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Facilitating ambidexterity of efficiency and flexibility in project-based organizations: An exploratory study of organizational antecedents

Abstract

Through an exploratory multiple-case study in the context of project-based organizations in China, this study aims to identify the antecedents that facilitate three prevalent types of ambidexterity, namely, structural, sequential and contextual ambidexterity. Seven case studies with 76 qualitative interviews were held to understand and theorize the phenomenon. The results show that unpredictable and changing environments set the enabling context for ambidexterity, while design choices involving dimensions of structure, processes, empowerment, rewards and human resource policies serve as structural antecedents. The managers and employees who respectively behave in supportive and initiative ways finally trigger different types of ambidexterity.

Keywords

Ambidexterity; Project-based organization; Efficiency; Flexibility; Antecedents

Introduction

Strategy and organization theorists have noticed that the high performance of modern business in dynamic environments is anchored in its capability to be good at both efficiency and flexibility (Teece, 2007; Eisenhardt et al., 2010). In general, the pursuit of flexibility has been connected with organic structures reflecting loose coupling and improvisation, while obtaining efficiency is assumed to be associated with mechanistic structures, reflecting tight coupling, routinization, control, and bureaucracy (Schreyögg & Sydow, 2010). The differences lead to different regulations, and organizations that use both arenas for actions are therefore likely to encounter tensions (O'Reilly & Tushman, 2013). Researchers have explored the challenges of balancing these competing activities and proposed alternative approaches for addressing the tensions (Raisch et al., 2009; Simsek et al., 2009). Organizational ambidexterity appears to be one such topic.

Ambidexterity is defined broadly as a firm's capability to simultaneously perform competing activities in a trade-off situation (O'Reilly & Tushman, 2013). For the purpose of the present study, we take ambidexterity as the capability to respond to the changing environmental demands in a flexible way while also maintaining efficiency in current operations, that is, simultaneously pursuing both efficiency and flexibility. Over the past decades, the way in which ambidexterity is achieved has been discussed by a variety of studies in organization theory (Birkinshaw & Gupta, 2013; O'Reilly & Tushman, 2013). Structural ambidexterity, sequential ambidexterity and contextual ambidexterity are the three most prevalent types of organizational ambidexterity in existing research (Benner & Tushman, 2003; Raisch et al., 2009; Gibson & Birkinshaw, 2004). However, these studies are mostly rooted in the area of general management based on the practice of traditional industrial enterprises.

As Turner et al. (2015) have argued, the conceptualizations and theoretical arguments derived from

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a universal organizational context are insufficient to explain the experience in a specific setting of the newly emerging organizations. With increasing complexity and environmental turbulence, highly flexible and fluid organizational forms are emerging (Schreyögg & Sydow, 2010). The pressures for these organizations to meet conflicting demands of efficiency and flexibility have escalated (Eisenhardt et al., 2010). A knowledge of what the three types of ambidexterity truly mean and how they are achieved in terms of efficiency and flexibility in such new organizational forms is critical for both the research and practice fields. This is the knowledge gap that we focus on in the present paper. We take the project-based organizations (PBOs) as the specific context to further the understanding of structural, sequential and contextual ambidexterity in terms of efficiency and flexibility.

The PBO is regarded as an emerging flexible form to overcome traditional barriers faced by most organizations (Hobday, 2000). Compared with traditional organizations that are more dedicated to systematic processes, the focus of PBOs is more on unique and temporary tasks that provide the opportunity to mobilize resources and capabilities (Bakker et al., 2013; Lundin & Söderholm, 1995). PBO's fluid, temporary nature and membership of interorganizational networks, alliances and partnerships have been considered as critical to the generation of flexibility (Manning & Sydow, 2011). Meanwhile, efficiency considerations expecting repetitive actions typically rely on standardizing and normalizing the best practice across projects (Eriksson, 2013; Liu & Leitner, 2012). Generally, the existing theory for explaining the tensions between efficiency and flexibility in the ambidexterity literature does not account for the context of PBOs, which is more flexible and adaptable than other forms of organizations. As the nature of the organization has shifted, antecedents

that influence, enable and facilitate ambidexterity could be quite different. From this we formulate the following research questions:

RQ1: *What do structural, sequential and contextual ambidexterity of efficiency and flexibility actually mean in PBOs?*

RQ2: *How are these three types of ambidexterity achieved; specifically, under which antecedent conditions can the different types of ambidexterity be facilitated and enabled in PBOs?*

Overall, we highlight the relevance of the prevalent enabling mechanisms of ambidexterity in the traditional organizational literature. We note that the identification of these antecedents will provide an opportunity to elaborate how PBOs address the challenges of efficiency and flexibility and to specify how ambidexterity is achieved in a project-based working context. This leads to the potential contribution that connects the more general theoretical arguments of ambidexterity with the realities of new forms of organizations in dynamic environments.

Literature review

Organizational ambidexterity: Trade-offs, prevalent types and antecedents

In his foundational work, March (1991) identified the tension between the twin requirements of exploration and exploitation. Building on this seminal article, ambidexterity has emerged to describe firms that are able to both exploit and explore (Simsek et al., 2009). Over several decades, there has been an explosion of research on the challenge of balancing paradoxical activities in organizations (Birkinshaw & Gupta, 2013; Garcia-Lillo et al., 2016). As Birkinshaw and Gupta (2013) suggested, “a central part of what firms do is to manage the tensions that exist between competing objectives”; that is, organizations always try to pursue some form of ambidexterity. The concept of ambidexterity

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has been extensively used to broadly refer to an organization's ability to address two competing objectives equally well (Raisch et al., 2009; Raisch & Birkinshaw, 2008). These contradictory activities and the resulting core trade-offs have varied from exploration and exploitation (Benner & Tushman, 2003), search and stability (Rivkin & Siggelkow, 2003), adaptability and alignment (Gibson & Birkinshaw, 2004), profitable and sustainable (Eccles et al., 2014), efficiency and flexibility (Schreyögg & Sydow, 2010), and too little and too much structure (Davis et al., 2009).

