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Leadership in project-based organizations: Dealing with complex and paradoxical demands

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CHAPTER 2

EXPLORING THE EFFICIENCY-
ADAPTABILITY PARADOX IN LEADERSHIP:
A STUDY OF COMPLEXITY LEADERSHIP IN
PROJECT-BASED ORGANIZATIONS

ABSTRACT

In the current qualitative study we build upon a perspective of leadership informed by the complexity sciences to explore the role of leaders in harnessing both adaptive and efficient organizational processes. Though leadership has been acknowledged to play a crucial role in dealing with this key paradox of organizing, this role has not been fully addressed in leadership research. We explore this issue in project-based organizations, as the paradoxical demands for adaptability and efficiency are especially apparent in this context. The results from our qualitative investigation indicate that leaders pursue both adaptability and efficiency by enacting opposing action strategies of absorbing and reducing complexity. We show how leaders adaptively combine these leadership strategies, and outline the indirect leadership practices used to enact these strategies of absorbing and reducing complexity. We discuss the implications of these findings and offer suggestions for future research.

1 INTRODUCTION

The context in which leaders operate in our increasingly complex knowledge economy is changing, and recent insights suggest it is important to adapt theorizing on leadership to acknowledge these complexities and their impact on the leadership role (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). A growing number of studies in the field of leadership are thus recognizing the need to consider broader views of leadership that not only focus on motivating individual and collective performance, but also engage with complexity to generate adaptive organizing processes (Hannah & Lester, 2009; Hazy & Uhl-Bien, Forthcoming; Lichtenstein & Plowman, 2009; Marion & Uhl-Bien, 2002; McKelvey, 2007; Plowman, Solansky et al., 2007; Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). In the wider strategy and organization literatures, it is becoming clear that the simultaneous pursuit of efficient and adaptive organizational processes are critical for the sustainable success of organizations (Eisenhardt et al., 2010; Farjoun, 2010; March, 1991; Raisch et al., 2009) and that leadership is expected to play a crucial role in the paradoxical demands for adaptability and efficiency (Smith & Lewis, 2011).

Although most leadership theories have not focused on the role of leaders in managing this paradox (for an exception see Rosing, Frese, & Bausch, 2011), one area of research that is beginning to address the simultaneous need to consider efficiency and adaptability is complexity leadership theory (CLT) (Marion & Uhl-Bien, 2001; Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2008). CLT draws from the complexity sciences to offer a framework for thinking about leadership relative to both the administrative and adaptive functions in organizations (Uhl-Bien & Marion, 2009). According to CLT, effective leadership processes in organizations are characterized by flexible administrative functions that simultaneously enable adaptive dynamics and capitalize on these dynamics to produce strong business results for the firm (Uhl-Bien & Marion, 2011). CLT forms a leadership paradigm that focuses on enabling the learning, creative, and adaptive capacity of complex adaptive systems in the context of bureaucratic systems (Uhl-Bien et al., 2007).

While the conceptual underpinnings of CLT are fit to accommodate the role of leadership in the efficiency-adaptability paradox, theoretical developments in CLT to date may have overemphasized the role of leaders in stimulating adaptability and underemphasized the importance of stimulating efficiency. This is perhaps unsurprising given the tendency in previous theorizing to overstate the importance of bureaucratic structures and hierarchy in framing leadership roles and the development of CLT in response to this. However, it means that we need empirical investigation to better understand the ways in which leaders address needs for both efficiency and adaptability in managing work processes (Uhl-Bien & Marion, 2011).

Therefore, the purpose of our study is to use CLT as a lens to investigate the

role of leadership in the efficiency-adaptability paradox. Specifically, we conduct an exploratory qualitative investigation in the context of project-based organizations. We begin by reviewing literature on the efficiency-adaptability paradox and the implications for complexity leadership research. We show the value and current limitations of CLT and suggest how insights from the strategy and organization fields concerning opposing action strategies (Gebert et al., 2010), requisite complexity (Boisot & McKelvey, 2010), and semistructures (Brown & Eisenhardt, 1997) can be embedded in CLT. This helps further our understanding of the role of leadership in dealing with the efficiency-adaptability paradox. We then describe why project-based organizations provide a good environment for studying these issues, embodying as they do the twin pressures to respond to novel market and technological demands (adaptability) and to deliver projects on time and within cost and quality constraints (efficiency) (Keegan & Turner, 2002). Through an in-depth study in a wide range of project-based organizations, we identify how leaders respond to dual pressures to stimulate project workers to be both adaptable and efficient, and to pursue adaptive and efficient organizing processes. In our research, we uncover the concrete practices used by leaders in projects to balance the efficiency-adaptability paradox, and in so doing respond to the call for empirical evidence to support further developments in the field of CLT (Avolio et al., 2009). Finally, we conclude by going beyond the specifics of our study to examine what the results suggest for the role of leaders in dealing with the central paradox of adaptability and efficiency.

1.1 The Efficiency-Adaptability Paradox

Since the earliest work in management and organization theory, researchers have recognized that a key tension faced by leaders is that between efficiency and adaptability (Schumpeter, 1934). For example, Burns and Stalker (1961) describe mechanistic management systems as designed for efficiency appropriate to stability, and organic management structures as flexible and responsive, appropriate to changing conditions. Mechanistic systems emphasize vertical specialization and control focused on routine and efficiency, while organic systems emphasize horizontal coordination and professional expertise focused on innovation and adaptability (Mintzberg, 1983).

The efficiency-adaptability paradox is also central to March's (1991) distinction in explorative and exploitative approaches to organizational learning. Exploration includes factors associated with adaptive processes (e.g., search, variation, experimentation, risk taking, discovery, flexibility, and innovation), and exploitation includes activities associated with production (e.g., refinement, choice, selection, efficiency, implementation and execution). According to March (1991), both of these factors are equally important for organizational success.

Therefore, maintaining balance between exploration and exploitation is a primary factor for system survival (March, 1991). The question of what it means to maintain balance is not trivial, however. In a review of March's framework, Lavie, Stettner and Tushman (2010) refer to the issue of balancing exploration and exploitation as a paradox, a dynamic tension of juxtaposed opposites (Lado, Boyd, Wright, & Kroll, 2006) that represents contradictory yet interrelated elements, 'elements that seem logical in isolation but appearing absurd and irrational when appearing simultaneously' (Lewis, 2000). As described by Lavie et al. (2010), 'exploration and exploitation are contradictory activities, yet an organization cannot achieve desirable performance objectives without engaging in both' (p. 126). Such paradoxes generate tension because they represent divergent or oppositional thinking (Lado et al., 2006; Smith & Lewis, 2011) that goes against internally consistent theorizing (Poole & van der Ven, 1989).

