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www.emeraldinsight.com/1757-5818.htm

Received 30 October 2009
Revised 31 March 2010
Accepted 7 April 2010

Capabilities for managing service innovation: towards a conceptual framework

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Abstract

Purpose – The purpose of this paper is to identify and reflect on a set of dynamic capabilities for managing service innovation and applies a dynamic capabilities view (DCV) of firms for managing service innovation.

Design/methodology/approach – This theoretical paper offers a conceptual framework for managing service innovation by proposing six dynamic service innovation capabilities. This framework builds on and is integrated with a model of service innovation that covers the possible dimensions where service innovation can take place. On this basis, avenues for future research into managing service innovation are identified and managerial implications discussed.

Findings – The six dynamic service innovation capabilities identified are: signalling user needs and technological options; conceptualising; (un-)bundling; co-producing and orchestrating; scaling and stretching; and learning and adapting. It is hypothesized that successful service innovators, which may include manufacturing firms developing into providers of service solutions, outperform their competitors in at least some of these capabilities.

Research limitations/implications – The six dynamic service innovation capabilities identified in this theoretical paper, their mutual links as well as links with dimensions of service innovation need to be tested further. Further refinement is required in order to be able to discriminate between various industries, sizes and types of firms.

Practical implications – Those involved in managing service innovation are offered a framework for systematically assessing dynamic service innovation capabilities.

Originality/value – The main contribution of this paper is that it links a service (innovation) perspective to a DCV of the firm by proposing a set of six dynamic service innovation capabilities.

Keywords Services, Innovation

Paper type Conceptual paper

1. Introduction

Service innovations are ubiquitous and their role in creating economic growth and wellbeing is increasingly acknowledged (Coombs and Miles, 2000; van Ark *et al.*, 2003; Gallouj, 2002; OECD, 2005; European Commission, 2009). This is also mirrored in the extensive literature on service management, service marketing and service innovation, and by the rise of the service-dominant logic perspective (Michel *et al.*, 2008;

The authors gratefully acknowledge the comments and suggestions made by two anonymous reviewers. They also want to thank Professor Tom Elfring (VU University, Amsterdam) who helped them considerably in finding their way in the resource-based view/dynamic capabilities view literatures as well as the participants in 11th International Research Symposium on Service Excellence in Management, June 11-14, 2009, who commented an earlier version of this paper.

Journal of Service Management
Vol. 21 No. 4, 2010
pp. 490-514

1757-5818
DOI 10.1108/09564231011066123

Vargo and Lusch, 2004a, b; Lusch *et al.*, 2008) and widespread deliberations on a comprehensive service science (IfM and IBM, 2008; Ostrom *et al.*, 2010).

At the same time, frameworks for the strategic management of service innovation remain scarce (Sundbo, 1996; Frei, 2008; Möller *et al.*, 2008). In this paper, we first develop a comprehensive model for assessing dimensions of service innovations (Section 2). Next, our claim in this paper is that linking the insights gained from the valuable combined service (innovation) perspectives indicated above to a dynamic capabilities view (DCV) of the firm may result in a promising conceptual framework for the strategic management of service innovation, including promising future research avenues. We propose that the dynamic capability perspective is particularly useful for service industries because the service innovation process is less tangible and more interwoven with the capabilities embedded in the processes and routines throughout an organization.

In this paper, we address the question: what are the (dynamic) capabilities for strategic management of innovation in service firms or service organizations? To do so we draw on the resource-based view (RBV) of the firm and thereby contribute to the emerging DCV of the firm. These approaches help us in identifying essential dynamic innovation capabilities for service organizations (Section 4).

This conceptual paper adds to the current understanding of service innovation in two important ways. First, we introduce a six dimensional service innovation model. The existing literature on service innovation tends to emphasize certain domains for innovation, often related to the tradition in which the contribution fits. The first wave of contributions is dominated by the marketing discipline, with an emphasis on improvements in service quality, customer management (Zeithaml and Bitner, 2003; Parasuraman *et al.*, 1985; Berry and Parasuraman, 1991; Grönroos, 2007; Lovelock and Wirtz, 2007), service management (Levitt, 1972; Quinn *et al.*, 1990, 1994; Heskett *et al.*, 1997; Lovelock, 1984) and operations management (Chase, 1981). Others have focused on important aspects of service innovation such as user involvement in service innovation (Matthing *et al.*, 2004), styles of managing service innovation (Sundbo, 1996, 1997; Sundbo and Gallouj, 2000), the notion of bundling and unbundling (Normann, 2002, p. 58), new processes for service innovation (Thomke, 2003), the collaborative client provider value creation process (Möller *et al.*, 2008), service logic innovation (Michel *et al.*, 2008), or the service (design) model (Frei, 2008). The most comprehensive approaches have been practiced in the Lille school (Gallouj and Weinstein, 1997; Gallouj, 2002; de Vries, 2006; Gallouj and Toivonen, 2008; Toivonen, 2010). Another example is the more empirical and policy-oriented service innovation of researchers working in what may in a similar vein be coined the Manchester school (Miles, 1993, 1996; den Hertog, 2000; Howells *et al.*, 2004; Tether, 2005; Tether and Tajar, 2008). A recent review of the existing schools in new service development and service innovation research is included in Droege *et al.* (2009). In Section 2 we propose an integrative model that covers the six possible dimensions of service innovation, building on the contributions from these various disciplines and backgrounds.

