

Resource orchestration for team-based innovation: a case study of the interplay between teams, customers, and top management

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The resource orchestration concept has attracted considerable interest in contemporary innovation research. However, resource orchestration is a manager-centric framework and not all of its components necessarily reflect the value-creation processes of organizations focusing on team-based innovation. Drawing on a single-case study of an innovative Swedish software company, we illustrate the roles of autonomous teams, customers, and top managers in orchestrating resources for team-based innovation. Moreover, we introduce the concept of resource flocculation to describe how key actors co-orchestrate various resource orchestration processes. The study contributes to research on resource orchestration by adapting the model to the conditions characterizing team-based innovation, and to research on team-based innovation by addressing how innovative teams are related to overall resource orchestration processes and, ultimately, organizational innovation outcomes.

1. Introduction

Resource orchestration refers to the processes of structuring a firm's resource portfolio, bundling resources into capabilities, and leveraging configurations of capabilities to generate various organizational outcomes (Helfat et al., 2007; Sirmon et al., 2007, 2011). Recent literature has stressed the importance of orchestrating firm resources to promote innovation (Carnes et al., 2017; Lamont et al., 2018; Candi and Beltagui, 2019; Nemeh and Yami, 2019) by arguing that innovation 'from technological capabilities depends on alignment among activities in the organization' (Candi and Beltagui, 2019, p. 64). According to Carnes et al. (2017, p. 472), resource orchestration provides a structured framework describing 'how firms orchestrate their resources to create innovation', and the resource orchestration

framework has attracted considerable interest in innovation research (Wu et al., 2008; Wright et al., 2012; Carnes and Ireland, 2013; Li and Jia, 2018; Cui et al., 2019).

The resource orchestration framework is based on the resource-based view of the firm (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993), with its roots in strategic management research. Consequently, the role of managers has been central to the resource orchestration literature, for example: Sirmon et al. (2007, p. 287) stated that orchestration 'requires top-level managers to be simultaneously involved in all stages of the resource management process'; Helfat et al. (2007, p. 26) described orchestration as 'a fundamental function of management'; and according to Sirmon et al. (2011, p. 1,390), resource orchestration is about 'explicitly addressing the role of managers' actions'. Although managers play a key role in

top-down-oriented innovation processes, innovation is often achieved by smaller groups at the operational level, and several studies have advocated team-based innovation (Scott and Einstein, 2001; Caldwell and O'Reilly, 2003; Glynn et al., 2010; Patanakul et al., 2012; Somech and Drach-Zahavy, 2013; Robbins and O'Gorman, 2015; Gerrard and Lockett, 2018). Team-based innovation is often achieved through complex interplay between several actors (Edmondson and Nembhard, 2009; Hülsheger et al., 2009), and merely assigning resource-management processes to a specific managerial level (as suggested in the resource orchestration model) (Sirmon et al., 2011) risks overlooking key elements of team-based innovation. Although the resource orchestration framework is useful for understanding the role of resources in innovation, the framework would likely benefit from focusing less on the role of specific, isolated managerial levels when addressing team-based innovation.

In this article, we will examine a highly innovative medium-sized Swedish logistics software company operating in the type of highly dynamic setting that the resource orchestration literature (Helfat et al., 2007; Sirmon et al., 2007, 2011) seeks to address. The company has grown tremendously and is renowned for the high well-being of its employees and for its successful innovation endeavors. It has a highly decentralized organizational structure and is organized around several autonomous teams without team managers. Apparently, this company has been highly successful in its innovative resource-management processes without having an orchestrator involved in 'all stages of the resource management process' (Sirmon et al., 2007, p. 287). By examining how the case company has dealt with its structuring, bundling, and leveraging processes to create innovation, this article aims to develop a resource orchestration framework for team-based innovation.

2. Theoretical framework

2.1. *The resource orchestration framework and the role of managers*

Resource orchestration concerns three overall processes, each comprising three subprocesses (Sirmon et al., 2007, 2011). First, the resource portfolio must be structured, and this process includes the subprocesses of externally acquiring resources, internally accumulating resources, and divesting dispensable resources. Second, resources must be bundled into capabilities by making minor improvements (i.e., stabilizing), enriching current capabilities, or by pioneering processes to develop new capabilities.

Finally, these capabilities must be leveraged using three subprocesses: by mobilization, the necessary capabilities are identified, and by coordination, these capabilities are integrated into capability configurations; these capabilities are then physically deployed in the product market using various deployment strategies. Thus, 'resource orchestration for innovation is a process of arrangement of all enterprise resources and external resources to produce the combinative capabilities and bring these new problem-solving capabilities into use' (Li and Jia, 2018, p. 1,136).

Managers play a central role in resource orchestration, and the seminal publication on resource management by Sirmon et al. (2007) focused solely on the role of top managers in orchestrating resources. Viewing resource orchestration as primarily a top-management issue is also recurrent in the contemporary resource orchestration literature (Al-Aali and Teece, 2014; Baert et al., 2016; Amit and Han, 2017; Carnes et al., 2017; Andersén, 2019; Andersén et al., 2020). Despite increased interest in resource orchestration by middle managers (Chadwick et al., 2015; Greer et al., 2017), the resource orchestration literature is still mainly concerned with managers and not, for example, with teams or front-line personnel. For example, drawing on the role of different managers in strategizing as described by Floyd and Lane (2000), Sirmon et al. (2011) address resource orchestration by top, middle, and operational managers but do not consider the role of nonmanagerial actors. Resource orchestration is thus still a framework mainly used to examine the role of managers, as outlined in the pivotal resource orchestration literature (Helfat et al., 2007; Sirmon et al., 2007, 2011).