This tension associated with the efficiency-adaptability paradox is implicit in many studies, often represented as a focus on enabling joint capacities for alignment and adaptability (Gibson & Birkinshaw, 2004; Rivkin & Siggelkow, 2003; Siggelkow, 2001; Tushman & O'Reilly, 1996). According to Eisenhardt (2000), rather than compromising between efficiency and adaptability, thriving organizations, groups and individuals successfully change by holding the two states simultaneously: 'This duality of coexisting tensions creates an edge of chaos, not a bland halfway point, between one extreme and the other' (Eisenhardt, 2000). The key is exploring the tension in a creative way that captures both extremes (Eisenhardt, 2000).

1.2 The Efficiency-Adaptability Paradox in Leadership Research

Although the efficiency-adaptability paradox has clear and important implications regarding the role of leaders in organizations, it has not yet been often addressed in leadership research. By conceptualizing the demands for efficiency and adaptability as a paradox, the dilemma for leaders can be framed as the necessity to support these opposing forces in an environment that needs both for successful organizational outcomes (Smith & Lewis, 2011), as is generally the case in project-based organizations.

Where issues of duality have come up in leadership it has primarily been in the context of contingency theory (Fiedler, 1964). A recent exception that has focused on the role of leadership in dealing with the efficiency-adaptability paradox is Rosing, Frese and Bausch (2011). Acknowledging that a single leadership style cannot promote innovation, Rosing et al. (2011) propose a framework of 'ambidextrous leadership' that advocates flexibly switching between increasing and reducing variance in followers' behavior to meet the changing requirements

within the innovation process. In direct reference to exploration and exploitation (March, 1991), this model recognizes a crucial feature of leadership for innovation as ‘fostering of either exploitation or exploration via the reduction or increase in the variance of follower behaviors’ (p. 957).

While this study by Rosing and colleagues (2011) is noteworthy in its recognition of the need for leaders to simultaneously consider adaptability and efficiency, conceptual and methodological aspects of this work limit its ability to more fully inform us regarding the nature of the efficiency–adaptability paradox for leadership. For example Rosing et al. (2011) describe the adaptability–efficiency paradox, yet the data from which they draw are findings from the transformational and transactional leadership literature (i.e., the multi-factor leadership questionnaire, MLQ), which is not designed to address the issues of flexibly switching between increasing and decreasing variability in followers’ behavior theorized by Rosing et al. (2011). To further investigate the efficiency–adaptability paradox in the context of leadership, we need a conceptual framework that more closely aligns with the theoretical underpinnings of the management and organization literatures concerning the central paradox of adaptability and efficiency. One such framework is CLT (Uhl-Bien et al., 2007).

1.3 Complexity Leadership Theory

CLT draws from the complexity sciences to provide a framework for thinking about leadership consistent with the central paradox of adaptability and efficiency as described in the management and organization literatures. This entails viewing organizations, their subsystems, and their broader environments as complex adaptive systems (Stacey, 1996). Complex adaptive systems (CAS) consist of interacting agents bounded by rules (schemas) who work to improve their behavior (Stacey, 1996; Uhl-Bien et al., 2007).

CLT brings attention in leadership research to the importance of enabling and interacting with adaptive dynamics (innovation, adaptability, learning) in the context of bureaucratic organizing structures. The framework of CLT is suitable to studying the efficiency–adaptability paradox in that it ‘seeks to foster CAS dynamics while at the same time enabling control structures for coordinating formal organizations and producing outcomes appropriate to the vision and mission of the organization’ (Uhl-Bien et al., 2007).

CLT sees a key challenge in leadership as addressing the dynamic relationship between the bureaucratic, administrative needs of the organization and the emergent, informal adaptive needs (Uhl-Bien et al., 2007). It addresses this challenge by introducing three leadership functions in organizations. Administrative leadership

refers to formal acts that serve to coordinate and structure organizational activities; adaptive leadership refers to leadership that occurs in the informal adaptive dynamics of the organization; and enabling leadership serves in the interface between the other two, working to enable adaptive dynamics and help enable adaptive outcomes into the organization to generate productive outcomes for the firm (Uhl-Bien et al., 2007).

Within this framework, enabling leadership appears to most closely relate to the challenge of the efficiency-adaptability. According to CLT, enabling leadership both fosters conditions that enable the emergence of adaptive dynamics, and mediates the relationship between the administrative function and the adaptive function (Uhl-Bien & Marion, 2009). It does this by ‘trying to assure a healthy ambiance for the adaptive function while simultaneously trying to assure that the adaptive function serves the goals and mission created by administrative leadership’ (p. 645).

Though the conceptual underpinnings of enabling leadership are thus fit to accommodate the role of leaders in the adaptability-efficiency paradox, current theorizing on the role of enabling leaders does not fully address both sides of the paradox by focusing more on stimulating adaptability and less on stimulating efficiency. In the following sections we describe how insights from the management and organization literatures can be embedded into a framework of CLT in order to shed more light on the role of enabling leaders in effectively dealing with the adaptability-efficiency paradox.

1.4 Enabling leadership strategies: Opposing action strategies

In order to explore the role of enabling leadership in effectively dealing with the paradoxical demands for organizations to achieve both adaptability and efficiency, we first outline the organizational strategies leaders should implement in order to effectively deal with these demands for adaptability and efficiency. Achieving the dual goals of efficiency and adaptability calls for enabling leaders to implement the opposing action strategies of complexity reduction and complexity absorption.

Boisot and Child (1999) distinguish two strategies organizations can pursue to deal with complexity: complexity reduction and complexity absorption. Complexity reduction is an ‘efficient’ way of dealing with complexity by developing a single representation of that complexity followed by a single response (Ashmos, Duchon, & McDaniel, 2000; Boisot & Child, 1999). Complexity absorption is a ‘flexible’ way of dealing with complexity by developing multiple, possibly conflicting, representations of that complexity and developing a range of responses (Ashmos et al., 2000; Boisot & Child, 1999). Given that these different responses to complexity carry with them particular challenges for leading and managing both people and resources, Boisot

and Child have noted that organizations generally pursue either a reduction or an absorption strategy (1999).

Others, however, argue that in order to pursue both adaptability and efficiency leaders will have to combine the opposing strategies of complexity absorption and complexity reduction, as enacting either in isolation ‘yields undesired effects that may trigger negative spirals’ (Gebert et al., 2010). Rather than impeding or offsetting each other, each enables the positive effects of the other (Gebert et al., 2010). Lewis et al. (2002), for example, found that a combination of emergent and planned management styles enhances project performance. Research on complex processes such as team innovation and organizational learning identify the benefits to these processes of synergies brought about by the opposing actions strategies of opening and closing, or loosening and tightening (Gebert et al., 2010; Hannah & Lester, 2009; Rosing et al., 2011).