Second, we contribute by applying and operationalising the DCV approach specifically to a services context. We identify a set of dynamic capabilities that service organizations can draw on for the creation and realisation of innovations. This adds to the existing RBV and DCV literature in several ways. Some contributions (Wang and Ahmed, 2007; Sirmon *et al.*, 2007; Teece, 2007) provide generic frameworks that identify

resources and dynamic capabilities for superior and sustainable firm performance in general. However, these frameworks are neither specified for a service context nor do they start with the specificities of the service innovation process. Other more focused contributions to the RBV and DCV debate look at particular resources or capabilities, but to our knowledge not at the business process of service innovation. As observed by Salomo *et al.* (2007), these studies focus on particular dynamic capabilities or resources such as managing alliances, acquisition, knowledge creation or indeed (aspects of) innovation or dynamic marketing capabilities (Bruni and Verona, 2009). Other studies in this tradition pinpoint specific issues such as related diversification (Døving and Gooderham, 2008) or internationalization of born global firms (Weerawardena *et al.*, 2007) or specific industries[1]. An exception is Kindström *et al.* (2009, p. 331) who apply a dynamic capabilities approach to the service infusion process in manufacturing. We agree with them that:

> [...] so far, discussions in the literature around dynamic capabilities tend to be goods/product oriented. Innovation relates to lines, production resources, and installed base, not services. [...] By applying dynamic capabilities in a service context the DCV framework can be developed further.

The six dimensional service innovation model will be introduced in Section 2 and also be used for developing our definition of service innovation. In Section 3, both the RBV and DCV of the firm are briefly introduced and used as a basis for defining dynamic service innovation capabilities. Subsequently, in Section 4 our set of dynamic service innovation capabilities are defined and linked to the most relevant dimensions of the six dimensional model.

The set of six dynamic service innovation capabilities also opens up new, promising research avenues for further analysing service innovation management[2]. These will be addressed in the concluding section. Here, we also present hypothesized links between individual dynamic service innovation capabilities as well as dynamic service innovation capabilities and the six dimensions of service innovation. The theoretical framework we offer here is not only relevant for pure play service firms, but also applies to those goods-based organizations evolving the process of service infusion into service-oriented enterprises (Ostrom *et al.*, 2010, p. 4).

2. Service innovation as a multidimensional phenomenon

Notwithstanding the broad meaning of innovation as introduced by Schumpeter (1934), too often the innovation literature has taken more limited views by focusing on technological innovations. Although this is indeed usually a too limited approach, it becomes even more biased if applied to service innovation. In the case of services, particularly due to the considerable role of customer interaction and the intangibility characteristic, a bias towards technological innovations is even more inadequate. Also, compared to manufacturing, services are less standardized, usually not focused on products, and less centralized/more dispersed. All these factors have made an adequate description of service innovation more hazardous than in the traditional innovation literature, while at the same time not less relevant.

In the introduction, we summarized contributions to understanding service innovation, thereby covering a wide variety of possible angles. Building on these contributions, we have developed a six dimensional model covering the possible dimensions for service

innovation (numbers 1-6 in Figure 1); or more precisely, the dimensions where service innovation can take place in a business. These service dimensions lead, individually but most likely in combination, to one or more (re)new(ed) service functions that are new to the firm. These new service functions do change the service or goods offered on the market and so require structurally new technological, human or organizational capabilities of the service organization. With the latter we refer to the idea that to realise these service innovations, the innovative firm can draw on various operational resources and capabilities mostly linked to functional management domains (i.e. first ring of circles around the core of Figure 1). By adding these resources and capabilities, we anticipate the switch from the dimensions of service innovation as a discrete phenomenon and the dynamic capabilities needed for managing service innovation. The latter dynamic capabilities are the six circles numbered A-F in Figure 1 and will be discussed extensively in Section 4.

As can be observed from Figure 1, we include the creation of new service experiences and service solutions as the ultimate goal of service innovation of the