Among these contradictions, the trade-off between efficiency and flexibility is one of the enduring topics in organizational research. Thompson (1967) marked it as "a central paradox of administration". March (1991) noted that exploration involves flexibility, risk taking, experimentation, discovery and innovation, whereas exploitation involves efficiency, selection, implementation and execution. Similarly, He and Wong (2004) highlighted that exploration is associated with flexibility, organic structures, autonomy and frequent change, whereas exploitation is associated with efficiency, mechanistic structures, routinization of processes, and control. In general, efficiency and flexibility stand for different organizational design strategies that are respectively in favor of the achievement of exploration and exploitation (Turner et al., 2013). Most of the time, managers must choose whether the organization is to be designed for routine and repetitive tasks or for nonroutine and innovative tasks (Adler et al., 1999). However, from an ambidexterity perspective, firms are able to perform in both efficient and flexible ways simultaneously (Volberda et al., 2012).

As the resolution of these core trade-offs requires very different organizational support, capabilities, and culture, the achievement of ambidexterity is a rather complex challenge for firms (He & Wong, 2004). To navigate through these challenges, prior literature has suggested multiple

paths to ambidexterity. In the review of the current state of the ambidexterity research, O'Reilly and Tushman (2013) highlighted that structural, sequential and contextual ambidexterity have been extensively employed as a framework of approaches to achieve ambidexterity. These three types of ambidexterity have been widely recognized as the most prevalent types of ambidexterity by scholars (Awojide et al., 2018; Eriksson, 2013; Jansen et al., 2012; Wang & Rafiq, 2014).

Structural ambidexterity is grounded on the spatial separation of organizational units, which are each equipped with one of the paradoxical activities (Benner & Tushman, 2003). Sequential ambidexterity proposed a dynamic approach of temporal separation through punctuated changes during phases of exploration and exploitation (Raisch et al., 2009). Contextual ambidexterity aims to simultaneously pursue paradoxical activities within one business unit. This is achieved by building a supportive organizational context that encourage individuals to make their own judgments as to how best divide their time and efforts between the conflicting demands (Gibson & Birkinshaw, 2004). The organizational context can be broadly defined as the processes and systems as well as the underlying values and norms promoting individuals' ambidextrous behaviors (Wang & Rafiq, 2014). Contextual ambidexterity places a premium on the agency of individuals in making ambidexterity possible (Burgess et al., 2015). Essentially, contextual ambidexterity can be viewed as a behavioral approach, where managers and employees are expected to think and act in ambidextrous way to integrate both exploration and exploitation (Awojide et al., 2018).

To achieve these different types of ambidexterity, the literature emphasizes antecedents that influence, enable and facilitate ambidexterity. Raisch and Birkinshaw (2008) explicitly emphasize that organizational structure denotes an important antecedent to organizational ambidexterity. From a structural view, several structural antecedents of ambidexterity have been recognized, such as the

team-based structures, strategy-making processes, reward systems, human resource practices, work flows and routines, facilitating the simultaneous pursuit of incremental and discontinuous change (Jansen et al., 2012; Simsek et al., 2009; Tushman & O'Reilly, 1996). Based on these structural arrangements, organizations are supposed to establish administrative mechanisms that foster the employees' ambidextrous behaviors (Gibson & Birkinshaw, 2004). Some recent studies have suggested the behaviors of employees and managers are more likely to be conducive to ambidexterity (Laplume & Dass, 2015). Junni et al. (2015) demonstrate the positive role of employee orientation, cognition, and personality in ambidexterity. Others focus on the critical role of managers, for instance, García-Granero et al. (2018) prove that top management's shared responsibility and cognitive trust are positively linked to ambidexterity; Awojide et al. (2018) argue that ambidexterity is enacted by managers through using cultural resources for specific behaviors. Both of them highlight the supportive role of managerial actions in facilitating ambidexterity. Considering the different roles of employees and managers that enable ambidexterity, Turner et al. (2016) argue that employees with specialist knowledge about their clients use 'gap filling' to initiate ambidexterity, while managers are more likely to use 'integration', 'role expansion' and 'tone setting' to enable ambidexterity.

Beyond establishing a supportive structural and behavioral context, extant research has also highlighted contextual explanations. Jansen et al. (2006) have examined the impact of environmental dynamism on realizing ambidexterity, and Han et al. (2001) have discovered that a high level of technological orientation facilitates ambidexterity. In line with the prior literature, the structural, behavioral and contextual dimensions constitute the framework of the antecedents of ambidexterity in this study.

The interplay between efficiency and flexibility in PBOs

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Project-based organizations (PBOs) are conceived as an emerging flexible form to overcome traditional barriers faced by most organizations (Hobday, 2000). Every project is considered as a temporary and relatively short-term phenomenon (Turner & Müller, 2003). PBOs' flexible configuration enables them to react timely to diversified and changing customer demands (Bakhshi et al., 2016). The emphasis is more on diversity, adaptability and flexibility than on similarity, routinization and efficiency. Through this, PBOs make themselves somewhat more immune to inertial processes, counteracting the development of "core rigidities" (Lindkvist, 2008). However, several studies have reported different voices. Keegan and Turner (2002) argue that the pursuit of efficiency in a project context is at the expense of flexibility and reveals that the emphasis on the importance of project control systems stifles innovation. Eriksson et al. (2017) imply various cognitive "rules of thumb", such as availability and familiarity heuristics facilitate the design of structures and routines in a temporary organization. Mitrev et al. (2017) analyze how projects 'imitate' each other and suggest that strong isomorphic processes and coercive measures might be preferred in projects.

From an ambidexterity perspective, we conceive of the PBO as a flexible and responsive form of organization and meanwhile highlight the efficiency considerations to gain sustainability. As several authors have mentioned (Schreyögg & Sydow, 2010; Eisenhardt et al., 2010), "efficiency requires a bureaucratic organization with high levels of standardization, formalization, specialization and hierarchy; but these characteristics restrict the process of mutual adjustment, which is needed for flexibility". In the context of PBOs, the nature of efficiency and flexibility is affected by the unique characteristic of PBOs. First, PBOs' customer focus is more on task compared to other forms of organizing (e.g., permanent organizations) that are more dedicated to systematic processing (Bakker et al., 2013). Second, due to projects' limited duration, PBOs do not carry forward irreversible

resource commitments, thereby increasing the resource flexibility (Sydow et al., 2004). Third, PBOs are based upon an interorganizational network involving individual firms with diverse strategies and business models in the delivery of project business, which provides the possibility to mobilize resources and capabilities in a larger scope in flexible ways (Wikström et al., 2010; Manning & Sydow, 2011).