This is supported by a case study of Infosys by Garud, Kumaraswamy and Sambamurthy (2006). Garud et al. (2006) show opposing action strategies in Infosys’s ‘design for emergence,’ which both seeds the organization with generative (i.e., adaptive) properties and includes mechanisms for routinely applying these elements to generate effective performance. For example, Infosys’s design promotes iterative experimentation, learning and change along with efficiency and reliability. Its governance structures work to balance stability with growth and continuity with change. Similar to Gebert et al.’s (2010) description of opposing action strategies, these design elements ‘reinforce and balance one another, leading to the emergence of an organizational platform that supports both day-to-day performance and transformation’ (Garud et al., 2006).

In contrast to these views which identify the need for opposing action strategies, theoretical developments of enabling leadership have placed primary emphasis on the importance of a strategy of complexity absorption (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). For example, Uhl-Bien et al. (2007) identify interaction, tension and interdependence as three aspects of leading that stimulate complexity absorption. In combination, these ‘complexity absorption’ strategies (Boisot & Child, 1999) increase the adaptability of the organization by stimulating discussion of conflicting views (i.e., tension is surfaced in interaction) and fostering interdependence among agents that serves as an incentive for both interaction and for acting upon new information (Uhl-Bien et al., 2007). Moreover, Uhl-Bien et al. emphasize the role of enabling leaders in enacting a strategy of complexity absorption as opposed to enacting a strategy of complexity reduction when they stress that enabling leaders protect adaptive processes from ‘stifling control preferences’ (Uhl-Bien & Marion, 2009) in the formal organization.

Therefore, it appears that theoretical development of enabling leadership has emphasized the role of leadership in stimulating adaptability over efficiency

by stressing the importance of a strategy of complexity absorption (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). Building on the insights from the strategy literature, enabling leadership cannot be expected to be effective in dealing with the adaptability–efficiency paradox effectively when purely enacting a strategy of complexity absorption, but should instead combine the opposing action strategies of absorbing complexity and reducing complexity. However, this balancing act of both absorbing and reducing has not yet received much attention in CLT.

1.5 The adaptive nature of enabling leadership: Approaching requisite complexity

Another aspect we need to consider in theorizing how leaders deal with the adaptability–efficiency paradox, is the inherently adaptive nature of this process. Scholars writing on the complexity sciences argue that the extent to which adaptability and efficiency are needed to achieve successful organizational outcomes depends on the complexity of stimuli from the environment.

This need for adaptation can be explained on the basis of Ashby’s law of requisite variety, which states that ‘Only variety can destroy variety’ (Ashby, 1970). Boisot and McKelvey (2010) see variety as a proxy for complexity and introduce requisite complexity to show that an organization can only be adaptive if the complexity of external stimuli is matched by the complexity of internal responses. As the complexity of stimuli from the environment continuously changes, organizations will have to adapt their complexity of responses in order to approach requisite complexity.

Leaders can increase or decrease the complexity of responses by shifting the focus of their action strategies between complexity absorption and complexity reduction respectively. The shifting pressures for efficiency and adaptability are affected by the misalignment between the complexity of responses and the complexity of stimuli. When the complexity of stimuli is higher than the complexity of responses, this increases the pressure for adaptability. Leaders can respond to this increased pressure by shifting their focus more towards a strategy of complexity absorption, stimulating a wide range of representations and responses. This leads to a higher complexity of responses, decreasing the gap between the complexity of responses and the complexity of stimuli, and in this way (temporarily) approaching requisite complexity. The opposite occurs when the complexity of stimuli is lower than the complexity of responses. This increases the pressure for efficiency, and leaders can approach requisite complexity by shifting their focus towards a strategy of complexity reduction. To deal effectively with the adaptability–efficiency paradox, enabling leaders will have to adaptively use the strategies of complexity absorption and complexity reduction in order to approach requisite complexity.

1.6 Indirect enabling leadership practices: Semisttructures

Drawing this together, we focus on the question: How do leaders enact the opposing action strategies of complexity absorption and complexity reduction? The extant literature suggests that indirect leadership practices are expected to play a major role in enabling the organization to deal with complexity and pursue the dual goals of efficiency and adaptability (Anderson, 1999; Eisenhardt et al., 2010). Indirect leadership practices are specific practices with which leaders attempt to influence others indirectly through their impact on structures, as opposed to direct leadership practices with which leaders directly influence others in interaction (Yukl, 2009a). Because of the theorized importance of indirect leadership practices in dealing with complexity and pursuing the dual goals of efficiency and adaptability, we focus specifically on these leadership practices in this study.

According to Brown and Eisenhardt (1997), organizations that successfully manage demands for efficiency and adaptability use semisttructures. Semisttructures exhibit partial order, such that some aspects are prescribed and others are not (Brown & Eisenhardt, 1997). Semisttructures combine opposing action strategies as they comprise elements of structure and freedom to move. For example, semisttructures could involve setting some responsibilities, meetings, and priorities while leaving space for the design process to emerge in an organic manner (Brown & Eisenhardt, 1997), or time pacing in the form of deadlines to provide a minimal amount of direction to enable progress monitoring without specifying how the work should be done (Okhuysen & Eisenhardt, 2002; Okhuysen & Waller, 2002).

Semisttructures therefore might help us understand how leaders enact the aforementioned opposing action strategies. While semisttructures can help to effectively deal with the efficiency-adaptability paradox, constant vigilance is necessary to avoid slipping into pure order or pure chaos (Brown & Eisenhardt, 1997). Leaders thus not only play an important role in developing semisttructures, but also in vigilantly maintaining them. In the current study we will explore the role of leaders effectively dealing with the adaptability-efficiency paradox by exploring the indirect leadership practices with which they do this, and assess whether these leadership practices take the form of semisttructures.

1.7 Present Study

In the present study we address the following research question: How do leaders in project-based organizations use indirect leadership practices to enable adaptability and efficiency? The framework we develop to understand the role of indirect leadership practices in settings in which the adaptability-efficiency paradox

is especially apparent, is explored using qualitative data from 48 interviews. On the basis of this data we explore two aspects of leadership in project based organizations. First, we assess whether leaders in these organizations adaptively enact the opposing action strategies of complexity absorption and reduction to achieve adaptability and efficiency respectively. Second, we examine the indirect leadership practices associated with complexity absorption and complexity reduction.

In order to develop a rich understanding of how leaders deal with the paradoxical demands of adaptability and efficiency, we analyze this issue in a context in which this paradox is especially apparent, namely project-based organizations. Scholars of project-based organizing have described the tensions produced by the necessity to manage for both adaptability and efficiency (Sydow et al., 2004). These paradoxical demands are explicitly pronounced in project-based organizations, as projects are set up to accomplish new tasks (pushing for adaptability), and do this within clearly defined boundaries in terms of time and money (pushing for efficiency) (Lindkvist, 2008).