2.2. *Innovation and resource orchestration*

The notion that bottom-up initiatives are important for innovation is neither new nor controversial. For example, the role of top management in influencing the strategic and cultural context to promote or direct bottom-up initiatives has been highlighted in the strategy and management literature for decades (Barnard, 1938; Burgelman, 1983), and the role of employee initiatives in innovation has been well researched in the innovation literature in the context of, for example, high-involvement innovation (Bessant and Caffyn, 1997; Bessant et al., 2010) and innovation climate (Bommer and Jalajas, 2002; Popa et al., 2017; Rangus and Černe, 2019). Concerning team-based innovation, much research in this field has focused on the team level by exploring how to foster team innovativeness (Hülsheger et al., 2009; Somech and Drach-Zahavy, 2013; Robbins and O'Gorman, 2015). Other studies have considered

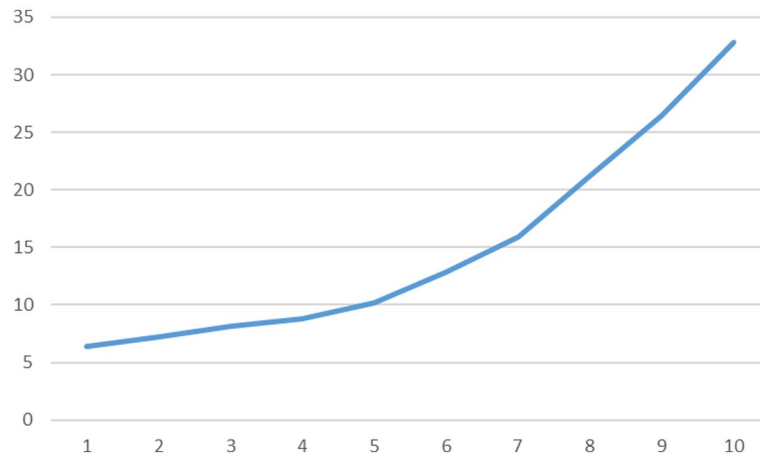


Figure 1. Alpha's turnover growth in MUSD, 2010–2019. [Colour figure can be viewed at wileyonlinelibrary.com]

how team-based innovation can be facilitated by various organizational factors (Caldwell and O'Reilly, 2003; Edmondson and Nembhard, 2009; Büchel et al., 2013). The role of the innovation initiatives of teams with nonmanagerial members has been highlighted in several studies. However, few studies relate team-based innovation to the overall value-creation process of organizations, for example, as outlined in the resource orchestration framework.

Considering the role of non-managers in innovation and team-based innovation, the manager-centric view characterizing resource orchestration risks limiting the applicability of this framework, keeping it from addressing innovation activities in organizations relying on team-based innovation. Nevertheless, the resource-management framework has frequently been applied in innovation studies. Some of these studies have examined how managers orchestrate resources in order to promote innovation (Carnes et al., 2017; Lamont et al., 2018), whereas other studies have focused on resource orchestration processes per se and not the specific roles of managers or other actors involved in the value-creation process (Cui et al., 2017; Candi and Beltagui, 2019; Nemeh and Yami, 2019). For example, these studies have examined how resources are orchestrated to 'create innovation over the firm's life-cycle' (Carnes et al., 2017, p. 472), innovation by orchestration in family firms (Carnes and Ireland, 2013), the role of resource orchestration in academic entrepreneurship (Wright et al., 2012), and how resource orchestration is related to first-mover advantages (Nemeh and Yami, 2019). Although previous studies have made important contributions to how innovation is related to resource orchestration, the role of the orchestrator or orchestrators in resource orchestration processes focusing on team-based innovation remains somewhat unexplored.

3. Method

3.1. Research design and setting

As the aim of this study is to examine the structuring, bundling, and leveraging processes (Sirmon et al., 2011) in the context of team-based innovation, a case study methodology was deemed suitable for developing the resource orchestration framework (Carnes and Ireland, 2013; Stoyanov et al., 2018; Chiambaretto and Wassmer, 2019). The case company was chosen for three reasons: (1) it is operating in a dynamic environment, that is, the environment in which resource orchestration is applicable according to seminal orchestration publications (Helfat et al., 2007; Sirmon et al., 2007, 2011); (2) it is highly successful in terms of innovation and growth as well as employee well-being, apparently being able to 'orchestrate' its resources successfully; and (3) this company is renowned for an organizational structure promoting team-based innovation.