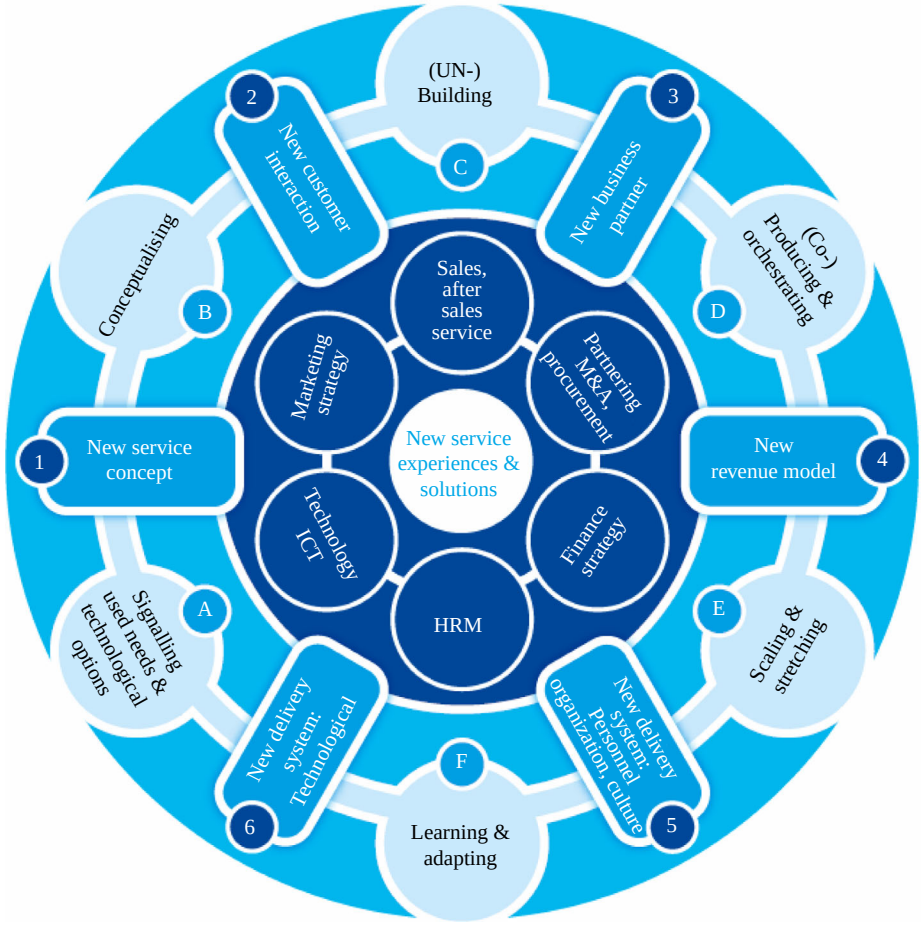

Figure 1.
Six dimensional model of service innovation and the (dynamic) capabilities for realising new service experiences and solutions

6D-model and have positioned this in the centre of the model. The idea that the essence of producing a service is to provide a solution or an experience can be traced to several authors (Gadrey *et al.*, 1995; Goldstein *et al.*, 2002; Grönroos, 2007; Pine and Gilmore, 1999).

In our view, a new service experience or service solution can consist of a new service, a new service portfolio and/or a new service process that individually or in combination defines a new way of creating value for the customer. The majority of these services propositions are co-created by the client and the provider[3]. The degree of novelty – as with goods-based innovation – may differ from new to the firm, new to the industry, new to the country or new to the world. Hence, our definition of service innovations reads as follows[4]:

> A service innovation is a new service experience or service solution that consists of one or several of the following dimensions: new service concept, new customer interaction, new value system/business partners, new revenue model, new organizational or technological service delivery system.

The first dimension is the service concept, also named the service offering (Frei, 2008). The service concept or offering describes the value that is created by the service provider in collaboration with the customer. The innovation is often a new idea of how to organize a solution to a problem or a need of a customer. Many new service concepts – a notion which can be traced to and has been used by various scholars (Heskett, 1986; Heskett *et al.*, 1997; Normann, 2002; Frei, 2008) are combinatory, i.e. they combine elements of services that do exist individually or as part of other services in a new combination or configuration. Examples include telecom providers offering integrated bundles of their various services (telephone, broadband access and TV) or temporary staffing agencies offering pool management services or taking care of HRM tasks outsourced by their clients. Small retail outlets at high traffic locations (such as "AH to go" in The Netherlands), monobrand stores or the idea of designer hotels are other examples of new service concepts.

The second dimension is the new customer interaction and the role customers play in the creation of value. The interaction process between the provider and the client is an important source of innovation – more so when the business service itself is offering support for innovation (which, for example, is the case in research and development (R&D) or design services). The various generations of electronic banking ranging from the introduction of ATMs to the use of mobile phones in banking are examples of an innovation where the "customer-interface dimension" is dominantly present. The majority of innovations here are variations on the introduction of "self service". The client interface interaction – although mostly worded differently – also featured prominently in the service marketing and service innovation literature (Eiglier and Langeard, 1977; Lovelock, 1984; Grönroos, 2007; Edvardsson and Olson, 1996; Zeithaml and Bitner, 2003; Gallouj and Weinstein, 1997; Miles, 1996).

The third dimension is the new value system or set of new business partners, i.e. actors involved in jointly co-producing a service innovation. New services – thus creating and appropriating value – are increasingly realised through combinations of service functions provided by a coalition of providers, both parties in the value chain, and actors in the wider value network (Chesbrough, 2003, p. 68; see also Gawer and Cusumano, 2002; Huston and Sakkab, 2006; Jacobides *et al.*, 2006; Tee and Gawer, 2009). It is remarkable in this context that open innovation literature has started at the

R&D and manufacturing side, whereas the relevance for service innovation might be even greater. As the example of the iPhone in combination with the iStore shows, important new services are developed in large communities linked through platforms and networks of businesses. Without such platforms and networks, these innovations would not become as successful or even exist.

The fourth dimension is related to new revenue models. Only a few new service concepts become successful service innovations as especially those services requiring multiple actors to produce have to find models to distribute costs and revenues in appropriate ways. Put differently, many new service ideas fail as the distribution of costs and revenues do not match. Developing the right revenue model to fit a new service concept may require considerable ingenuity (Päällysaho and Kuusisto, 2008; Chesbrough, 2006; Johnson *et al.*, 2008). In technical engineering, the switch from hiring specialist capacity (and thus billable hours) to turnkey projects or so-called build-operate-transfer contracts means in fact a switch in revenue models. Similarly in information and communication technologies (ICT) services, moving from selling packaged software and customizing these versus ASP-models or software as service models essentially implies the introduction of new revenue models. A document service management firm may shift from a hardware and product-based revenue model towards a much more customized service-based revenue model where profits made on client-specific service-contracts count rather than selling machines and copies, and is another example of revenue model innovation. In ecommerce the discussion on what model to use to make a profit is essentially about revenue models.