On the one hand project-based organizations are designed so that resources can be rapidly and flexibly reconfigured in order to carry out projects in response to emerging marketplace demands (Schreyogg & Sydow, 2010; Sydow et al., 2004). On the other hand, projects are subject to pressures for efficiency, and most project management methodologies stress planning and control as well as time, cost and quality constraints (Atkinson, 1999; Keegan & Turner, 2002; Söderlund, 2004). We expect that the explicit demands for both adaptability and efficiency in project work make these types of organizations a rich context to observe leadership strategies and practices enacted to deal with this paradox.

2 METHOD

2.1 Data collection

Data were gathered on 20 separate projects in companies located in the Netherlands to explore how leaders deal with the adaptability–efficiency paradox in project-based organizations. We conducted 48 semi-structured individual interviews with team members and either their project managers, their line managers, or both (see Table 1 for a description of the interviewees and the projects). Interviewees were purposefully sampled for variation in settings including for multiple industries (e.g., IT, consultancy, construction), internal and external projects, and governmental and non-governmental organizations. Such variation in settings and perspectives can

help to identify new aspects of leadership in project-based organizations (Corbin & Strauss, 2008). Consistent with best practice in qualitative research, we gathered data from respondents representing different views of leadership, and specifically indirect leadership practices. This was done to allow for triangulation of events and processes across data sources and in order to remain open to emerging information not captured by our preliminary sets of questions and themes in the semi-structured interview protocol (Miles & Huberman, 1994).

The purpose of the interviews was to gather data on leadership practices in project-based organizations. To achieve this, we defined focal projects during each interview by taking a project that the project team member and project manager were both working on. Important characteristics of focal projects were that they represented a project in which the interviewees worked extensively, and that the project was nearing completion or was recently completed. The semi-structured interview protocol (see Appendix 2) was used to ensure key topics were addressed and to allow the opportunity for additional information to emerge during the interview. Non-directive questions were used to probe emerging issues of interest in the study. The interviewees were prompted to talk about concrete leadership practices exhibited during the focal projects. Open questions were used to encourage interviewees to use their own words to express their observations and experiences and to facilitate insights emergent from the local project context and practice (Alvesson, 2003). In particular, questions were asked about influence behaviors, working relationships, and the process of developments in and around the focal projects. The individual interviews lasted one hour and 10 minutes on average. All interviews were recorded, with the consent of the interviewees, and transcribed verbatim. This resulted in 1161 pages of transcript. We maintained confidentiality throughout the process and did not report the results of specific focal projects back to the organizations involved or discuss with interviewees the content of other interviews.

After the first 11 individual interviews, additional data were gathered during one day of observation of a practicing project manager in the role of leading an ongoing project. We observed this project manager because the emergent themes from his individual interview posed a surprise in light of CLT. The data from this observation were used to corroborate emerging insights and provide depth on specific issues relating to the processes of adaptive balancing of efficiency and adaptability, and of specific indirect leadership practices used to reduce and absorb complexity.

After the day of observation, a group interview was conducted to reflect upon emergent themes. Data gathered from these interviews were summarized into emergent themes, which were presented in one group interview to 6 project managers recruited through one of the prominent project management associations in the Netherlands, namely the International Project Management Association (IPMA-NL). The purpose of this interview was to test the adequacy of emerging

explanations in a practical setting. On the basis of feedback from this group interview we reframed and refined the themes used to develop our semi-structured interview protocol before carrying out later interviews.

Table 1 Description Interview Sample

Project number	Project description	Type of project	Employer/project manager	Employer team member & line manager	Client organization	Team members interviewed	Project managers interviewed	Line managers interviewed
1	Developing a new website	ICT	IT firm 1	IT firm 1	Bank 1	1	1	1
2	Developing a construction contract for a road	Infrastructure	Professional services 1	Province 1	Province 1	1	1	1
3	Designing and building a school	Construction	Consultancy and engineering firm 1	Consultancy and engineering firm 1	Three schools and a nursery 1	1	1	
4	Testing an IT system	ICT	Consultancy 1	Self employed 1	IT expert centre	1	1	
5	Implementing new business software	ICT	Consultancy 1	Consultancy 1	Inter-governmental organization	1	1	
6	Developing a talent exchange platform	Consultancy/ICT	Consultancy 2	Consultancy 2	Bank 1	1		1
7	Outsourcing datacenter	ICT	Consultancy 3	Consultancy 3	Bank 1	1	1	1
8	Designing and implementing an internal transport system	Construction	Trade fair	Trade fair	Trade fair	1	1	1
9	Redesigning a park	Landscaping	Municipality 1	Municipality 1	Municipality 1	1	1	1
10	Developing a sustainable plan for a new neighborhood	Consultancy	Consultancy and engineering firm 2	Consultancy and engineering firm 2	Province 2, municipality 2 and water board	1		1

11	Building metro stations	Infrastructure	Professional services 1		Municipality 3		2	
12	Developing a new content management system	ICT	Self-employed 2	Public transport 1	Public transport 1	1	1	1
13	Testing a motor	Manufacturing	Temporary work agency	LM Semiconductor manufacturer - TL temporary work agency	Semiconductor manufacturer	1	1	1
14	Designing a motor	Manufacturing	Semiconductor manufacturer	Semiconductor manufacturer	Semiconductor manufacturer	1	1	1
15	Developing a new business plan	Consultancy	Professional services 2	Professional services 2	Professional services 2	1	1	
16	Improving travel information	Consultancy	Consultancy 4	Consultancy 4	Public transport 1	1	1	
17	Introducing new hardware	ICT	Governmental organization	Governmental organization	Governmental organization	1	1	1
18	Developing company policy	Policy development	Professional services 2	Professional services 2	Professional services 2		1	1
19	Building a school	Construction	Contractor	Contractor	School 2	1	1	
20	Improving group performance	Consultancy	Consultancy 5	Bank 2	Bank 2	1	1	
						Total	Total	Total
						18	19	12

2.2 Data analysis

In order to build upon CLT and explore how leaders deal with the adaptability–efficiency paradox we employed an abductive approach to the analysis of our qualitative material (Locke, 2011). Abduction involves rethinking current theories in light of a surprising empirical phenomenon and resolving surprises by articulating a new interpretative rule or theory (Alvesson & Kärreman, 2007). We chose this abductive approach to build upon the framework of CLT, while remaining open to surprising findings and alternative explanations, as we expect CLT can inform our understanding of the role of leadership in the adaptability–efficiency paradox but cannot assume that this framework is complete and fully fitting, as it has rarely been studied empirically.

In order to address both existing theories and emergent results, all 48 individual interviews were coded both inductively and deductively using the software NVivo 9. The initial analysis of each interview began by writing up a contact summary sheet (Miles & Huberman, 1994), containing the key points made by the interviewee as well as special circumstances to take into account when analyzing the data. During the process of coding, multiple types of memos were written, including memos about emerging themes across all interviews, within each interview, and links to theory. With the input of these memos, the broader emerging theoretical framework and remaining inconsistencies were recorded. Together with the coding logbook, these memos allowed us to look back at the way the study developed and key theoretical issues emerged, which facilitated in tracing the emergence of new ideas. The memos helped to ensure reflexivity in dealing with the data and the emerging theory.