Alpha (fictional name), a software company started in 1998 by a self-taught programmer, produces highly customized component-based software innovations for the planning and coordination of transport, including related consulting services. As programming and logistic innovation are Alpha's core activities, the company's prime resource is staff competence. The company has grown strongly from the start. In 2005, the company made a strategic change to make upscaling possible. By eliminating personal dependency, that is, function-oriented organization, and by introducing modular processes, growth was achieved by independent teams delivering highly customized products. Moreover, a general principle is that operational decisions should be made as close to the customer as possible. As its turnover has grown by over 20% per year for the last 3 years, Alpha can

be classified as a rapidly growing company. In 2015, operations were also established in India, Great Britain, and the United States. Inspired by international management literature and established in three continents, Alpha applies the same management processes and organization in all locations. The model has worked well and the operations in these countries have expanded according to plan. However, minor problems have occurred in India, attributable to cultural perceptions of hierarchy. Figure 1 shows the growth of turnover from 2010 to 2019.

The firm has won several prizes and awards in Sweden and elsewhere in Europe for being one of the best places to work and for its work environment, officially explained in terms of its employees' ability to influence and control their work.

3.2. Data collection

Table 1 shows the types of archival data, interviews, and secondary data collected in the research process.

The archival data comprised 10 multipage interviews (over 1,000 words each), 164 press clippings (many 700–900 words each), statements from 10 annual reports, and 50 press releases from the company's bulletin. The 10 multipage interviews were dominated by the following themes: (1) the founder's management philosophy and view of autonomous self-managed teams, (2) the company's growth and cooperation with customers, and (3) the company's work environment and culture management. These interviews were collected from leading Swedish business press outlets, namely, *Veckans Affärer*, *Affärsvärlden*, and *Dagens Industri*, and the business section of the newspaper *Svenska Dagbladet*. The press clippings were mainly collected from the Swedish news platforms Mynewsdesk and Industritorget, and from local newspapers. The contents of the 50 press releases can be classified according to the following four thematic groups: (1) customer collaboration and innovation [15], (2) sustainability and participation in the Best European Workplace competition [17], (3) business growth and

partnership [9], and (4) recruitment and culture [9]. Broadly speaking, the 164 press clippings fall into the same categories. Essentially all these data concerned the management process.

Eleven semi-structured interviews were conducted with the founder and the HR Manager (top managers), and with operational team members of Alpha. These people were chosen for interviews as the former group indirectly forms the firm's normative guidelines for the management processes, and the latter group represents the company's core business. The interviews, each lasting about an hour, took place at the company's premises and were conducted and recorded by one of the researchers. We explicitly asked about the management's and employees' organizing roles, and about the relationship between resource-management processes, innovation outcomes, growth, and employee well-being (for interview questions, see the Appendix). Fifteen employee reviews were also collected from the recruitment website Glassdoor (2020) concerning employee perceptions of the management and the work environment. These reviews consist of two parts: in the first part, former and current staff can express their opinions on the general work environment, and in the second part they can address the pros and cons of the business and provide advice to the management. Finally, one survey using the questions of Lepak and Snell (2002) to explore the company's personnel policy was completed by the HR Manager. By using varied data sources, quotations and statements could be triangulated (Yin, 1984) and cross-checked, which controlled for interpretation biases (Golden, 1992).

3.3. Data analysis

The data were analyzed using the four steps outlined by Eisenhardt (1989) and Eisenhardt and Graebner (2007). First, as previously described, the case was selected because it represents the roles of resource orchestration and management in a team-based organization operating in a dynamic environment. Second, to describe the resource orchestration process,

Table 1. Data sources

Multipage interviews in business press with key persons	Annual reports	Press clippings covering the resource orchestration process	Employee reviews	Interviews conducted by the authors
2009–2020 <i>n</i> = 10	2010–2019 <i>n</i> = 10	2009–2020 <i>n</i> = 164	2018–2020 <i>n</i> = 15	2010–2020 <i>n</i> = 11
		Press releases in the company's bulletin	Personnel policy survey completed by the HR Manager	
		2013–2020 <i>n</i> = 50	2018 <i>n</i> = 1	

keywords derived from the concepts of structuring, bundling, and leveraging (Sirmon et al., 2007) were used to identify and categorize relevant data (Short et al., 2010). For example, 'recruitment' was a term used to identify and tabulate quotations associated with 'structuring'. Data implications directly related to Sirmon et al.'s (2007) concept of core descriptions were categorized in line with these descriptions. Following the approach to examining case study data used by, for example, Clark et al. (2010), a significant number of quotations with resource orchestration implications were tabulated, representing a substantial part as well as recurrent features of the collected data. Since division of responsibility is central to the management process, particular attention was paid to quotations with relevant implications. Third, the tabulated quotations were abstracted to form summative themes. Consequently, the processes of structuring, bundling, and leveraging became exemplified by comprehensible and illustrative characteristics. Fourth, given the contingencies of the case company, tentative theoretical implications were extracted from the thematic findings (Mirabeau and Maguire, 2014), which are summarized in the orchestration objectives in Figure 2. The findings as well as the tentative theoretical implications were then compared and analyzed in light of the resource orchestration framework.

Furthermore, to increase the reliability of the study, all the collected material addressing resource

orchestration was initially scanned by both authors separately and ordered primarily according to the mentioned concepts. To create a common and internally valid understanding (Gibbert et al., 2008), ambiguous and overlapping quotations and statements were discussed, and then, recategorized if necessary.