The fifth dimension concerns the "new delivery system: personnel, organization, culture"[5]. The notion of a service delivery system originated from the work of Heskett (1986) and has resonated in many textbooks since then. It refers to the organizational structure of the service company itself. Appropriate management and organization are needed to allow service workers to perform new jobs properly, and to develop and offer innovative services. New services, for example, may require new organizational structures; (inter)personal capabilities or team skills. Indeed this is often an important additional dimension in many service innovations originating in other dimensions. However, here we intend this dimension to refer to innovations that typically start at the human resources and/or organization side of the firm. Well known are the examples given by Normann (2002) such as the establishment of the EF summer schools and student exchange programs based amongst other things on the availability of teachers during regular summer holidays of JC Decaux that empowered its personnel to clean public transport in combination with using this for advertisements. In retailing, IKEA for example (Edvardsson and Enquist, 2009) is not only an innovative retail concept, but also innovative in how it is organized, how it empowers its employees, how it motivates customers to assemble their own furniture and how it has established a very clear firm culture of how to service and approach clients. This illustrates that also through the soft elements of the service delivery system one can differentiate oneself from the competition.

The sixth dimension new service delivery system: technological[6]. This dimension pinpoints the observation that ICTs (predominantly, but not exclusively) have enabled numerous service innovations ranging from electronic government and e-health, to advanced multi-channel management, customization of services, introduction of self service concepts, virtual project teams and so on. In the hospitality industry, online booking systems and handheld devices are important, but also new kitchen

equipment and semi-prepared food. In retailing, a substantial part of the investments in innovations is in new ICT systems and logistics solutions, both at corporate and decentralized level (Segers *et al.*, 2007).

A service business can innovate every single dimension, or a combination of the several dimensions previously outlined. The significance of the dimensions, as well as the interactions between them, will vary across individual service innovations and firms. Business model innovation can be perceived as a systems-level innovation where (almost) every dimension is changed. It is important to highlight here that service firms can have various business models in one portfolio and that a service firm may combine various new business models in one strategy.

3. Six dynamic capabilities for managing service innovation

What matters for service innovators to be successful in the long run is not only being able to successfully launch a service innovation once, but to be able to introduce and exploit service innovations repeatedly. This allows service innovators to adapt to their changing environment and stay competitive sustainably. As indicated in the introduction, the combined RBV/DCV approach offers a promising starting point for identifying and analysing in more detail what we have coined dynamic service innovation capabilities. The latter serve to deepen the theoretical understanding of managing service innovation following service (innovation) management traditions, while adding to the development of the RBV/DCV literature at the same time.

We now introduce the RBV/DCV-approach briefly and define the notion of dynamic service innovation capabilities, and introduce a set of six dynamic service innovation capabilities in Section 4.

3.1 Defining dynamic service innovation capabilities – introducing the RBV and DCV

The rise of the RBV (key references here are Barney, 1986, 1991; Wernerfelt, 1984 [7]) since the early 1980s and mostly in parallel the rise of the DCV (key references here are Teece and Pisano, 1994; Teece *et al.*, 1997; Eisenhardt and Martin, 2000; Helfat *et al.*, 2007) since the 1990s, caused the pendulum in important parts of the strategic management literature to swing back somewhat. The dominant focus on the position in an external environment was partly substituted by analysis of the role played by the internal organization of the firm in creating and sustaining competitive advantage[8]. We introduce both the RBV and DCV below.

In the RBV, a resource is defined as "an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to on a semi-permanent basis" (Helfat and Peteraf, 2003, p. 999). Essentially the RBV conceptualises firms as "bundles of resources" that are "heterogeneously distributed across firms" and assumes that these "resource differences persist over time" (Eisenhardt and Martin, 2000, p. 1105). The bases for competitive advantage are essentially resources that meet the valuable, rare, inimitable and non-substitutable (VRIN) criterion and give rise to "fresh value creating strategies that cannot be easily duplicated by competing firms" (Eisenhardt and Martin, 2000, p. 1105). Teece *et al.* (1997, p. 513) in a similar vein indicated that "competitive advantage lies 'upstream' of product markets and rests on the firm's idiosyncratic and difficult-to-imitate resources". So, simplified, the sheer possession of these rare and hard to imitate resources and leveraging them drives value creation through development of competitive advantage.

Over the years and responding to some criticism of the approach (see especially Priem and Butler, 2001), the RBV was developed and enriched. It started to deal (once again) more explicitly with how a firm's external environment is influencing the process of managing resources and how a firm's resources are transformed into value. Sirmon *et al.* (2007) for example recently proposed a dynamic resource management model of value creation. Bingham and Eisenhardt (2008, p. 242) contributed to the RBV by arguing that "competitive advantage stems from both the characteristics of individual resources as well as the linkages among the resources". Then they apply the VRIN criteria basically to the combinations of resources and especially see inimitability as the key criterion for gaining competitive advantage.

The DCV as compared to the initial, basic version of the RBV, offers the more dynamic version of the RBV by emphasizing that possessing a set of resources with VRIN characteristics is not enough to stay competitive in a changing business context. Instead, dynamic capabilities or "the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (Teece *et al.*, 1997, p. 516) are seen as key and perceived as the cornerstone of competitive advantage. Dynamic capabilities (still following Teece *et al.*, 1997, pp. 518-24) are based upon highly firm-specific managerial and organizational processes (or routines) and are shaped to a considerable degree by its specific asset position (current specific endowments of technology, intellectual property, complementary assets, customer base and its external relations with suppliers and complementors) and paths dependencies [9]. So, it is not merely the unique set of resources with VRIN characteristics at a certain point in time that matter (as is the case with the basic version of the RBV), but essentially a firm's ability to constantly adapt, reconfigure and innovate that is key.