We iterated multiple times between interaction with the empirical material and interpretation guided by academic theories and found the interface between these different levels of interpretation useful in the development our framework (Alvesson & Sköldbörg, 2009). We also alternated between the part and the whole in a hermeneutic circle in a variety of ways, including transitioning from the detailed coding of the data to a theoretical interpretation, and transitioning from coding the details to describing each interview and the whole set of interviews per project setting. Such iterative processes of reflection, reframing and refinement of data analysis through within case and between case analysis are common in inductive research (Eisenhardt, 1989; Miles & Huberman, 1994). This analysis of the qualitative material allowed us to find appropriate existing theories to explain the data and to extend those theories on the basis of unexpected findings in the data of relevance to these theories. Table 2 gives an overview of the initial deductive codes from existing theories and the final abductive codes that we generated through this process of data analysis.

Table 2. Changes in coding scheme

Deductive codes	Final abductive codes
Enabling leadership <ul style="list-style-type: none"> • Stimulate interaction • Stimulate tension • Stimulate interdependence 	Complexity leadership Leadership strategies to deal with complexity: <ul style="list-style-type: none"> • Absorb complexity <ul style="list-style-type: none"> ○ Stimulate interaction ○ Stimulate tension ○ Stimulate interdependence • Reduce complexity <ul style="list-style-type: none"> ○ Bound interaction ○ Bound tension ○ Bound interdependence
Semistuctures <ul style="list-style-type: none"> • Time pacing 	Semistuctures Leadership practices to implement leadership strategies: Semistuctures to absorb complexity <ul style="list-style-type: none"> • Meetings • Co-location • Escalation • PM not available • Opposing goals Semistuctures to reduce complexity <ul style="list-style-type: none"> • Time pacing • PM as interface • Planning and reporting
Considerations in leadership strategies and practices: <ul style="list-style-type: none"> • Requisite complexity 	Considerations in leadership strategies and practices: <ul style="list-style-type: none"> • Type of issues: content or process • Requisite complexity

3 RESULTS

The results shed light on the role of leadership in effectively dealing with the adaptability–efficiency paradox. First, the results showed that leaders in project-based organizations combine opposing action strategies of complexity absorption and complexity reduction in order to achieve both adaptability and efficiency. Second, the analysis of the qualitative material showed that leaders combine opposing action strategies in an inherently flexible manner in order to approach requisite complexity. The combination of opposing action strategies changed as the leaders responded to complexity in the environment. Third, the results showed the important role of semistuctures as indirect leadership practices. Our findings revealed a distinction between semistuctures that most directly support an action strategy of complexity reduction, and those that most directly support complexity absorption. The findings also showed that semistuctures mainly affect the complexity of responses through their impact on interaction, tension or interdependence.

3.1 Combining opposing action strategies

A key finding in our data is that leaders in all of the projects that we studied combined the opposing action strategies of reducing complexity and absorbing complexity in order to achieve both adaptability and efficiency. This was illustrated by a project team member who stressed that the complexity of the situation called for the use of these opposing action strategies:

‘[W]e don’t want to be too bureaucratic, that’s not possible either because it is so complex (...) just hold each other by the arm and if you don’t do that, then you are hopelessly and utterly lost. (...) because it is so complex, you can’t catch all this in a routine way with reporting, you catch 80 percent with that and the 20 percent really difficult stuff is holding each other’s hands again and tell each other, speak up and don’t keep walking around with it.’ (Team Member, Project 7)

Leaders combined these opposing leadership strategies in an adaptive way in order to approach requisite complexity. This meant that leaders generally shifted their focus to complexity absorption when the environment became more complex, and complexity reduction when the environment became less complex, in order to achieve a complexity of responses consistent with the complexity of stimuli from the environment. Leaders intuitively recognized the need for a high complexity of responses in situations of high complexity of stimuli. This is demonstrated in the following quote from a project manager, who explicated the importance of continuously testing the accuracy of the way in which problems were solved in a changing environment:

‘Look, in a dynamic project the rules of the game change every day. (...) You will always have to keep testing: “Am I doing things right?” And the fact that it went well yesterday doesn’t mean that if you do things the same way today it will go well tomorrow. And that calls for communication. That calls for searching out other people.’ (Project Manager Project 11)

Our results also showed a temporal pattern, in which leaders first enabled a strategy of complexity absorption and then enabled a strategy of complexity reduction. This can be partly explained by a perceived reduction in the complexity of

environmental stimuli because of a growing understanding of these stimuli. Through the implementation of a strategy of complexity absorption an understanding of the environment evolved, reducing the perceived complexity of stimuli, and increasing the need for complexity reduction. One project manager explained that a complexity reduction strategy was needed as the project advanced to ensure the project could be finished:

‘So, as the project approached the end we formalized more things. Also work sharper with detailed functional descriptions. Look, the project, and also from piloting (...) had developed a very informal atmosphere. (...) We stretched the system that we bought with a whole lot of wishes and demands, and wanted a lot from the system, that we almost built the website in a type of prototype forwards manner. That works in the beginning, but when you start facing deadlines it becomes difficult. Then you want to say, “This is it, it’s no longer a prototype.” Then it just has to be finished.’ (Line Manager, Project 1, talking about another project for which he was project manager)

Although there appeared to be a general trend in shifting focus from complexity absorption to complexity reduction across the project life cycle, this shift did not represent a purely linear development. Instead, this development was conducted iteratively in order to improve adaptation. Indeed, a line manager in our sample explained about a project in which the complexity of responses had to be increased again after it had already been brought down, as the emergent design of the product showed flaws:

‘So you have to get a number of experienced people from somewhere else who can take fresh look at the existing design. Then you also bring in discussion. You don’t take away everyone that has been on it, but you put in a few new ones that are at the same level. They will romp with each other. Beautiful discussions arise like “this does work” and “no this doesn’t work because...”’ (Line Manager, Project 14)

In addition, leaders took into account the content of complexity in the environment. An action strategy of complexity absorption was most often used to respond to issues related to the content of the work, while complexity reduction was most often used for issues related to process such as discussions around deadlines

and budgets. Interviewees indicated that flexibly absorbing complexity was more important for content issues, whereas for process issues a strategy of complexity reduction was better suited. To illustrate, one project manager explained how he reduced complexity on process issues. He tried ‘to shield the team from political games that are being played,’ and ‘hold off the questions and discussions’ about ‘interpretation of agreements, interpretation of requirements.’ He explained his role in the following way:

‘I’m an interface, a screen towards the client that asks things and translates that to work for the developers. What I hope is that they realize that I intercept things for them and I only give them things that really have to get done.’
(Project Manager, Project 1)