4. Findings

The following section illustrates the case. Aggregating selected and representative results according to resource-management processes (Sirmon et al., 2007) reveals the nature of team-based resource orchestration for innovation, as well as the roles of different actors in these processes. Table 2 presents quotations classified thematically according to the structuring, bundling, and leveraging components. Furthermore, inspired by Mirabeau and Maguire (2014) and Clark et al. (2010), the characteristics of resource management are abstracted into summative themes.

Overall, the software and related services are mainly produced by self-governed teams in which the sequential processes of structuring, bundling, and leveraging can be identified. Each team comprises eight individuals, and when four to five new teams have been established, a new 'sector' is formed.

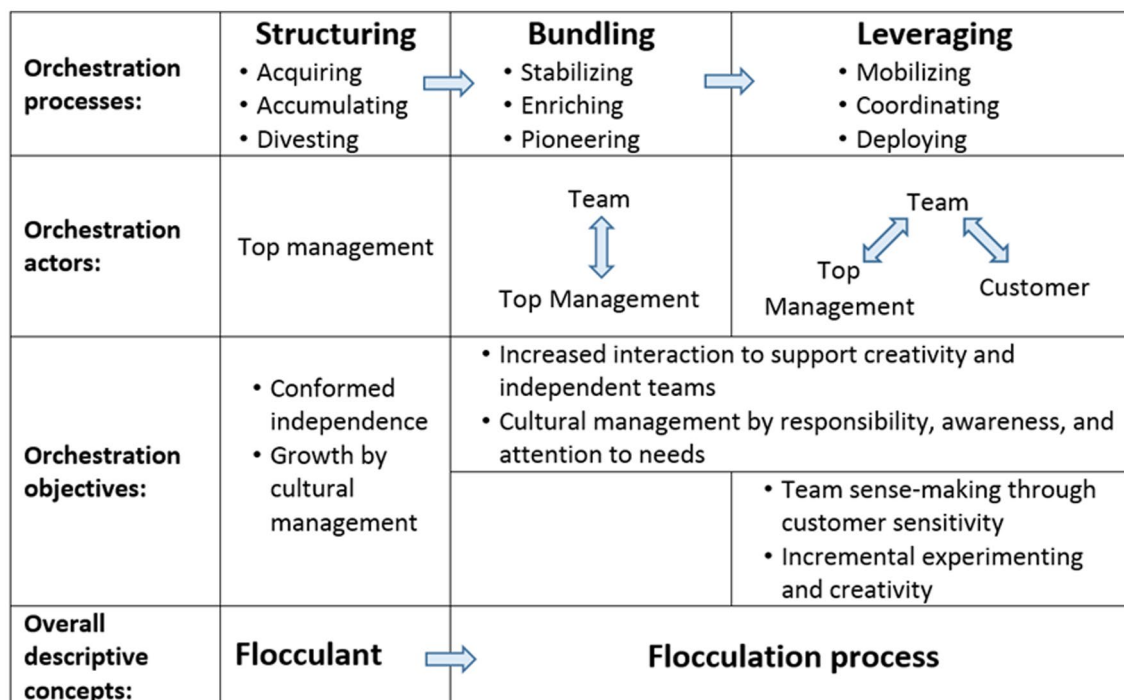


Figure 2. A resource orchestration framework for team-based innovation. [Colour figure can be viewed at wileyonlinelibrary.com]

Table 2. Roles and illustrative quotations, thematically classified

Processes	Roles	Representative quotations	Summative constructs/ themes
Structuring	Top managers	<ul style="list-style-type: none"> During the job interviews, we quickly notice if applicants have overly self-centered career ambitions, then we immediately remove them from the selection process. (HR Manager) You need to get down to the personal level with each employee, discuss and highlight the importance of cooperation. (Founder) For me, it is very important to dive deep into the employees, to get to know what they are doing and who they are. It's about caring about people, not resources. Getting people to focus on their colleagues (Founder) I got a lot of questions about my personality [during the job interview]. How I perceived different things and what I thought about them. How I look at others and the ability to collaborate. (Team member) Everyone in the team knows him – sometimes he comes by and talks personally with us. (Team member) 	Mapping of recruits' and employees' values
		<ul style="list-style-type: none"> The teams inform us how the new team members are working out, about their ambitions and qualifications. (HR Manager) The management is very attentive. If I need to develop some skills to manage my customers, the management listens. (Team member) 	Personal initiatives are encouraged within leaderless teams
	Team members	<ul style="list-style-type: none"> We want to avoid individual competition ... but the team members must take initiatives. (Founder) I regard the company as an innovation system ... autonomy must be strengthened and decisions must be made as close to the customer as possible. (Founder) Everyone acts on the basis of interest. It could be about a certain customer you feel you want to take responsibility for. (Team member) I get the resources and time to develop my skills. (Team member) 	
	Top managers	<ul style="list-style-type: none"> The company is managed by values. (HR Manager) To back up growth, we want a flat organization and a family culture – you are fostered in this culture. (Team member) 	
		<ul style="list-style-type: none"> For us, passion comes before competence – you should find your driving force individually. (HR Manager) The company has invested in an organizational form that has enabled growth. It consists of self-governing teams, where everyone is responsible and focuses on how the tasks are solved. (HR Manager) A guiding idea is that the teams work better without team leaders, [because] then the team members have to cooperate. (Founder) It sounds a bit like a cult, but the team is my second family. (Team member) 	Growth is backed by normative self-organizing teams
	Team members	<ul style="list-style-type: none"> The company has invested in an organizational form that has enabled growth. It consists of self-governing teams, where everyone is responsible and focuses on how the tasks are solved. (HR Manager) A guiding idea is that the teams work better without team leaders, [because] then the team members have to cooperate. (Founder) It sounds a bit like a cult, but the team is my second family. (Team member) 	
Bundling	Top managers	<ul style="list-style-type: none"> You become like a family ... the manager's role is to support us in being independent [team members]. (Team member) Getting rid of personal dependence is [priority] number one [regarding the organizational structure]. (Founder) Due to the small amount of documentation, employees are forced to co-work, favoring cooperation and trust. (HR Manager) 	Team members are driven to cooperate and to share knowledge
		<ul style="list-style-type: none"> A fundamental thing is that you want different competencies and personalities in the team. (Team member) The dynamics of the group [i.e., the team] bring out what you are best suited for, based on your personality. (Team member) 	
		<ul style="list-style-type: none"> It is important that a family feeling is created in our self-organizing teams. (Founder) He is at the bottom and supports the various teams. (Team member) We create positive spirals through employees' ideas, which also means that they constantly share their experiences and ideas. (Founder) 	Self-bundled teams
	Team members		