As a central topic in traditional management research, the interplay between efficiency and flexibility and related ambidexterity issues have attracted the attention of scholars in the project management. Geraldi (2008, 2009) proposes a model to map order and chaos in a multiproject context based on the fit between the complexity and flexibility of organizations, thereby allowing for a more holistic view of project organizational design considering efficiency and flexibility issues. Liu and Leitner (2012) focus on the simultaneous pursuit of efficiency and innovation and verify that an ambidextrous project team has a significant influence on project performance. Brady and Maylor (2010) identify the existing paradoxes in the world of projects, i.e., raising control and predictability while reducing flexibility, and reflect on the role of exploring these tensions in building theories of project management. Turner and his colleagues devote themselves to the research of ambidexterity in projects and advance the literature on the mechanisms by which ambidexterity is achieved in projects (Turner et al., 2015; Turner et al., 2016). Pellegrinelli et al. (2015) describe how organizational ambidexterity is achieved through the complementary use of programs and projects. More recently, Davies and Brady (2016) explain how organizations develop dynamic capabilities to balance routine and innovative tasks in complex projects. Sohani and Singh (2017) examine ambidexterity in the "within" project level and the "between" projects level; Lee-Kelley (2018) applies the ambidexterity theory in the development of project management staff.

After we reviewed and synthesized the enabling mechanisms for achieving ambidexterity in the existing literature, we employed structural, sequential and contextual ambidexterity as three types of ambidexterity to be studied in this paper. We aim to specify the potential states of these three types of ambidexterity in the context of PBOs while identifying the antecedents of different types of ambidexterity, which responds to Turner et al.'s (2013) call for research to understand the nature and mechanisms enabling different types of ambidexterity in the new setting. In line with the prior literature, we propose that these antecedents can be identified from contextual, structural and behavioral levels.

Methodology

We choose the research approach and strategy regarding our research questions, and subsequently make our choice of data collection techniques and analysis procedures. Given the limited theories available, and the goal of exploring the organizational antecedents that facilitate the particular types of ambidexterity in a new setting (PBOs), we adopt an abductive approach that integrates the deductive insights from existing concepts, theories and the inductive insights emerging from the data collected in the case-study interviews (Müller et al., 2018; Alvesson & Kärreman, 2009). The strategy of multiple case analysis is employed to obtain a rich understanding of the context in which our research question is embedded. Case study is a comprehensive research approach that investigates a phenomenon in its real world context, and multiple case study enables the replications and contrasts among a set of cases, thereby leading to an extension of emerging theory (Yin, 2013).

The context for this study is project-based organizations in China. The selection of cases follows the principle of “theoretical sampling”, in which multiple cases are chosen based on three questions:

(1) whether the firm perceives itself to be project based, (2) whether the firm faces the paradox of efficiency and flexibility, and (3) how is the performance of project management with regard to efficiency and flexibility. Through these three questions, we select firms that belong to the category of PBO, and make preliminary judgment about the relationship of flexibility and efficiency in these firms' business operation, to ensure that the selected cases cover all potential types of ambidexterity.

We selected those cases in line with our definition and research questions, and sampled extreme cases to identify contrasting patterns or trends in the data (Eisenhardt & Graebner, 2007). As shown in Table 1, seven cases were selected from three industries: manufacturing, construction and service, which were considered as the top three industries for undertaking projects. Meanwhile, the size of these firms were supposed to cover small ($0 < \text{employees} < 100$), medium ($100 \leq \text{employees} < 1000$) and large ($\text{employees} \geq 1000$) scale. The richness of case firms in industries and sizes would help us to capture the whole picture of tensions between efficiency and flexibility in PBOs, and therefore help to raise the generalizability of emerging findings. In all these firms, project management was used for more than 6 years, and the percentage of total annual revenue earned from projects were above 80 percent. We reached agreement with the seven firms for long-term in-depth interviews.

Table 1. Summary of the seven cases

	Case A	Case B	Case C	Case D	Case E	Case F	Case G
Industry	Service	Construction	Manufacturing	Service	Manufacturing	Construction	Service
Business Scope	Design and consulting for harbor engineering	EPC services for modern coke-making and refractory-making plants.	Design and manufacture of plastic and rubber product lines	Business process outsourcing, IT support and other services	Manufacturing Development and manufacture of LED chips	EPC services for petrochemical engineering construction	Integration services for full life cycle in Internet industry
Employees	80	720	3000	1350	500	2500	36
Years of PM	8	7	6	12	6	12	6

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% Annual revenue from projects	>90%	>90%	>90%	>90%	>80%	>90%	>90%
Project performance	Good	Good	Poor	Excellent	Good	Excellent	Excellent
Performance of efficiency & flexibility	Extremely high flexible	Good performance in efficiency	Low efficiency not flexible either	Both flexibility and efficiency are good	Different performance in two units	Integrated efficiency and partial flexibility	High efficiency and flexibility

From early 2012, we started data collection in three areas: (1) qualitative data from 76 semistructured interviews in the seven firms, (2) archival documents, including company websites, publications, and materials provided by participants, and (3) field visits, observations and participation in internal meetings. The semistructured interviews were held face-to-face by three of the researchers per interviewee. The interviews lasted 50-90 minutes, and notes were taken by the researchers. All interviews were recorded with permission and transcribed within 12 hours. Other sources of data were also sought and are shown in Table 2.

Table 2. Summary of data source

	Interviews Number	Interviewees	Archival data	Observation data
Case A	12	HR Manager, Project Managers, Project Members, QA staff	Public information online; Publications	Field visit
Case B	15	Deputy Manager, Project Managers, Project Members, Procurement Manager	Public information online; Publications	Project meeting; Daily meeting
Case C	10	General Manager, Project Managers, Project Members, Process Manager, Research staff	Public information online; Cases	Project meeting; Daily meeting
Case D	10	Project Managers, Project Team Members, Operation Manager, HR Specialist	Company websites; Internal files	Field visit
Case E	10	General Manager, Project Managers, Project Members, Operation manager and staff	Public information online; Publications	Field visit
Case F	12	General Manager, Regional Managers, Project Managers, Project Members	Public information online; Internal files	Daily meeting; Field visit
Case G	7	General Manager, Project Managers, R&D Manager, Project Members, R&D Members	Company websites; Internal files	Project meeting

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Four categories of interviewees were selected, namely, managers and nonmanagers in project and line organizations. This diversification ensures a comprehensive understanding of the phenomenon and avoids common method biases caused by single sources of data. Data collection was conducted following the case study protocol prepared beforehand through semistructured interviews. The interview guide mainly comprises questions including participants' roles and responsibilities in the organization, and his/her understanding of the efficiency and flexibility performance in the organization. The participants were asked to specify how they handled efficiency and flexibility in projects and daily working, as well as to describe the characteristics or events reflecting their views. Participants were also encouraged to analyze the existing problems and give comments on the forming conditions. Finally, we complemented our interviews with collecting archival sources, following up with emails and calls to fill in missing details and by observing organizational behaviors in the meetings and office area. This triangulation of data provides strong evidence and strengthens our confidence in the accuracy of the findings.