A project team member working with this same project manager explained that she values being shielded from process issues, especially when approaching deadlines. Since this enabled a more efficient handling of process issues, she was left with more room for handling content issues:

‘[The client] really likes conference calls. It’s really bad. (...) And then we’d have the same discussion about point eleven for example and that would be the same discussion as the day before. (...) With the same people and with the same conclusion that [the client] had to decide something before we could implement it or something like that. Well anyway, at a certain moment I said, “This is a waste of time and we are approaching the deadline and I can spend my time better by helping or supporting content management, and thinking about it properly.” So then [the project manager] said “I’m staying in and you can go to work”.’ (Team Member, Project 1)

Taken together, the results showed that leaders enacted both strategies of complexity absorption and complexity reduction, and that they did this in an adaptive way so as to approach requisite complexity. These efforts showed a general pattern over time of shifting focus from absorbing to reducing complexity as evolving understanding reduced the perceived complexity of stimuli, but this general pattern could involve multiple iterations. Approaching requisite complexity also involved a focus on process issues in complexity reduction, so as to allow the time and space to effectively absorb complexity on content issues.

3.2 Indirect leadership practices: Semistuctures for complexity absorption and reduction

By closely examining the action strategies used to deal with the efficiency-adaptability paradox, our results identified a number of indirect leadership practices that played an important role in enacting these strategies. Our analyses showed that leaders indirectly influenced others through creating, transforming, and disassembling semistuctures in which some aspects were prescribed, and others were not.

Our data also revealed two different types of semistuctures used by leaders. One type of semistucture was consistent with complexity absorption, increasing interaction, tension and/or interdependence, thereby increasing the complexity of responses. The second type of semistucture was consistent with complexity reduction, decreasing interaction, tension and/or interdependence, and thus decreasing the complexity of responses. An overview of these different types of semistuctures, and an example of a specific indirect leadership practice that represents each type of semistucture, is shown in Table 3. We briefly describe each below to illustrate how leaders used semistuctures to enact the strategies of complexity absorption and reduction.

Table 3. Leadership strategies and practices

Strategy	Most direct result	Semi-structure	Route	Representative quotes
Absorb complexity of responses	Stimulate interaction	Meetings	Face-to-face group interaction to surface tension and enable team interdependence	<p>Having meetings is important because 'then they learn from each other, hear things about problems you could run into' and have 'a little cross-fertilization' (Line manager project 14).</p> <p>'I called all those people to the table, (...) indicated what the intention was, what the planning was, (...) then the comments start coming (...) then you try to find a way to approach the planning in such a way that it is possible.' (Team member, project 8)</p>
		Co-location	Face-to-face group interaction to surface tension and enable team interdependence	<p>'I attach great importance to my team sitting together. Preferably at location. (...) That works best for a) the forming of the team. So learning to trust each other, getting to know each other, but also knowing each other's weaknesses. (...) And b) knowledge exchange is much faster in word than per email, chat, or even calling.' (Project manager project 15)</p> <p>'We have a real project office, that's also necessary because you really have to deal with each other a lot.' (Team member, project 5)</p>
	Stimulate tension	Opposing goals	Formalize tension between efficiency and adaptability	'And what you see, if you get stuck in time and such a project manager starts cutting corners and skipping things then my role as watchdog kicks in, to supervise it, keep an eye on the essence of the [planning and reporting] steps. (...) Often it is a mild battle. The project manager (...) wants to reach that timing and I am mainly responsible for quality. (...) Those are typical tensions that we consciously apply.' (Line manager, project 14)
	Stimulate inter-dependence	Escalation	Stimulate interdependence across hierarchical levels	<p>'I escalate because if I don't get this we will have a problem and I don't want to be punished for that. It's just.. in the end the goal is to slip responsibility. I don't mind doing executive work, but if I get stuck you have to solve it. And then I mean my project manager.' (Team member project 5)</p> <p>'You can easily say to the employee "in first instance you look at it yourself, if you can't solve it then you sound the alarm with the team leaders", and well, it is scaled up that way until in theory finally the director.'(Line manager, project 2).</p>



	↓		↓	<p>PM not available</p> <p>Stimulate interdependence among project team members</p> <p>'[This project manager] will just not pick up his phone and not call back. (...) Because you get that responsibility to do things, you learn how to solve your own problems. So it is just a different way of, in projects, delegating or letting go of responsibilities.' (Team member, project 3)</p> <p>'You've got people who really give lists from day to day, like you have to do this today. Well, if team leaders, or people in my team expect that from me, I say like "then you'll have to search for a project somewhere else, because you're not going to achieve that". As far as that is concerned I believe in the knowledge and abilities of the people themselves'. (Project manager, project 1)</p>
Reduce complexity of responses	Bound interaction	Time pacing	Reduce time spent on process issues by team	'At a certain moment we were often being called and emailed [by the client] and we mentioned this [to the project manager]; "we are constantly disturbed and they want answers directly". And well then he arranges a question hour. Things like that to make our work easier.' (Team member, project 1)
	Bound tension	Planning and reporting	Gain clarity on process issues	'That is very important, because otherwise you get, if you don't do that with such a big group of people, then the expectations and outcomes aren't clear for anyone anymore (...) and that is why it's so important we work with documents.' (Project manager, project 14)
	Bound interdependence	PM as interface	Boundary spanning handled by PM only	'they [line managers] have to make sure that you as a man of content can do your job properly and that, if there is a conflict with another department, they solve it for you.' (Team member, project 9)
				'I think "I can't work this way" and then a sort of cordon gets build around you. "Leave him alone, let him do his job!" (...) Because multiple people bothering me at once, that doesn't help me. Because clarity "do this, first this, then that, that, then finished". (...) And peace. That is the most important thing.' (Team member, project 14)

3.2.1 Indirect leadership practices for complexity absorption

Leaders in project-based organizations created, transformed and disassembled a number of different semistructures to implement a strategy of complexity absorption. All of these semistructures increased the amount of interaction, tension and/or interdependence. Leaders mainly used the semistructures of calling meetings and ensuring co-location to stimulate high quality group interaction. Meetings could stimulate face-to-face group interaction, which in turn could surface tension in the form of the discussion of a wide diversity of views.

‘Once every two weeks we have a meeting where we all sit together. This is desirable, because you can all engage in a discussion, because you have areas of expertise everywhere, and sometimes it’s just useful if you all engage in a discussion and come to a solution from those different points of view.’
(Project Manager, Project 18)

Meetings also enabled a higher level of interdependence, as all team members had enough information about the project to solve problems together without necessarily needing direct instructions on exactly what to do from the project manager. Co-locating the project team enabled more face-to-face interaction among team members, facilitated sharing of different views, and allowed for working together interdependently with a reduced need for the project manager to make all decisions.

