"Could you please reflect upon the complementarities or contradictions in meeting demands *X* (e.g., IT efficiency) and *Y* (e.g., IT innovation) at the same time in the program?"

"Did the relative importance and emphasis on either one of the two discussed demands change over time and if yes, why and how?"

"What enabled you to deal with both discussed demands at the same time in the program?"

As a result of asking these more detailed and specific questions, we were able to construct the storyline for this paper.

The intensive interviewing process outlined above evolved over a time period of approximately two years in parallel to the execution of the examined IT transformation program, and involved over 90 interviews. This illustrates the complexity of examining paradoxes and ambidextrous management strategies in large organizations (in our case the program organization involved over 900 people); it requires gathering different viewpoints and perspectives of reflective practitioners that cover major parts of the program in terms of breadth. In addition, it involves considering viewpoints from the very top management level (e.g., we interviewed the COO that directed the entire program) down to the lower management levels (e.g., we interviewed several project managers and even subproject managers involved in the program whose work was really affected by the organization's ambition to meet so many contrasting demands at the same time). Furthermore, what also enabled the effectiveness of our intensive interviewing was the opportunity given to us to accompany important phases of the program in the spirit of a longitudinal examination of how things evolve and change over time, including the early phase when the program was officially kicked off.

Finally, constructing substantive grounded theory in our case was enabled greatly by the richness of our data and opportunities for conceptualization. Importantly, we were able to engage key informants from our case organization in in-depth reflective conversations in which emerging insights were the outcome of *contextual negotiations*—Charmaz in her description of intensive interviewing states: "An interview is contextual and negotiated" (Charmaz 2006, p. 27). The intensive interviewing in our case was also enabled greatly by the fact that the interviewer and first author of this paper was able to conduct fieldwork during certain time periods as frequently as once a week for an entire working day—being given a working desk to prepare next scheduled interviews for the day, immediately document any reflections that went beyond the spoken words after interviews, or simply engaging in informal conversations with program members and observing how people interacted and worked with each other. The work desk given to the interviewer was located in the middle of the large open plan office in which key program and project managers worked, which came in handy for building up social relationships with a diversity of program members, having small talks with them about the emerging research findings, probing whether the results resonated with them, and asking them whether they knew anybody else inside the program that could help us substantiate these emerging findings who we had not interviewed yet. In summary, our experience was that building up a strong social network and engaging with the participants of our study regularly on a face-to-face basis enhanced greatly the quality of our intensive interviewing efforts and enabled grounded theorizing.

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