For data analysis procedures, we began with within-case analyses, focusing on describing the nature of the efficiency and flexibility experienced by each firm, positioning their states of ambidexterity and identifying the potential antecedents. Subsequently, cross-case analysis was used to highlight the similarities and differences among cases and different types of ambidexterity, determine the common patterns in enabling factors for each type of ambidexterity, and finally develop the framework of organizational antecedents underlying the achievement of ambidexterity of efficiency and flexibility. Data coding was conducted in four steps: (1) building the database, which includes the interview transcripts, observational, and archival data while indexing the data by source type, interview number and question number; (2) reviewing the database and forming a preliminary understanding of each case; (3) selecting, simplifying and abstracting the data in light of depicting the performance of efficiency and flexibility as well as the antecedents enabling this outcome, and

subsequently listing them in tables; and (4) coding by three independent researchers, categorizing and classifying data, looking for intragroup similarities and intergroup differences, and eventually discovery emerging patterns. For inter-coder reliability, three researchers read the data separately to form independent views, and then we synthesized these views to develop preliminary patterns and a rough theoretical explanation. We conducted independent coding checks over time and asked three independent coders to match their codes with a sample of informants' quotes or phrases taken directly from the raw data to discern the major concepts of interest (Clark et al., 2010). The level of agreement on codes was 89 percent. Disagreements across the researchers were discussed until we achieved consensus.

Overall, we collected multiple sources of evidence and triangulated interview data with observations and archival data to establish construct validity. Pattern matching and cross-case synthesis during data analysis were used for developing internal validity, and the replication logic in a multiple case design was used for external validity. Reliability was ensured by the use of a case study protocol and developing a case study database.

Data analysis and results

Different types of ambidexterity in PBOs

We analyzed the database for individual firms to identify how efficiency and flexibility are being performed in PBOs and which types of ambidexterity they belong to. To this end, two groups of questions were used: First, to address the generic meaning of efficiency and flexibility (Koontz & Weihrich, 1990) and the related literature in project management (Geraldi, 2008; Liu & Leitner, 2012), we assessed efficiency through questions on the extent to which a firm makes good use of resources and avoids wasting time or money in delivering projects, while being flexible in terms of the ability to provide diverse products or services and respond to changing requirements quickly. Second, based on the questions about the way in which firms realize efficiency and flexibility, we aligned seven

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case firms with the three types of ambidexterity, namely structural, sequential and contextual ambidexterity. Unfortunately, Case C doesn't belong to any of these three types, because of its low efficiency and low flexibility. The results show that there is a large difference in the performance of efficiency and flexibility in the seven cases. The evidence supports the performance scale of high/low efficiency and high/low flexibility, as well as the ways of achieving efficiency and flexibility. Parts of the evidence from the data coding are shown in Table 3.

The cases show that PBOs achieve structural ambidexterity through spatial separation between functions and project units (Case B) or different types of project units (Case E). The former is supported by Adler et al. (1999), while the latter is a new insight in explaining structural ambidexterity. In Case E, the difference between two project units lies in the different level of novelty of the projects. One of its project manager stated: *Projects handled by these two business units are completely different. One unit takes care of products that can be manufactured in batches stably, and the other unit has to design and develop based on clients' requirements accordingly...Therefore, the requirements are different for the two units.*

Table 3. Evidence for identifying ambidexterity types of seven cases

	Evidence from interviewees		Comments on ambidexterity types
	Performance of efficiency and flexibility	Approaches of efficiency and flexibility	
Case A	<ul style="list-style-type: none"> • Efficient working inside the project team • High performance in satisfying customers 	The project team is able to act both efficiently and flexibly.	Contextual
Case B	<ul style="list-style-type: none"> • Enhancing efficiency through formalizing different functions • A particular unit for bridging clients and inside project working 	Functions are important for efficiency and project unit for flexibility.	Structural
Case C	<ul style="list-style-type: none"> • Slow response to clients' new requests • Great cost in coordinating across different functional divisions 	Cannot deal with flexibility and efficiency simultaneously	Non-ambidexterity

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Case D	<ul style="list-style-type: none"> • Best practice, standardizing the process • Providing the customized service well 	Earlier project stage for flexibility, later operation stage for efficiency	Sequential
Case E	<ul style="list-style-type: none"> • Operation efficiency is guaranteed. • Adaptive culture for changing environment 	Two business divisions operating two different types of projects	Structural
Case F	<ul style="list-style-type: none"> • High performance in project results • Responding to clients timely 	Different projects may be expected for different objectives.	Sequential
Case G	<ul style="list-style-type: none"> • Effective project management systems • Strong environment adaptiveness 	Relying heavily on the adaptive staffs	Contextual

Case D and Case F are concluded as showing sequential ambidexterity, which is achieved through temporal separation between different stages of the project life cycle (Case D) or organizational development life cycle (Case F). As Case D mainly provides outsourcing services, they put more efforts on the needs and feedback of clients' at an early stage of the projects. Once the clients' needs are identified and structured, the firm operates the project with low input but high efficiency. Therefore, the firm focuses more on flexibility in the early stage but more on efficiency in the later stage of the project. Case F presents a different scenario, as stated by Case F's general manager: *When the firm encounters projects that can be used to develop new clients, the firm will try its best to meet clients' needs at all costs. When handling conventional projects, they will again emphasize the input output ratio.* These findings provide the practical scenario for a better understanding of the temporal sequencing of different periods in managing contradictory activities (Geraldi, 2008; Raisch et al., 2009).

Contextual ambidexterity is achieved in Case A and Case G, in which the importance of project teams is highlighted, and both of these firms benefit from the employee's adaptive behaviors and good performance. As stated by Case G's project manager: *We believe our team members can make choices between coherent business activities and reconfiguring these activities to meet the specific task context.* It shows that provided with a trusting and supportive context, a single project team could

be a possible unit to examine ambidexterity, where individual employees balance efficiency and flexibility simultaneously. These findings are in accordance with the main idea of contextual ambidexterity in the extant literature (Gibson & Birkinshaw, 2004).