In addition, leaders indicated that they stimulated the inherent tension between efficiency and adaptability by creating a semistructure with formalized roles that involved opposing goals. To illustrate, in one case where the project manager was responsible for bringing the project in on time, and the line manager was responsible for quality. This formalized tension, and resulting interdependence between the roles, contributed to a situation where both needs were taken into account in decision making as each person worked specifically to achieve one of these needs.

Finally, leaders used another set of semistructures aimed at stimulating interdependence: ‘escalation systems’ and project managers deliberately not making themselves easily available. Escalation systems involved strategies in which leaders offered a formal route through which project team members could inform people higher up in the hierarchy about the problems they observed or foresaw that they couldn’t solve on their own. This semistructure increased interdependence among people at different levels of the project hierarchy, as an issue that was officially recorded in the escalation system would move up through the hierarchy until someone solved it. The second semistructure that leaders used to stimulate interdependence among team

members was some project managers making themselves deliberately not available to team members. This semistructure stimulated people to solve their problems without management decisions for every step of the way. This semistructure could, however, lead to anxiety on the part of project team members when it occurred in stark contrast to their current situation. For example, in the following illustration a project manager explained the effects of changing a situation in which team members used to be led on a detailed level to a situation in which the project managers were not easily available to solve the problems of their team members.

‘People were used to being led in a directive way. What we did in the beginning is, we were not easily available, which led to some nice scenes, because if you are used to seeking alignment with your boss to a very detailed level, but he is not there, you will get a sort of split at a certain moment. Well, at first this led to panic. (...) They just did not see that we did it on purpose, like “Take the decision yourself”’. (Project Manager, Project 11)

3.2.2 Indirect leadership practices for complexity reduction

In addition to semistructures leaders used to implement a strategy of complexity absorption, the results revealed another set of semistructures that leaders used to implement a strategy of complexity reduction (see also Table 3). All of these semistructures decreased the amount of interaction, tension and/or interdependence. The first semistructure, time pacing (e.g., in the form of leaders’ introducing a question hour for questions from the client to the project team), was mainly used to decrease the time spent on interaction. The results showed that the semistructure of time pacing was created by leaders to limit the time spent by the team on communication with people outside the team, and specifically on process issues, to help team members focus on core tasks.

The second set of semistructures, involving planning and reporting, identified ways in which leaders decreased tension on process issues by stimulating the development of a single representation of these issues among team members. Planning mainly decreased tension through enabling the team to develop a similar view of where they were going and at what pace. Reporting likewise decreased tension, but here more specifically by enabling the team to develop a similar view on tasks that have been completed and what challenges still remain.

Finally, leaders also bounded interdependence by creating a semistructure

in which they acted as an interface between the team and the environment. This decrease in interdependence between the team and the environment came with decreased interaction between individuals inside and outside of the team, as the project manager shielded the project team from certain types of interaction, certain issues, or certain individuals. Consequently, this semistructure could decrease tension as the leader limited the amount and type of information flowing from the environment to the team, or from the team to the environment. Project managers used this role of interface to filter information from the environment, and in this way they stimulated the development of a single representation of the environment by all team members. Shielding team members from some information reduced the complexity of responses on these issues, allowing for more attention and complexity of responses on issues most relevant to the project.

3.3 Implementation of semistructures

In sum, these indirect leadership practices in the form of semistructures illustrated how leaders enacted opposing action strategies of complexity absorption and complexity reduction. Our findings showed that although these semistructures were mostly implemented in a manner that enabled the system to effectively deal with complexity, the same semistructures, when implemented in ways unfit for their environment, prevented effective handling of complexity. This links back to our results concerning the enactment of opposing action strategies in order to effectively deal with the demands for both adaptability and efficiency by approaching requisite complexity. The question of which leadership strategies and practices were called for depends on the extent of the mismatch between the complexity of environmental stimuli and the complexity of responses. In other words, the value of these semistructures in dealing with complexity depended on the way in which they were implemented, configured, and matched to the environment at a specific time.

4 DISCUSSION

Though the central efficiency-adaptability paradox has major implications for leadership, it has received very little attention in leadership research. The results of the current study shed light on the role of leaders in dealing with the central paradox of adaptability and efficiency, and provide an early empirical illustration of complexity leadership theory (CLT). We have explored this issue in a setting in which the efficiency-adaptability paradox is especially apparent, namely project-based organizations.

The current study builds upon CLT in several ways. Most importantly, we showed that in order to effectively deal with the adaptability–efficiency paradox, enabling leaders pursued strategies of both complexity reduction and absorption, as opposed to merely complexity absorption. The extent to which each of these strategies was implemented was dependent upon the types of issues at hand (process or content), and the extent to which the complexity of responses matched the complexity of stimuli.

We also identified indirect practices leaders enacted to implement the opposing action strategies of complexity absorption and reduction that we described as taking the form of semistructures (Brown & Eisenhardt, 1997). Enabling leaders create, transform and disassemble semistructures to effectively deal with the adaptability–efficiency paradox. For leaders, implementing a strategy of complexity absorption involved creating semistructures that increase the complexity of responses by increasing interaction, tension and interdependence, while implementing a strategy of complexity reduction involved creating semistructures that decrease the complexity of responses by decreasing interaction, tension and interdependence.

4.1 Implications for theory

The current study has several implications for current theorizing on both CLT and the efficiency–adaptability paradox. First, based on our findings, we inform CLT by moving beyond enabling leadership and proposing that the leadership function described in the current study is more appropriately characterized as complexity leadership. Second, we discuss the ways in which leaders adapt their leadership strategies and practices in order to approach requisite complexity to effectively deal with the adaptability–efficiency paradox. Third, we add the concept of semistructures to CLT, and propose two categories of semistructures: complexity absorption semistructures that stimulate interaction, interdependence and tension, and complexity reduction semistructures that decrease interaction, interdependence and tension.

4.1.1 Informing CLT: From ‘enabling leadership’ to ‘complexity leadership’

The results of our current exploration imply that insights developed from a perspective informed by the complexity sciences can enhance our understanding of leadership in settings in which the efficiency–adaptability paradox is especially apparent. Though CLT provides a valuable basis for the exploration of how leaders deal with the central paradox of adaptability and efficiency, our results suggest that

the previous theorizing is incomplete. Although CLT has taken paradoxical pressures into account, its leadership functions have over-emphasized the role of leadership in stimulating adaptability over efficiency.

Our findings suggest enabling leadership does not fully capture the leadership role of bridging the adaptive and administrative functions of the organization as its focus is on enabling the adaptive function and protecting it from the administrative function (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). Specifically, we inform CLT by proposing that the leadership function described in the current study is more appropriately characterized as complexity leadership, defined as dealing with complexity by harnessing both efficiency and adaptability to approach requisite complexity through the opposing action strategies of complexity absorption and complexity reduction.