(Continues)

Table 2. (Continued)

Processes	Roles	Representative quotations	Summative constructs/ themes
Leveraging	Team members	<ul style="list-style-type: none"> The goals are defined by the teams themselves. (Founder) Our teams can be seen as modules that consist of at least three competencies that can be supported by specialists if needed. (Founder) We solve everything in the team – I have no manager to report to. (Team member) He wants us [i.e., the team] to be the top of the pyramid (Team member) The staff put together their own team of up to eight people, expanding the company through pods [i.e., companies in the company]. (Team member) 	Responsibility-focused team culture
	Top managers	<ul style="list-style-type: none"> I believe in a non-person-centered culture, but where you take responsibility. (Founder) 	
	Team members	<ul style="list-style-type: none"> Through responsibility, the teams create their own culture within the company. (HR Manager) It never needs to be ordered who does what, it just happens. (Team member) To get the staff to focus on the business, not on performance metrics decided by the management. (Founder) I don't work against any specified performance metrics; instead, we create them by ourselves [in the team]. (Team member) There is a lot of freedom, but you have to take responsibility. (Team member) 	
	Top managers	<ul style="list-style-type: none"> I accidentally deleted customer information, but it was ok – without mistakes no development. (Founder) We pay tribute to people who make mistakes and congratulate them. (Founder) We don't believe that failures come from malice or poor skills, but from something you have realized. Daring to fail creates a culture of improvement. (Founder) 	Acceptance of learning by failure
	Team members and customers	<ul style="list-style-type: none"> Acceptance of failure is very high. It is really about finding the right solution yourself: you try various ways until you find the right one with the customer. (Team member) I have no manager who controls me, the team handles the failures themselves. As long as you do your best, there is significant tolerance and understanding. (Team member) 	
	Top managers	<ul style="list-style-type: none"> The key to growth is to create scalability, to develop a family feeling in self-organizing teams. (Founder) For me, it is about connecting the customer to the business, motivating, inspiring, and connecting with the customer. (Founder) 	Trust and collegial learning appear to be mechanisms for growth
	Team members and customers	<ul style="list-style-type: none"> The customer relationship is ultimately managed by the teams. (Founder) The teams work independently and therefore take responsibility, and normally deliver what the customer requires. The group often gets positive feedback and praise, which in turn drives growth. (HR Manager) We try to be with the customers – two of my colleagues are currently in Australia working with a customer. (Team member) It is very important to understand the solutions and needs of the customers. This requires that you want to learn new things. (Team member) 	
	Top managers	<ul style="list-style-type: none"> A modular solution that is completely adapted to you as a customer. (Founder) From our relationships with leading brands, we see an increased focus on tying together the entire customer experience, both development and delivery. (Founder) 	Team-framed innovations through individual customer sensitivity
	Team members and customers	<ul style="list-style-type: none"> We manage how and what we deliver to the customer, no one monitors us. (Team member) We work in high-performance teams; we have our own customers and own deliveries. (Team member) We are constantly listening to the customer and he or she is also involved in the processes and influences the content, scope, and variables that we should focus on. (Team member) 	

4.1. Resource structuring

In contrast to the other resource-management processes, in the *structuring* process, consisting of the subprocesses of *acquiring*, *accumulating*, and *divesting*, the top-management exercises tight control over the process of *acquiring* external resources, meaning that the founder and the HR Manager pay close attention to the recruitment process, examining each applicant in-depth to ensure that he or she fits the company's fundamental values and culture. Significantly, similar conversations also occur between management and employees, permitting an ongoing 'mapping of recruits' and employees' values' (Table 2). In the *accumulating* process, the employees take responsibility for alerting the management, and together they arrange facilities for competence development, meaning that 'personal initiatives are encouraged within leaderless teams'. As the teams have no appointed leaders, these initiatives are individually or conducted jointly in agreement with other team members. Because of the firm's rapid growth, *divesting* processes have been of marginal importance. However, based on employees' advice and wishes, teams have been dissolved and transformed. Furthermore, also related to divesting, employees have sometimes chosen to quit their employment, partly because of limited internal career opportunities and partly because of relatively low pay compared with industry norms.