Teece has recently developed the dynamic capability framework considerably in another landmark study (2007 and included in 2009). Here, he more deliberately attempts to weave an "umbrella framework that highlights the most critical capabilities needed to sustain the evolutionary and entrepreneurial fitness of the business enterprise" (Teece, 2007, p. 1322). He proposes three categories of dynamic capabilities that he sees as most critical for sustaining evolutionary and entrepreneurial fitness [10], i.e. the capacity to sense and shape opportunities and threats, to seize opportunities and dynamic capabilities to maintain competitiveness through enhancing, combining, protecting and, when necessary reconfiguring the business enterprise's intangible and tangible assets (Teece, 2007, p. 1319).

How should we discriminate then between an operational capability and a dynamic capability? Helfat and Peteraf (2003, p. 999) have defined an (organizational) capability as "the capability of an organization to perform a coordinated set of tasks utilizing organizational resources, for the purpose of achieving a particular end result". They stress that "dynamic capabilities do not directly affect output for the firm in which they reside, but indirectly contribute to the output of the firm through an impact on operational capabilities". Winter has formulated the basic difference between zero-level and higher order capabilities nicely. He refers to the first as "how we earn a living now capabilities" and in contrast, the others as "capabilities that would change the product, the production process, the scale, or the customers (markets) served" (p. 992). On top of this basic differentiation between operational capability and dynamic capability, various hierarchies of capabilities have been suggested in the literature (Wang and Ahmed, 2007; Ambrosini *et al.*, 2009; Zahra *et al.*, 2006).

3.2 Defining dynamic service innovation capabilities

When discussing the six dimensions of service innovation, we indicated that an innovative firm can draw on various (zero-level) resources and capabilities. These are regular operational resources and capabilities. Here, like Bruni and Verona (2009, p. 104) have done when defining dynamic marketing capabilities, a higher order of capabilities is meant that impacts upon operational capabilities, i.e. the regular way in which resources are transformed into innovative services.

Paraphrasing Teece (2009, pp. 87-8), we define dynamic service innovation capabilities as those hard to transfer and imitate service innovation capabilities which organizations possess to develop, (re-)shape, (dis-)integrate and (re-)configure existing and new resources and operational capabilities. These are needed to successfully offer clients a new service experience or new service solution and market these successfully in a sustainable fashion and hence swiftly adapt to a firm's changing environment. These dynamic service innovation capabilities are aligned with firm strategy, market dynamics and firm history. We explain some of the building blocks of this definition briefly below.

Dynamic service innovation capabilities refer to specific capabilities, i.e. organizational competencies, routines and processes organizations already have or newly develop to manage the process of service innovation. In practice this means combining existing and creating new resources and operational capabilities in order to realise (temporary) competitive advantage and an up to date service offer.

Hard to transfer and imitate means that these specific capabilities are partly idiosyncratic to the firm, the service value system or the specific market in which the firm operates. We refer here to Bingham and Eisenhardt (2008, p. 243) who especially advocated that inimitability is at the heart of competitive advantage. However, these capabilities contain some generic elements that can be used in other settings as well and most likely will need some customization. This implies that some best practices can be identified and that there is scope for learning. In our view, these capabilities are therefore not completely inimitable. However, these capabilities are not completely transferable either. If they were, it would be almost pointless to invest in dynamic service innovation capabilities. In that case these capabilities would be free floating, would not result in (temporary) competitive advantage, and could be used immediately in different contexts.

Finally, firm strategy, market dynamics and firm history will influence the particular subset of dynamic capabilities used for managing service innovation and the pace at which certain dynamic capabilities become obsolete. In order to innovate effectively, new service experiences, new service concepts and/or new ways of delivering must be aligned with firm strategy. Market dynamics or turbulence will affect the rate at which firms need to adapt their capabilities[11]. Firm history should be interpreted as the evolutionary notion of path dependency. In this context Teece *et al.* (1997, pp. 522-3) remarked that "bygones are rarely bygones [. . .] a firm's previous investments and repertoire of routines (its 'history') constrains its future behaviours".

4. Six dynamic service innovation capabilities

We will now reflect on a set of six dynamic service innovation capabilities. This set has the status of a yet untested conceptual framework. It emerged from a theoretical analysis in which we confronted the essential dimensions of service innovations as included in the six dimensional model (i.e. the service (innovation) management

literature) with both generic and more focused (topical and sectoral) contributions following the RBV/DCV tradition. The leading question was what types of dynamic capabilities linked to the specific dimensions of service innovation are needed to foster service innovation in a sustained way. In the introduction it was already pointed out that thus far, neither more generic frameworks nor more focussed (sectoral and topical) contributions to the RBV/DCV literature deal explicitly with this type of capabilities. By introducing the individual dynamic service innovation capabilities it will be indicated to what extent they build on existing contributions to the RBV/DCV literature.