As describe above, in CLT enabling leadership has been conceptualized as entangling the formal structures and informal network dynamics of organizations through a strategy of complexity absorption. Enabling leadership, with its important role bridging the adaptive and administrative functions of the organization, is well placed to deal with the paradoxical demands of adaptability and efficiency. Previous theoretical developments in enabling leadership have already highlighted the influence leadership can have on the complexity of responses through its impact on interaction, tension and interdependence. But they have done so only by emphasizing the role of enabling leadership in complexity absorption. The current study shows that in order to effectively deal with the paradoxical demands of adaptability and efficiency, complexity reduction is an equally important leadership strategy.

Specifically, the results of the current study indicate that, for complexity leadership, effectively dealing with complexity involves balancing opposing action strategies of complexity absorption and complexity reduction. We inform CLT by moving beyond enabling leadership with a focus on enabling the adaptive function, which only addresses complexity absorption, to a focus on 'complexity' leadership, which captures opposing action strategies of complexity absorption and reduction to approach requisite complexity, to better capture the dynamic nature of leadership in complex environments. A focus on complexity leadership more clearly represents what both our findings, and the strategy and organization literatures, reveal about the role of leadership in the efficiency-adaptability paradox.

4.1.2 Complexity leadership to approach requisite complexity

Our results also provide support for, and emphasize the importance of, requisite complexity in leadership research (Boisot & McKelvey, 2010; Hannah, Lord, & Pearce, 2011; Hazy & Uhl-Bien, Forthcoming; Lichtenstein & Plowman, 2009; Miller,

1993; Uhl-Bien et al., 2007). More specifically, our findings shed some light on the ways in which complexity leaders adapt their leadership strategies and practices to approach requisite complexity. Often, this development entails a temporal pattern, in which complexity leaders gradually shift their focus from complexity absorption to complexity reduction. The leadership process we identify is similar to processes described for moving from creativity to innovation implementation by generating ideas, selecting ideas and implementing those ideas (Somech & Zahavy-Drach, forthcoming). This temporal pattern in leadership can be explained by a growing understanding of the complexity in the environment. This growing understanding reduces the perceived complexity of stimuli, increasing the need for a reduction of the complexity of responses in order to approach requisite complexity.

Although this shift over time from complexity absorption to complexity reduction is a general trend, our results highlight that this development can show multiple iterations within one project. The project management literature highlights a similar type of development in that the project life cycle is not always seen as a waterfall, in which project phases have limited overlap, but rather as a rolling wave, iteratively moving between planning, executing and receiving feedback (Alvesson, 1996).

Another factor leaders take into account in their leadership strategies is the type of issue under consideration (content or process). A strategy of complexity reduction is not without risk, as the increased ability to focus on core tasks and reduced anxiety of team members comes with a reduced opportunity for collective learning from working through the complexity of stimuli (Stacey, 2010). This could explain why when leaders implement an action strategy of complexity reduction, they tend to shield team members from complexity in process issues such as discussion over deadlines and budgets. These process issues offer relatively little opportunity for valuable collective learning compared to content issues, making the downsides of this strategy less pronounced. In addition, reducing the complexity of responses concerning process issues leaves valuable time and cognitive space for dealing with the complexity of content issues.

4.1.3 Implications for work on the adaptability-efficiency paradox

The findings of our study also have implications for work on semistructures. The results support the argument posed by Eisenhardt and colleagues (2010) that leadership can harness both efficiency and adaptability through semistructures. Our results suggest two categories of semistructures important in complexity leadership: those geared toward complexity absorption that stimulate interaction, tension and interdependence, and those geared toward complexity reduction that decrease

interaction, tension and interdependence. So, though semistructures can enable organizations to achieve both efficiency and adaptability, not every semistructure does this in the same way. Semistructures such as meetings, co-location, escalation systems, opposing goals and managers not being available are more geared towards the adaptability end of the paradox, whereas semistructures such as time pacing, planning and reporting and managers acting as interfaces are more geared towards the efficiency end of the paradox. It's the emerging configuration of semistructures and their fit with the evolving complexity of stimuli that can lead to sustainable success.

Finally, our results add to the debate in the strategy and organization literatures on enabling efficiency and adaptability. Calls have been made in the field of strategy to explore both the mechanisms used in organizations to balance efficiency and adaptability and to establish the appropriate organizational level at which to integrate efficiency and adaptability (Lavie et al., 2010). Andriopoulos and Lewis (2009) theorize that balancing efficiency and adaptability is an important responsibility at all levels within the organization. Moreover, some scholars specifically call for a focus on individuals to explain the microfoundations of strategic organization (Felin & Foss, 2005). However, others have argued that individuals will not be able to accomplish what even whole organizations struggle with (Schreyogg & Sydow, 2010). Our findings alleviate this latter concern by showing that individual leaders do indeed adaptively balance efficiency and adaptability, and highlight leadership as a crucial aspect of the microfoundations of performance in complex organizations.

4.2 Strengths, limitations and future research

The current study has a number of limitations and related implications for future research. In order to explore how leaders effectively deal with the adaptability-efficiency paradox, we have conducted a qualitative study in project-based organizations. The context of project-based organizations have proven to be a fitting environment in which to study the role of leaders in dealing with this paradox as our results show leaders clearly experience these paradoxical demands and enact a number of leadership strategies and practices to deal with them.

Though we have sampled our interviewees from a wide variety of project-based organizations, our limited sample prevents us from claiming these results are applicable to all project-based organizations. In addition, future research is needed to assess whether these results are generalizable to other types of organizations. Using semi-structured interviews to gather data also has limitations. Interviews only get at what the respondents can remember and choose to share in a period of approximately one hour. Long-term observation can reveal more ways in which leaders indirectly

enable the organization to deal with complexity.

The results show the leadership strategies and indirect practices aimed at harnessing both adaptability and efficiency. Future research is called for to further explore leadership strategies, and both direct and indirect leadership practices in enabling both adaptable and efficient organizational processes. In addition, as the impact of complexity leadership on long-term effectiveness cannot be proven by this method, future research could delve deeper into the effects of these leadership practices on complexity of representations, complexity of responses, efficiency, adaptability, success of the project and sustainable success of the organization. Specifically, future research could illuminate the effects of different configurations of semistructures and their adaptations over time. More research is needed to assess the extent to which complexity leaders are conscious of the adaptive balancing act within the complex adaptive systems in which they work, and their effects on it.

4.3 Conclusion

To conclude, studying leadership through a complexity lens opens up relevant pathways to advance our understanding of the role of leaders in harnessing adaptability and efficiency. We have explored this role empirically in project-based organizations. Complexity leaders in project-based organizations already seem to implicitly understand much of the dynamics needed to adaptively balance efficiency and adaptability. However, further research is needed to help us continue to uncover these important leadership dynamics, and guide complexity leaders as they engage in their constant balancing act of managing efficiency and adaptability to approach requisite complexity in organizations.