Antecedents for achieving ambidexterity of efficiency and flexibility in PBOs

Through investigation of the cases, we focused on the antecedents that influence, enable and facilitate the choice of different types of ambidexterity in PBOs in terms of contextual, structural and behavioral levels. Data analysis involved initial coding and a second-cycle coding for pattern identification, and the extant literature was also employed to refine our emergent theoretical framework. We carried out repeated iterations until theoretical saturation. The process and results are shown in Table 4.

Table 4. Coding process and results of antecedents for achieving ambidexterity in PBOs

	Representative Informant Quotes	1st-Order Terms	2nd-Order Themes	Aggregate Dimensions
Contextual level	<p>“Customers’ demands move toward diversification and customization. It pressures us to become more efficient and flexible.”(Project manager, Firm A)</p> <p>“Affected by the global economic and regional policies, unpredictable factors are on the rise. We should be ready to respond to different situations.” (Regional manager, Firm F)</p>	<ul style="list-style-type: none"> • Calling for timely response to personalized services • Fast changing environment of competition • Continuity and predictability of the development of manufacturing technology • Projects with high uncertainty and ambiguity 	<ul style="list-style-type: none"> • Changing and diversified requirements • Technology update rate • Environmental uncertainty 	<ul style="list-style-type: none"> • Rate of change • Unpredictable
Structural	<p>“The firm is equipped with a strong</p>	<ul style="list-style-type: none"> • Strong matrix organization 	<ul style="list-style-type: none"> • Functions and 	<ul style="list-style-type: none"> • Structure

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level	<p>project manager group and different functions of professionals. The cooperation of these two groups lead to the coexistence of efficiency and flexibility.” (Internal files of Firm G)</p> <p>“The project team has autonomy in fulfilling the clients’ demands and their performance are related to their rewards, which promotes the employees to work actively.” (General manager, Firm A)</p> <p>“We are expected to follow the rules to keep efficiency. However, still, we have authority to tailor the standards to satisfy changing requirements.” (Project members, Firm E)</p> <p>“In the project meeting, we get a good feeling for the positive, enjoyable team atmosphere. They work together to seek solutions proactively.” (The records of observation in Firm D)</p>	<p>with project teams and functional divisions</p> <ul style="list-style-type: none"> • Standard procedure to minimize the change factors • Every project has a tailored plan. • Emphasis on the expertise and skills of the personnel • Differentiated incentive measures related to project performance and individual performance • Giving more authority to the project team for daily operation while strategic decision is centralized 	<p>project team</p> <ul style="list-style-type: none"> • Standards and project plans • Rewards system • Performance evaluation • Centralization and decentralization • Professional skills 	<ul style="list-style-type: none"> • Process • Human resource • Rewards • Empowerment
Behavioral level	<p>“What we need to do is set the direction and provide support for the project teams.” (Deputy manager, Firm B)</p> <p>“Top managers must maintain an open awareness of changes and make quick decisions.”(General manager, Firm C)</p>	<ul style="list-style-type: none"> • Project members actively seek new methods for new problems. • Good coordination across temporary project teams • The executive team makes timely adjustments to the changing environment. • The manager provides support and trust. 	<ul style="list-style-type: none"> • Initiative of project team • Managers’ flexible decisions • Supportive leaders 	<ul style="list-style-type: none"> • Employees’ initiative behaviors • Managers’ supportive behaviors

The enabling context for different types of ambidexterity

Data analysis shows that the common concern in enabling contexts for achieving ambidexterity in PBOs involves two dimensions of environment, namely, the rate of change and unpredictability, which are generally used to define the concept of environmental dynamism in the existing literature (e.g., Fiss, 2011). Rate of change refers to the changing speed in project deliveries, products or services, as well as the requirements from the clients and environment. Although the environment may be changing rapidly, these changes may nevertheless be fairly predictable (Fiss, 2011), such as

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the changing requirements of similar elements in projects. Unpredictable environments are defined as ones with high uncertainty; thus, managers cannot anticipate effectively what will occur (Eisenhardt et al., 2010). For example, technology updates may bring about unpredictable changes.

Specifically, for the environment of structural ambidexterity, the interviewees emphasized the uncertainty of the future development of the industry, which pushes the firms to prepare for it in advance. Therefore, the firms need to handle projects with different levels of innovation. In Case E, some of the projects are somewhat repetitive, and others are innovative. In Case B, one of the main functions of the PMO (project management office) is catching the market trends in new technologies and products. However, for those repetitive divisions in these two cases, the environment of the business is more stable. It can be regarded as an unpredictable yet slowly changing type of environment. The operation manager of Case E gave the following explanation: *Our company has two business divisions: one is to address future changes, and the other is to meet the current needs.*

The results of Case D and Case F show that the suitable environment for sequential ambidexterity is that the development track of the project or organization is somewhat predictable whereas changes are very common due to the diversified and personalized requirements. However, it rarely involves radical changes. We define this type of environment as changing rapidly yet predictably. For example, Case D provides quite mature services and has accumulated rich experience in this area for more than ten years. Overall, the uncertainty of the environment is very low. Meanwhile, Case D is constantly facing many types of needs from customers and needs to update their service quickly. As the regional manager from Case F stated: *Changes exist, but they are similar.*

Case analysis show that the environment of contextual ambidexterity is the most dynamic one, which we refer to as highly unpredictable and rapidly changing. In their fast changing industrial environments, full of competition, Case G and Case A face many competitors under extremely high pressure. The General Manager of Case G believed that: *Any success is temporary, and there is no ever-victorious champion under circumstances of hypercompetition.* Fierce competition forced the

enterprise to perform well in multiple dimensions simultaneously. It not only has to maintain critical factors affecting the development of the organization such as cost and quality but also needs to be more careful with factors such as speed of response and adaptability to the environment.

In contrast, the case study shows that if the pressure from the environment is not as high, it will not be very easy or attractive to pursue ambidexterity in companies. For example, Case C remains in a relatively slowly changing and predictable environment because of the resource monopoly. As mentioned by the General Manager of Case C: *The switching between different efforts for efficient and flexible working comes at a price; the organization must consider the cost and benefit behind such a decision.* Therefore, firms start to consider to pursue efficiency and flexibility simultaneously only when they are in a context that creates strong demands for both efficiency and flexibility.