(A) Signalling user needs and technological options

Service innovations are seldom born in a firm lab as a result of an isolated research activity (Sundbo and Gallouj, 2000; den Hertog *et al.*, 2006). On the contrary, most service innovations are an answer to a perceived unmet need of actual or potential customers or translating a technological option into a service proposition. Systematically or more haphazardly looking for and interpreting signals in the real world, i.e. having some sort of intelligence function in place, is key for innovators (Teece, 2007) and in our view for service innovators in particular. This intelligence function can then be labelled as the capability to see dominant trends, unmet needs and promising technological options for new service configurations. Service innovators are to a much greater extent dependent on their (actual and potential) users for co-developing and co-producing new service propositions (Alam, 2002; Michel *et al.*, 2008; Matthing *et al.*, 2004) Therefore, understanding these users and their needs is a first priority. Further, due to their combinatory nature (van der Aa and Elfring, 2002; Normann, 2002; Sundbo, 1994; Gallouj and Weinstein, 1997), service providers have to understand what new service configurations would be valued by customers.

Two important sub-capabilities are signalling user needs on the one hand and technological options on the other. The first – and probably more important of the two in a service context – is the capability to empathically understand users and sense their (potential) needs well in advance by interacting intensively with (potential) clients. Dialogues with lead users, joint experimentation and prototyping, user panels, account management systems, client profiling, detailed analysis of how current services are used, trend analysis in client groups, are some of the tools used to sense user needs early on and inform the actual act of service innovation. Typically this capability – at least in larger firms – resides in marketing, new business departments or innovation management if present (den Hertog *et al.*, 2006).

The second variety included under this capability is the capability to signal new technological options (Kindström *et al.*, 2009, p. 336; Teece, 2007, p. 324). These do provide opportunities to adapt and innovate the service portfolio, including new ways of interacting with clients, on demand production, enriching service dialogues or offering opportunities for customized services which sometimes also go hand in hand with new options for self service. Service innovators have to make sure they are informed about the latest options that technologies offer in their industry and related trades. This can be part of a business development function or an ICT department, making a group of people responsible for scanning promising technologies and discussing new options with groups of technology providers.

This signalling activity is not a passive activity, but can be managed for example by a new business development unit as an active, though still rather open process with

broad, well specified questions in mind. Actually a deep understanding of how the relevant context of a firm is changing and being able to sense user needs well in advance and translate this into a search routine for a new service is hypothesized to be key here. These "how" questions may steer implicitly or more explicitly the search processes of service innovators. It is suggested that they first have to be able to manage internal and external sources of information and knowledge and translate these in leading problems and unmet service needs, before more focused service conceptualisation can take place.

This capability has been discussed in more generic terms by Teece (2007) and Wang and Ahmed (2007). Teece (2007, p. 1326) includes under his sensing category "processes to identify target market segments, changing customer needs, and customer innovation" and "processes to tap developments in exogenous science and technology". Wang and Ahmed (2007, p. 37) in their review mention the "ability to scan the market, monitor customers and competitors" as an example of an element of what they define as adaptive capability. In a services context this capability is mentioned regarding specific dynamic marketing capabilities as discussed by Bruni and Verona (2009, p. 107). They include (amongst other components) external ties with lead users and opinion leaders, with the scientific community and with consulting firms. Kindström *et al.* (2009), when discussing dynamic capabilities for manufacturing firms transforming to a service-based business model, signal the importance of "building up a deep customer knowledge, including institutionalizing feedback loops and creating organizational roles, systems and processes that continuously capture and relay customer demands" as part of their wider value opportunity sensing and discovery, next to technology sensing, i.e. "technological innovations directly related to the services business" (Kindström *et al.*, 2009, p. 336).

(B) Conceptualising

A service innovation cannot be researched, developed, prototyped and tested in a similar way as physical goods. This has mostly to do with two key characteristics of service innovation. First, its predominantly conceptual nature makes it difficult for a customer to assess beforehand what will be experienced and what will be delivered (Parasuraman *et al.*, 1985); second, its highly interactive or shared process character (Alam, 2002; Magnussen *et al.*, 2003). Service innovations are in the first place intangible new ideas or combinations of existing ideas (sometimes in combination with physical objects) that together constitute a new value proposition to a client. Conceptualising, designing, prototyping or testing these more fuzzy types of innovations is a specific capability that is therefore expected to be less tangible and codified. The shared process character causes this service conceptualisation for important categories of services (non-standardized services) to become an ongoing process between service provider (mostly a group of service providers) and client.

Once signals and first ideas for new services and service combinations have been collected based on thorough customer interaction and insight into new technological options, a true creative process of reworking these in a service offering (Frei, 2008) or service concept (Normann, 2002) starts. This may involve the ability to smartly combine new and existing service elements into an integrated service configuration that is experienced as new to the market. The actual conceptualisation and design of a service innovation involves more than detailing and visualizing the service offering gradually. It may also involve deciding on how the new service offer relates to firm

strategy, target audience, intensity and forms of customer interaction, organization of the delivery system, partners needed to bring about the service, pricing and revenue model to be used, sort of service dialogue foreseen in detail, and so on and so forth.

In practice, this process is mostly in the hands of a multidisciplinary project team responsible for bringing an initial idea for an innovative service to life (den Hertog *et al.*, 2006). Another task of such a team may be to organize support from senior management as increasingly the service innovation processes involves more disciplines (IfM and IBM, 2008) and in fact corporate entrepreneurship is controlled by management (Sundbo, 1996). In the end this dynamic capability can be said to be about transforming a rough idea for a new service into a viable service offering. This offering should be understood by colleagues, external partners and recognised by clients as a useful, valuable new service offer. As there are hardly ever ways in which new services can be prototyped in a lab-like setting, new concepts and related business processes are simply tried out in practice in the form of prototypes and experiments (Toivonen, 2010), mostly with trusted and well known clients that operate as co-innovators. It is hypothesized that this requires a widely distributed preparedness or capability within the firm to think out of the box, question current service practices and processes, and be prepared to test prototypes and run service experiments. This preparedness in turn requires that ideas and suggestions for new services and service processes can pop up in diverse settings and parts of the organization, including in relation to clients and suppliers. The capability to nurture corporate entrepreneurship and create – to an important degree through HRM policies and leadership practices[12] – an open service innovation culture that values experimentation, prototyping and thinking out of the box, is expected to be essential when managing service innovation in a sustained way.