4.2. Resource bundling

Regarding the *bundling* process, the top-management role consists of cultural management, that is, encouraging values of team-based responsibility, interaction, and paying attention to team and team members' needs. Furthermore, the teams can be regarded as 'self-bundled' and highly 'responsibility focused' (Table 2). The teams are responsible for combining the competences and capabilities of their members, meaning that they are also responsible for skills training and upgrading, thereby creating innovative capabilities. The subprocess of bundling emphasizes *enriching* and *pioneering*, though the *stabilizing* process mainly entails knowledge and competence sharing. By minimizing the amount of documentation, the 'team members are driven to cooperate and to share knowledge'. The ensuing *enriching* process focuses on including and combining new competencies in the teams. Moreover, the teams are not controlled by predetermined performance metrics, which the following quotation from a team member

underlines: 'Freedom under responsibility drives our behavior'. The team members are, therefore, expected to concentrate on the core activities, be responsible for developing strong relationships and team cohesion, and shape a commitment-oriented team culture. The subprocess of *pioneering*, which is evident in daily operations, is basically spontaneous and opportunity oriented, decided on and executed by the team members. During staff coffee meetings, team members present their own developed services and products, inspiring capability development in other teams. Furthermore, by considering not only competencies, but also the combination of different personalities, the teams try to become as independent and dynamic as possible. Notably, the recruitment process is a key element of the subprocesses of bundling, as the top managers only hire highly team-oriented people.

4.3. Resource leveraging

In the *leveraging* process, top-management steers the teams by emphasizing and encouraging values of customization and experimentation. However, the teams are accountable for the leveraging process: they take responsibility for creating customer value as they handle product improvements and deliveries in close cooperation with customers. This decentralization entails organic adaptation to customer commitments and requirements. The subprocesses of the *leveraging* process are characterized by the following. By working in close cooperation with the customer, the team identifies and *mobilizes* the capabilities needed to deliver the innovative solution. When mobilizing, the team also accounts for the team members' personal interest in coworking with the customer and developing their learning. Speaking as a role model for the acceptance of failure, the founder states: 'Experimentation and the courage to make mistakes are prioritized'. Thus, 'acceptance of learning by failure' (Table 2) is emphasized as very important. The subprocess of *coordination* is achieved by self-organizing that builds on trust and, guided by core values, mediates the favored customer relationship. The team centers on customers with common but specific characteristics and takes full responsibility for the coordination, so that 'trust and collegial learning appear as mechanisms for growth'. In this process, the customer also becomes part of the team. The leveraging process is *deployed* by the team. Each team member develops a personal and close customer relationship, insights from which are shared with the team members, resulting in the development

of ‘team-framed innovations through individual customer sensitivity’. Furthermore, the team takes full responsibility for product development. The acceptance of experimentation and mistakes means that each team member must account for his or her learning, which in the long-run fosters a high degree of customization.

5. Discussion

Sirmon et al. (2011) expanded the top-management focus characterizing their earlier work (i.e., Sirmon et al., 2007) and that of Helfat et al. (2007) to also include middle and operational managers. However, our case study has illustrated the importance of actors with nonmanagerial positions and that managing resources often involves complex interplay between several actors. Thus, assigning a specific managerial position or level to a specific resource orchestration process does not necessarily reflect the true nature of resource orchestration in the context of team-based innovation. Our key findings are summarized in Figure 2. The model extends the resource orchestration framework to encompass team-based innovation, and it also contributes to innovation research by linking innovation objectives and key actors to the overall value-creation process – that is, structuring, bundling, and leveraging resources – of the firm.

5.1. Actors and objectives in team-based resource orchestration

Figure 2 provides more detailed account of the role of different actors in specific stages of the resource orchestration process. By linking key actors to each of the resource orchestration processes and by describing the key objectives of the processes, our model provides an overview of resource orchestration for team-based innovation.

The structuring of resources in a team-based innovation context can be described by the original resource-management model developed by Sirmon et al. (2007). Top management, in our case represented by the founder/CEO and the HR Manager, plays a crucial role in structuring the overall resource portfolio. Team-based innovation requires teams that are highly independent and allowed to make their own decisions concerning almost all of their activities. However, to achieve this, top management must be rigorous in structuring the resource portfolio in order to develop a strong organizational culture based on certain common values. This ‘conformed independence’ of individuals and teams will enable

the organization to achieve growth based on cultural management.

In the bundling and leveraging processes, the teams undertake most of the activities traditionally associated with managers, such as distributing work assignments, setting targets, monitoring, exercising control, and taking responsibility. In the bundling process, the overall ‘management’ is almost entirely delegated to the teams. Top management does, however, play an important but extremely indirect role by communicating the organizational culture and by providing necessary support and resources at the request of the teams.