The structural conditions underlying different types of ambidexterity

As has emerged from the data, the organizational dimensions of structure, process, human resource, rewards and empowerment are found to be critical for achieving ambidexterity of efficiency and flexibility in PBOs. These dimensions have covered most of the design elements in the organization design literature, such as the design of PBOs from Miterev et al. (2017).

In Case B and Case E, where structural ambidexterity is achieved, the common pattern of enabling factors lies in the design of the organizational structure and process. Both of their structures embrace two differentiated parts. Case B sets up the PMO as a bridge for connecting the project working internally with the market and clients while relying on the functional departments to complete tasks in different fields. In Case F, two business divisions were operating two different types of projects, one using relatively mature technology to carry out repetitive projects, and the other using new technology for innovative projects. While different structures separate the targets and resource for achieving efficiency and flexibility, the integrative processes are suggested to be equally important for the achievement of structural ambidexterity by the interviewees. One of the project

managers in Case E said: *There are many shared processes between our two departments. For example, we communicate much based on office systems and do regular experience exchanges...There is also a set of processes for mutual support, evaluation and feedback.* Although they are two departments of different natures, these processes help them to cooperate more closely.

Case D and Case F show that to achieve sequential ambidexterity, the matrix structure and combined processes are of great importance. Case F has a matrixed organizational design with project teams and functional divisions cross-linked, one of which serves as the primary structure and another as the secondary structure in a particular period. The general manager of Case F explained: *We have taken into account both efficiency and flexibility in terms of organizational structure design. The project team guarantees enough flexibility, and when we emphasize efficiency, the functional structure based on specialization of work can play a role.* The operation manager of Case D highlighted the importance of both standardized processes and customized processes: *The process has several standard modules, the costs behind the modules, and the business relevance logic, which is carefully designed by many experts based on experience. The special needs of customers can be realized through a customized process with special modules.* The interviewees believe that matrix structures and combined processes serve as the common foundation when firms switch their focus during different periods.

Data analysis suggests that the contextual ambidexterity of Case A and Case G is not achieved based on structures or processes; instead, they rely heavily on empowerment, rewards and human resource policies. Case G empowers the project team to make most decisions on their own and create the best environment to inspire its employees, while the strategic decisions are centralized. Case A provides its employees with differentiated incentive measures related to project performance and individual performance. An R&D Member stated: *Employees can enjoy the bonus shares of the overall performance in the rapid growth of the firm and can be rewarded for the outstanding performance in the project, which is called a combination of long-term and short-term rewards.* Both

cases emphasize both professional and multiskilled employees, providing various personnel development channels, such as management training and youth overseas training. The General Manager of Case G believes: *The improvement of employees' competency brings the organization flexibility to a higher level.* On this basis, flexibility can be achieved without sacrificing efficiency.

The behavioral factors facilitating different types of ambidexterity

Behavioral factors that promote the ambidexterity of efficiency and flexibility are explored in the study as well. The results show that, for PBOs, two groups of behaviors, which are defined as managers' supportive behaviors and employees' initiative behaviors, play a critical role in the pursuit of the three types of ambidexterity. Managers' supportive behaviors involve the intentions, efforts and actions that top managers or project managers undertake for addressing efficiency and flexibility, such as the integration of activities toward efficiency and flexibility, which has been addressed in the existing literature (Mom et al., 2009). Employees' initiative behaviors are referred to as initiative actions taken by the employees to balance the capacities of efficiency and flexibility and adjust themselves in line with changing requirements, which is similar to the specific actions of individuals discussed in the contextual ambidexterity literature (Gibson & Birkinshaw, 2004). Interestingly, each of the three ambidexterity types is associated with different behaviors.

For structural ambidexterity, top managers' coordinative and integrative activities of separate units are suggested to be the most important promoters. Interviewees refer to high tolerance for ambiguity and unpredictability as beneficial attributes of top managers, and thus, they could take risks to separate the firms into differentiated parts. One employee group works on mature products, and its members devote themselves to seeking more efficient and low-cost ways, e.g., the Normal production section in Firm E; and another group is innovative and continuously develops new products, e.g., the Flip-chip section in Firm E. They are heterogeneous but they can complement and help each other with the integration of top management. As the procurement manager of Case B suggested: *The most*

important thing follows is how to make this separation sustainable. In these two cases, top management is at the center of decision making, which acts as the “central processing unit (CPU)” responding to the changes in the environment and client demands. Resource integration and direct coordination across divisions were highlighted by the General Managers of Case B and Case E. The General Manager of Case E stated: *Most of the time I behaved as a coordinator of different functions.*

In cases of sequential ambidexterity, the supportive behaviors for appropriate variations and flexible decisions are deemed as the most important factors. In Case F where the switching occurs on the organizational level, the executive team plays a leading role in making flexible changes. The General Manager of Case F suggested: *We have more information at the level of decision making and a higher-order thinking and expertise; thus, we are responsible for making the right choice, such as for maintaining a client's relationship, where we might choose to complete the task at any cost.* In this case, the project manager and team members shared this ambition and took care of the client's requirements in the most flexible way throughout the project. Meanwhile, other project teams were also requested to offer support to facilitate the success of the project. Flexibility seemed to overwhelm efficiency during this period in Firm F. Top managers steer the performance of efficiency and flexibility according to the enterprise's strategic goals, and the functional and project teams just follow their decisions. The achievement of sequential ambidexterity depends on the conformity of the goals and actions of different employee groups and managers. For Case D, sequential ambidexterity lies in different stages of their projects, project managers' capability of making timely adjustments, and appropriate variations to changes in the internal and external environment. One of the Project Managers said: *I will follow the management system and best practices that are set by the firm, while I will also tailor the redundant system to avoid affecting the timeliness of customer service.*

In comparison, Case A and Case G stress the critical role of employees (e.g., project members) in achieving contextual ambidexterity. In Case A, information of the changing requirements of clients is mainly controlled by the project team members, who act as the information processors and choose

whether to follow the routines or try out something new according to the situation. One of the project managers said: *In this way, whether the project team can timely respond to and truly report the changes of the environment, probably determines whether the firm can actively address the paradox of efficiency and flexibility.* Similarly, several interviewees in Case G highlighted the importance of the cooperation of different groups of employees, who take the initiative to be on the lookout for changes, opportunities and new problems, and seek solutions accordingly. In Case G, employees from various professional fields worked together in a project team and shared different opinions when solving problems; some argued that they should provide repeatable solutions by recycling the existing modules while others held that new modules were needed to satisfy the specific requirements. This diversity could in turn foster a new solution that integrates flexibility and efficiency. Table 5 summarizes the antecedents for the three types of ambidexterity in PBOs.