In the RBV and DCV-literature we have not come across conceptualisation as a specific dynamic capability. This is mainly due to the fact that conceptualisation is typically of importance in service innovation, whereas most dynamic capabilities are discussed in a manufacturing and technological innovation context. In the service management and service innovation literature, however, concept development is mentioned as a step in a typical new service development process (Zomerdijk and Voss, 2010). It is also acknowledged that this can be a rather fuzzy or abstract process especially in services, and therefore has been referred to as fuzzy front end (Zeithaml and Bitner, 2003, p. 226). Edvardsson and Olson (1996) include service design as one of the three core concepts in their holistic service prerequisites model. Similarly Shostack (1984), one of the founders of service blueprinting, uses the notion of service design and indeed this is one of the methods which can be used for developing new service innovations[13].

(C) (Un-)bundling capability

One of the key characteristics of service innovations is that they are often new configurations of existing elements supplied in a new context (van der Aa and Elfring, 2002). That means that in practice, many new services are newly bundled, enriched, blended or the opposite of newly unbundled, stripped down to the bare essential, service offerings (Normann, 2002).

Two basic varieties can be recognised. First, making smart service combinations with a "one stop shopping" character, but still including the possibility to customize the service offer. Examples are integrated consultancies that provide accountancy,

organizational advice and ICT service; all-inclusive holiday packages where apart from the air trip and hotel, catering and car rental services are included or retail formulas that have an important leisure component or vice versa. Second, unbundling services and stripping these down to their bare essentials creates highly specialised services that are very similar and can therefore be standardized to a certain extent. Examples are law firms specialising in divorces or engineering firms specialising in advising on oil rig construction or deep sea drilling. A smart variety is where a bundled service is unbundled first and the basic service sold as a highly standardized basic item; then the remaining service elements are offered and priced separately or re-bundled later at a premium as is evidently the case with low cost carriers in the airline industry. It is to be expected that in practice, decision-making on (un-)bundling may involve innovation strategists – either from new business development or marketing – and most likely senior management as decisions on actual and potential cooperation partners are involved.

In the RBV and DCV literature, this bundling/unbundling capability had not been described to our knowledge as a separate dynamic capability. Sirmon *et al.* (2007) do propose a new overall resources management process whereby they differentiate between structuring, bundling and leveraging of resources. However, they interpret bundling as the bundling of resources rather than the bundling of service activities or functionality which is intended here[14]. However, as indicated above, in the service management and service innovation literature, the importance of bundling in services and service innovation is well documented. As observed by van der Aa and Elfring (2002, p. 162), this type of innovation resembles Normann's (2002) concept of bundling (origibally 1991), Sundbo's (1994) concept of "modulization", and the concept of "recombinative innovation" of Gallouj and Weinstein (1997).

(D) Co-producing and orchestrating

It is hypothesized that managing service innovation across the boundaries of the individual firm and managing and engaging in networks is a key dynamic capability for being able to put a new service concept or configuration on the market. Many service propositions are combinations of service elements (and sometimes goods elements as well) of different services providers that together fulfil a service need (Ramirez, 1999). This corresponds with one of the key characteristics of service innovation, i.e. its highly combinatory or architectural nature. This implies that the core service provider has to co-design and co-produce a service innovation with other suppliers and manage the accompanying alliance. Customers will often be involved in these alliances, co-producing and co-designing service innovations.

Service innovators are therefore expected to be able to engage in these alliances and networks in the first place. Second, they must be able to manage and orchestrate (Teece, 2007, p. 1320) these various coalitions (with different sets of partners) alongside each other and so invest in a set of potential partners who might be needed now or in the future to create new service experiences and solutions. One could even argue that this dynamic service innovation capability actually is the capability to organize and act in open service innovation systems. That would mean the capability to co-produce and co-design with clients (benefiting from customer interactions and access to a set of customers) and other trusted partners and stakeholders newly configured business concepts and subsequently orchestrate these temporary partnerships or alliances.

This capability has, mostly in more generic terms, been touched upon in various RBV/DCV-contributions (Eisenhardt and Martin, 2000, p. 1108; Wang and Ahmed, 2007, p. 34; Teece, 2007). Kindström *et al.* (2009), when applying Teece's framework to manufacturing firms transforming to service providers, mention two dynamic capabilities that are relevant in this context. First, they point out the importance of "an understanding of the value network" (Kindström *et al.*, 2009, p. 336) as part of a wider service-oriented dynamic capability, namely value opportunity sensing and discovery. Second, they identify the orchestrating of the service system as one of the two key reconfiguring service-oriented dynamic capabilities. The latter is needed as they observe that value creation takes place in a network of providers, service partners and customers or a value creating system (p. 337). Another study in a services context also points at orchestrating or alliancing as a key dynamic capability for in this case related diversification in small Norwegian accountancy practices (Døving and Gooderham, 2008).