The orchestration objectives of the bundling process, that is, increased interaction to promote creativity, communication of culture, and top-management support, are also objectives of the resource-leveraging process. Moreover, similar to the bundling process, top management mainly provides support for and communication of the organization’s overall culture in the leveraging process. Thus, our case description illustrates how team-based innovation requires the synchronization of various resource-management processes and highlights the integrated nature of the bundling and leveraging of capabilities involved in innovation. The central role of the customer in orchestrating resources is unique for the leveraging process. Thus, by collaborating closely with their customers, teams can collectively make sense of customer needs in order to develop innovative solutions.

5.2. Resource flocculation

Our model highlights the usefulness of the adapted resource orchestration framework for understanding team-based innovation. However, using metaphors such as orchestrators and managers can itself be problematic when describing the actors involved in the process of generating innovation from resources in a team-based innovation context. Metaphors can produce a simplified perception of reality (Morgan, 1980; Osrick et al., 2002) and can consequently ‘highlight certain features while suppressing others that may be equally or more important’ (Shenkar et al., 2008, p. 906). If metaphors become entrenched they will become dead metaphors, that is, they become so ‘habitual that we have ceased to be aware of their metaphorical nature and use them as literal terms’ (Tsoukas, 1991, p. 568). Use of the orchestration metaphor could risk associating resource orchestration for innovation with only the actions of top management or an all-knowing conductor, and this does not reflect the nature of team-based resource orchestration.

As previously described, by acquiring, divesting, and assisting in the accumulation of resources, top management plays an important role in the early stages of orchestration. After providing the basic resources, teams are then allowed to develop and act independently to bundle capabilities and, together with customers, leverage capabilities. This configuration of the three processes recalls the chemical process of ‘flocculation’, defined by *Encyclopedia Britannica* as the ‘separation of solid particles from a liquid to form loose aggregations or soft flakes’. This process is initiated by a flocculant, also referred to as a flocking agent. In team-based innovation, the role of top management is limited to providing the basic resources and acting as a flocculant to initiate the process. When the process has been initiated, capabilities are bundled together into various self-governed flocks by way of autonomous self-organizing processes. The components will then be allowed to autonomously bundle themselves into flocks, but it is the role of top management to make sure that the right components are put into the mixture. We argue that the metaphor of an autonomous chemical process in which capabilities are grouped together into what Sirmon et al. (2011) call capability configurations (or loosely aggregated flocks, using chemistry terminology) provides a more accurate description of the role of the actors involved in the orchestration process. Thus, the concept of a flocculator reflects the role of the top managers’ initiation of the process. The flocculation process reflects the interactions, dependencies, and non-hierarchical relationships between the key actors involved in the resource orchestration process.

5.3. Theoretical contributions

Previous research on general management (Burgelman, 1983; Burgelman, 1985) and on team-based innovation (Caldwell and O’Reilly, 2003; Edmondson and Nembhard, 2009) has highlighted the importance of overall organizational mechanisms for promoting innovation in operational personnel and teams. These studies have examined, for example, how norms (Caldwell and O’Reilly, 2003), culture (Hogan and Coote, 2014), and other organizational antecedents (Hülshager et al., 2009; Somech and Drach-Zahavy, 2013) affect team-based innovation. Although these studies have addressed how team-based innovation is related to specific organizational factors, they do not link team-based innovation to an overall framework of organizational processes as does the resource orchestration model. Nevertheless, teams are an important component

of many innovation processes, and research on other areas of innovation, not focusing specifically on teams per se, has addressed how innovation is related to various organizational processes such as knowledge creation (Brix, 2017) and knowledge production processes (Roper et al., 2008), while other streams of innovation research have highlighted the importance of involving customers in innovation processes (Lagrosen, 2005; Büchel et al., 2013; Cui and Wu, 2016). Although these studies have related innovation to a broader range of organizational processes, the resource orchestration framework used in this study provides a much more detailed account of all the processes necessary for value creation. Thus, the novelty of our model, and our key contribution to the team-based innovation literature, is that it relates team-based innovation – more specifically, the objectives of team-based innovation and the key actors involved in team-based innovation – to a highly structured value-creation framework that encompasses all the processes involved in managing resources and capabilities.

A key contribution to the emerging literature on the role of resource orchestration in innovation is that our study highlights the importance of considering the actors orchestrating innovations and the interplay among them. Although our study focuses specifically on team-based innovation, innovation can rarely be attributed to a single-manager or a specific managerial level. Thus, whereas previous research on resource orchestration for innovation focused mainly on the role of top managers (Carnes et al., 2017; Lamont et al., 2018) or examined the processes per se and not the managers (Cui et al., 2017; Candi and Beltagui, 2019; Nemeh and Yami, 2019), our study illustrates the relevance of considering the roles of other actors, including actors with nonmanagerial positions and actors external to the firm, in various resource orchestration processes.

5.4. Managerial implications

Our work has some important implications for managers. The case description can provide an inspirational example for firms with innovation aspirations. Many owners/managers of small and medium-sized firms are reluctant to pursue innovation and growth out of concern for employee well-being (Wiklund et al., 2003; Andersén, 2017). Our illustrative case provides an example of how to combine high growth with high levels of employee well-being through team-based innovation. Moreover, the resource orchestration framework for team-based innovation shows how this combination can be achieved.