Table 5. Antecedents for the three types of ambidexterity in PBOs

Antecedents	Structural ambidexterity	Sequential ambidexterity	Contextual ambidexterity
Contextual level	Unpredictable yet changing slowly	Changing rapidly yet predictably	Unpredictable, changing rapidly
Structural level	<ul style="list-style-type: none"> • Differentiated structures between efficiency units (e.g., functions or repetitive projects) and flexibility units (e.g., innovative projects) • Integrative processes for connecting two separated units, i.e., the processes of communication, cooperation, mutual supports and evaluation 	<ul style="list-style-type: none"> • Matrix structure with both project teams and functional divisions, one of which serves as the primary structure and another as the secondary structure in particular period • Combination of standardized process and customized process (e.g., project plans) 	<ul style="list-style-type: none"> • Combination of centralization and decentralization, empowering the project team to make decisions • Mixed rewards with long-term (e.g., bonus shares) and short-term (e.g., project incentives) • Human resource policies on both professional talents and multiskilled employees
Behavioral level	<ul style="list-style-type: none"> • Two heterogeneous groups of employees work in efficient and innovative ways respectively, and top managers work as coordinator and integrator of these two groups. 	<ul style="list-style-type: none"> • Top managers initiate appropriate variations, and the employees share goals and follow them to make timely adjustments 	<ul style="list-style-type: none"> • Employees with diversified professional backgrounds work together and take the initiative to seek solutions in the face of changes and problems.

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Discussion

The three ambidextrous approaches, namely, structural ambidexterity, sequential ambidexterity and contextual ambidexterity, have been extensively explored in organizational research (O'Reilly & Tushman, 2013). Prior literature has investigated conceptualizations, antecedents, and outcomes of organizational ambidexterity (Birkinshaw & Gupta, 2013; Raisch & Birkinshaw, 2008). However, these studies are insufficient to explain in detail how ambidexterity is achieved in PBOs, in which the focus is more on unique and temporary tasks, and the requirement is from changing business environments.

In the present study, PBOs tend to achieve structural ambidexterity of efficiency and flexibility through spatial separation between functional and project units or different types of project units, which can be regarded as a further explanation and depiction of the mechanisms of spatial separation suggested in much of the existing literature (Benner & Tushman, 2003). For example, Tushman and O'Reilly (1996) propose an organizational structure with a combination of tight and loose coupling, and Gilbert (2005) argues that structural differentiation can help ambidextrous organizations to address two organizationally incompatible objectives. Our insights into the structural foundations, which refer to differentiated structures and integrative processes, correspond well to these ideas. On the behavioral level, the manager's role is to integrate the two groups that focus on efficiency and flexibility respectively. This is in line with the existing literature (García-Granero et al., 2018; Turner et al., 2016). The data analysis reveals that this integration requires much effort from the managers to balance and coordinate in the course of their day-to-day work. In contrast, the ambidextrous behavior of employees is a matter of only making full use of their strengths to work more efficiently or innovatively in their respective business unit. This means that managers' coordination and integration is critical for structural ambidexterity, and this supports the studies on the role of senior managers'

ability to influence the achievement of ambidexterity (Smith & Tushman, 2005). Moreover, the context for this spatial separation has not been discussed in-depth, and we found that in a relatively slowly changing yet unpredictable environment of PBOs, structural ambidexterity might be a viable choice.

Similarly, the findings of sequential ambidexterity have corresponded to much of the ideas in the traditional organization literature while yielding some new insights into the context of PBOs. The results show that the sequential ambidexterity of efficiency and flexibility is achieved through temporal separation between different stages of project life cycles or organizational development life cycles. Particular for the PBO context is that during a time span of a project flexibility-focused and efficiency focused activities may be conducted sequentially. This is supported by (Geraldi, 2008) who highlighted the influence of the project-life cycle on the challenges of different degrees of flexibility in multiproject firms. All of the structural antecedents that refer to a matrix design and combined processes, as well as the behavioral factors of top managers in supporting appropriate variations and making timely adjustments are supported by the existing literature (Duncan, 1976; Lubatkin et al., 2006). The findings show that in sequential ambidexterity, the managers have to take account for choosing efficiency-centered or flexibility-centered strategy considering the changing internal and external environment. Once the decision is made, employees need to adjust their behaviors to follow the managers to accomplish the goal. This type of ambidextrous behavior is undertaken on the basis of shared goals across the entire organization, which is similar to the insights on a “shared vision” by Wang and Rafiq (2014). The particular type of environment that is referred to as predictable yet rapidly changing is also identified. This can be expected to be a further explanation of the research of Jansen et al. (2006) on the impact of environmental dynamism on realizing ambidexterity.

Two facets of contextual ambidexterity have emerged from the data, referring to the “supportive organizational context” and “those individuals who are encouraged to make their own judgments as to how best divide their time between the conflicting demands”, which is noted as the principle of

contextual ambidexterity by Gibson and Birkinshaw (2004). A supportive organizational context in this study involves a combination of strategy-level centralization and project-level decentralization, long-term and short-term rewards, and human resource policies for both professional and multiskilled employees, and this is in accordance with the ideas of Tushman and O'Reilly (1997), who highlighted the hardware of rewards and decision-making processes, as well as the software of human resource capabilities. Managers' and employees' ambidextrous behaviors are broadly in line with the existing studies of contextual ambidexterity (Swart et al., 2016), in which the role of managers is to create the supportive context, while the role of employees is to take the initiative to be on the lookout for changes and opportunities, and pursue efficient and flexible activities accordingly. Employees are at the center of achieving contextual ambidexterity, which is in line with the statement of Gibson and Birkinshaw (2004). Additionally, the results show that the cooperation of diversified employees with different viewpoints, skills and knowledge will accelerate the achievement of contextual ambidexterity, which can be viewed as a response to the study on the effectiveness of diversity in ambidextrous organizations by García-Granero et al. (2018).