More generically, our study highlights the possibility of achieving success without managers being the key orchestrators of each resource orchestration process. Managing innovation processes is not always about delegating responsibility to specific managers for specific resources; instead, incorporating non-managers as well as customers in certain processes can be a viable option. Seeing team-based innovation as a process of resource flocculation rather than resource orchestration can provide managers with a new perspective on how to promote team-based innovation.

5.5. Limitations and future research

Our study is based on a single case, raising the question of whether our model is applicable only to this unique case. However, other Swedish firms have similar organizations, and to provide a broader picture, two additional examples beyond the present case study are cited here. The data used to describe these companies are from the publicly available annual reports and official company information presented on these companies' websites (Consid, 2020; Netlight, 2020). Both businesses are based on autonomous self-managed teams operating in dynamic environments. The first example is the IT Company Netlight Consulting, founded in 1999 by three students at the Royal Institute of Technology in Stockholm. The company's operations are based on autonomous teams of consultants that create digital innovations for media, e-commerce, and payment services operating in Sweden, Germany, Denmark, Finland, and Switzerland. The company has grown rapidly in recent years. Between 2009 and 2018, the sales increased by over 800% and the number of employees increased from 141 to 905. The second example is Consid, a company founded by two Swedish entrepreneurs in 2000, which uses self-managed teams to offer IT and innovation services. With key competencies in programing and systems, Consid's teams work closely with customers. Between 2012 and 2018, the company's sales increased by more than 20% per year and the number of employees grew from 98 to 410. These two examples illustrate that Alpha is not unique in its team-based innovation strategy, suggesting that the framework developed to describe how Alpha has orchestrated its resources should be applicable to other firms as well.

Although there are additional examples of successful team-based innovation based on autonomous teams, we do not claim that our model is applicable to all kinds of innovation. First, the model describes team-based innovation-oriented organizations focusing on customized products. Firms intending to

produce standardized products are likely to need more top-management control over the bundling and leveraging processes, so the ideas developed here might not be a viable orchestration strategy for firms targeting customers with homogenous demands. Moreover, our case company is highly growth oriented, and organizations in more mature stages of the firm life cycle are more likely to benefit from other resource orchestration practices – for example, declining firms are more likely to focus on resource divestment processes (Sirmon et al., 2011). In addition, although acceptance of failure and a focus on creativity and innovation will stimulate firm growth, decentralized innovation and failure acceptance can be costly. It is not certain that firms striving to compete by way of cost-reducing innovation efforts and having, for example, profitability as their main objective will benefit from applying the resource orchestration model developed here. To consider strategic objectives other than growth and to consider other stages of the firm's life cycle, future research is encouraged to explore and/or adapt the model to such conditions, for example, by integrating the present ideas with the life cycle approach to resource orchestration for innovation developed by Carnes et al. (2017).

Another avenue for future research would be to examine resource orchestration for team-based innovation in other countries. Alpha, Netlight, and Consid all have operations in other countries, using similar organizational principles. As shown by our case, this type of organization has been successfully adopted in countries such as the United Kingdom and the United States; however, Alpha encountered some problems with the team-based organization in India. Thus, examining the ideas on team-based innovation developed here as applied in non-Western countries would be an important future research avenue, and it is possible that our findings are most applicable in Western countries.

6. Conclusion

Resource orchestration is a relatively new management concept that has nevertheless received considerable attention in innovation research. In a business world increasingly characterized by self-organizing teams and employee empowerment, the recent emergence of such a manager-oriented construct can be seen as somewhat paradoxical. Nevertheless, its structured approach to value creation makes several elements of the resource orchestration framework highly useful for examining the relationship between resources and innovation. Our proposed model of the

orchestration of resources to promote team-based innovation contributes to the resource orchestration framework by incorporating non-managers, namely, teams and customers, into the model and by illustrating the importance of the interplay between various actors for resource orchestration processes. Moreover, it contributes to research on team-based innovation by linking teams and key stakeholders to overall organizational value creation in terms of specific resource orchestration processes. By incorporating elements related to team-based innovation and by introducing concepts such as the flocculator and the flocculation process rather than orchestrators and managers, we have sought to broaden the applicability of the resource orchestration framework to a team-based innovation context.

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Appendix

Interview questions

The interview questions for the top managers and the team members were similar in meaning, but depending on the perspective (management vs. operative staff), differed slightly from each other. The following four open-ended and thematic questions were asked of the top managers:

1. What is your explanation for Alpha's rapid growth and how does it relate to the company's environment?
2. What is the relationship between management processes, innovation outcomes, growth, and employee well-being?
3. How does the company organize its core operations and how is the responsibility distributed?
4. What characterizes the core business's customization and how is it affected by the nature of the market?

The following four open-ended and thematic questions were asked of the team members:

1. What is your explanation for Alpha's rapid growth and how has it affected the team's functioning, innovativeness, and relationship with the work environment?
2. What is the relationship between team management, innovation outcomes, growth, and team member well-being?
3. How is the team put together, and how are tasks and responsibilities allocated?
4. What characterizes the team's customer interactions and how are they affected by market changes?