Comparing the three types of ambidexterity, we find that the ambidextrous behaviors of managers and employees are intertwined in achieving ambidexterity. Managers play a more critical role in achieving structural ambidexterity than do employees, while the significance of employees in contextual ambidexterity is greater. The level of efforts managers make to enable ambidexterity are high, medium and low in structural, sequential and contextual ambidexterity, respectively, while in contrast, the level of employees' efforts in facilitating these three types of ambidexterity are low, medium and high. These findings are presented in Table 6. These discussions of ambidextrous behaviors are also well-aligned with calls for study on the ambidextrous dimensions of dynamic capabilities in project-based organizing by Davies and Brady (2016).

Table 6. Comparison of ambidextrous behaviors in the three types of ambidexterity

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	Structural Ambidexterity	Sequential Ambidexterity	Contextual Ambidexterity
Significance/Effort Level of Managers' Ambidextrous Behavior	High	Medium	Low
Significance/Effort Level of Employees' Ambidextrous Behavior	Low	Medium	High

More specifically, our data shows that different employee groups work together to facilitate ambidexterity. For structural ambidexterity, employees from the group working on routine and repetitive tasks and the group undertaking nonroutine and innovative tasks work in complementary ways, and help each other with the integration of top management. For sequential ambidexterity, it depends highly on the conformity of goals and actions of different employee groups and managers during a particular period. Contextual ambidexterity is enabled by the cooperation of different groups of employees. Employees from various professional fields worked together in a project team and shared different opinions when solving problems. The diversity could in turn provide a new solution to integrate flexibility and efficiency.

With regard to the ambidexterity research in the project management literature, this study shares common interest with the studies of Turner and his colleagues (2013, 2015, 2016), although they are conducted in an intellectual capital perspective. First, the antecedents we identified in the present paper are somewhat aligned with the three types of intellectual capital. For example, one of the structural antecedents of contextual ambidexterity is that the human resource policies for both professional and multiskilled employees, which is relevant to the specialist and generalist in human capital of Turner et al. (2016). Second, the identification of antecedents are based on a framework of contextual, structural and behavioral levels, and the combination of different levels have been discussed, which is supported by Turner et al. (2015), who discuss four groups of combination possibilities. However, we have made some progress in two ways: (1) their combinations such as SC+OC have not been discussed in detail, i.e., how is the cooperative and entrepreneurial SC combined with the mechanistic and organic OC? In this regard, we have combined the three levels in

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Conclusion

This paper applies a comparative multiple case study involving seven project-based firms with different experience in managing efficiency and flexibility in China. The scenarios of structural, sequential and contextual ambidexterity of efficiency and flexibility in PBOs have been investigated, in terms of the contextual, structural and behavioral antecedents.

Our first research question is concerned with what the three types of ambidexterity, namely, structural, sequential and contextual ambidexterity, actually mean in the context of PBOs. The results show that PBOs may experience these three prevalent types of ambidexterity as well; nevertheless, the forms of these types of ambidexterity represented in PBOs are slightly different from those in traditional organizations. Specifically, PBOs tend to achieve structural ambidexterity of efficiency and flexibility through spatial separation between functional and project units or different types of project units, while achieving sequential ambidexterity through temporal separation between different stages of the project life cycle or organizational development life cycle. Contextual ambidexterity is achieved in a similar way as suggested in the organizational ambidexterity literature, where the importance of project teams and members is highlighted and ambidexterity is achieved through the employee's adaptive behaviors.

The second research question asks for antecedents and conditions through which the ambidexterity of efficiency and flexibility is achieved in PBOs. The results show that (1) structural ambidexterity is achieved in PBOs in a relatively slowly changing yet unpredictable environment, based on the differentiated structures and integrative processes, and facilitated by top managers' coordinating and integrating, (2) sequential ambidexterity is achieved in PBOs in a predictable yet rapidly changing environment, enabled by a matrix design with the coexistence of a primary and secondary structure as well as standardized and customized processes, and motivated by the adjustment of behaviors from top managers and project managers, and (3) contextual ambidexterity

is achieved in the rapidly changing and unpredictable environment, where the organization is equipped with both strategy-level centralization and project-level decentralization, long-term and short-term rewards, and professional and multiskilled employees; this ambidexterity is promoted by initiative behaviors of project members.

Theoretical implications from this study include deep insight into the nature of ambidexterity in project-based work and an extension of the understanding of how significant a supportive context is for achieving ambidexterity in PBOs. Specifically, we provide a holistic and in-depth investigation into the structural, sequential and contextual ambidexterity of efficiency and flexibility in the context of PBOs. Insights that emerged from this case analysis advances our understanding of the antecedents and conditions for each type of ambidexterity with regard to three questions: (1) What is the supportive organizational structural foundations for achieving this type of ambidexterity? (2) What is an appropriate environment to fit with this type of ambidexterity? (3) How should managers and employees behave to facilitate this type of ambidexterity? Theoretical implications also underlie the multilevel analysis where the combination of antecedent factors of contextual, structural and behavioral levels serve as patterns or profiles of supportive context rather than individual independent dimensions. With regard to this, we highlight the importance of the interactions between different levels of an organization in shaping ambidexterity.

Practitioners could benefit from the guidance on choosing and designing an appropriate ambidexterity approach for managing efficiency and flexibility simultaneously. First, as firms try their best to achieve some forms of ambidexterity, it is suggested that they should first identify what type of organizational context they are in. This study provides a potential framework for self-evaluation considering the environment, organizational foundations and behavioral characteristics. Only when the firms choose the type of ambidexterity that fits with their practical needs, can ambidexterity be more easily achieved. Second, this study can also serve as a guideline for pursuing

the different types of ambidexterity of efficiency and flexibility, such as the appropriate design of structure, processes, or human resource policies.

Further research suggestions come in two forms: (1) Building on a two-by-two typology that categorizes the prevalent ambidextrous approaches, this study offers a novel way of introducing and connecting the established stream of ambidexterity in organizational research into the project management literature. In the present study, we use this framework to study the antecedents of ambidexterity in the context of PBOs, and future studies can apply this in a similar way to the outcomes, performance and other related ambidexterity topics in other new settings of organizations. An important area for future research involves examining the relationships among these three types of ambidexterity and how to combine these different types of ambidexterity in practice. (2) Several organizational design dimensions emerged from the case analysis, such as structure, processes, rewards, and human resources, which correspond well to the emerging research stream in combining the research of project management with an organizational design perspective (Miterev et al., 2017). From a perspective of organizational design, the way in which these design dimensions support ambidexterity in PBOs and other new forms of organizations appears to be worth exploring further.

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Declaration of Conflicting Interests

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