(E) Scaling and stretching

Especially for large-scale (semi-)standardized service operations, the dynamic service innovation capability to scale and stretch service innovations is key (Winter and Szulanski, 2001). The scaling part of this dynamic capability is directly linked to a key process characteristic of service innovation, namely the observation that service innovations are relatively hard to introduce on a large-scale in a uniform way due to their intangible character, a human component which is hard to standardize, and their cultural dependency (Lyons *et al.*, 2007). At the same time, customers do expect to receive service in a similar fashion at the various outlets and through various channels of the service provider. They associate a brand name with a certain service formula, service process, service quality and pricing.

Scaling is mostly about diffusion. Launching an innovative service successfully in an experimental setting in one location is different to introducing such an innovation firm-wide. To be able to diffuse a new service concept or formula, it needs to be described (or codified) and the essential elements transplanted to other parts of the firm (den Hertog and de Jong, 2007). This may lead to a process of cross fertilisation especially in larger firms where innovative practices and concepts are shared, codified, and implemented firm-wide. Especially in large international service firms with (semi-)standardized services, scaling up successful service innovations is a capability in itself (Winter and Szulanski, 2001). It is expected to increase the efficiency of the service innovation process and to help in creating a consistent set of service experiences or service solutions and brand association.

The related stretching capability can be linked to the highly immaterial character of service innovation. In service markets, communication and branding are key for creating a recognisable service offering (Krishnan and Hartline, 2001). Building up a service brand that (potential) customers value and associate with a certain set of services and service quality requires serious investments and a consistent strategy. Once established, such a brand name can be really valuable for entering new, mostly related service markets, launching innovative service concepts using the existing brand name, and in doing so, stretch the core service offering. An important precondition is that stretching of service activities is consistent with overall firm strategy and logical for (potential) clients.

In the RBV/DCV tradition the attention paid to scaling and stretching and more generally marketing-related capabilities is limited. Bruni and Verona (2009) recently introduced the notion of dynamic marketing capabilities in an attempt to include a functional dimension in the understanding of dynamic capabilities, but applied it specifically to the pharmaceutical industry. Winter and Szulanski (2001) discuss extensively replication strategies in both manufacturing and service industries which essentially are about the scaling dynamic capability. They show that what we refer to as scaling is a much more subtle process than simply freezing a successful business model, rolling it out and exploiting it. Winter and Szulanski (2001, p. 733) argue that:

> [...] a replication strategy requires knowledge of the valuable traits of the business model that need to be replicated, the method by which such traits are replicated, and the kind of environments where outlets with such traits can successfully operate.

Winter and Szulanski (2001, p. 737) state that replication (or scaling in our words) does not only involve exploitation, but also exploration as especially the early stages of replication offer many opportunities for learning, adaptation and fine tuning of a successful business model. There is obviously a trade-off or replication dilemma – when to freeze the business model and how much adaptation and hence variety to accept later on in the process of scaling.

(F) Learning and adapting

Learning and adapting capability, i.e. a deliberate reflection and learning of the way service innovation is managed, is hypothesized to be an important asset for service innovators. It is defined as the capability to deliberately learn from the way service innovation is managed currently and subsequently adapt the overall service innovation process. The type of questions we should be asking include: what have we learned from our latest set of service experiments? Can we use bundling and unbundling strategies for deriving new services? How do we make sure we generate enough cues for service innovations? Are we experimenting enough with new revenue models? These and similar questions should be raised to be able to constantly change if needed the way new services are being created and diffused. Keeping track of failed and successful service innovation efforts and learning from both is hypothesized to be a key meta-capability that may inform management of service innovation. This meta-capability can be viewed as an essential part of learning from current service innovation efforts to see where an open and distributed tough-to-manage process can be improved. As also put forward by den Hertog *et al.*, 2006), it is important to strike a balance between a "command and control way" of managing service innovation and a "let a thousand flowers blossom" approach.

Learning features considerably in the RBV/DCV literature. There is however some debate as to whether the act of learning should be labelled as a dynamic capability itself. Zollo and Winter (2002, p. 340) clearly see learning as a dynamic capability when they remark that:

> [...] dynamic capabilities arise from learning: they constitute the firm's systematic methods for modifying operating routines. To the extent that the learning mechanisms are themselves systematic, they could (following Collis, 1994) be regarded as "second order" dynamic capabilities. Learning mechanisms shape operating routines directly as well as by the intermediate step of dynamic capabilities.

Ambrosini *et al.* (2009, p. 11) in a recent theoretical contribution also see learning as a dynamic capability when they remark that "as a dynamic capability, learning allows tasks to be performed more effectively and efficiently, often as an outcome of experimentation, and permits reflections on failure and success". With these scholars and applied to a service innovation context, we expect that a deliberate learning or evaluating capability is key for reflecting on current service innovation management practices and how to improve these.

5. Conclusions

The aim of this paper is to contribute to a better understanding of service innovation and its management by linking a service (innovation) perspective to a DCV of a firm. It started with the basic understanding that successful service innovators are those service firms and organizations that have introduced innovative service experiences and service solutions repeatedly. We developed a conceptual framework for strategically managing service innovation by proposing six, what we have coined, dynamic service innovation capabilities. This framework builds on and is integrated with a model in which six dimensions of service innovation are discerned. Both sets of dimensions and dynamic capabilities are integrated in Figure 1. We hypothesize that successful service innovators outperform their competitors in at least some of these dynamic capabilities. They are expected to have developed idiosyncratic and therefore difficult to replicate firm-specific mixes of dynamic service innovation capabilities. Equally important, they are expected to have developed a higher order of dynamic service innovation capability, i.e. the capability to reflect on the whole process of managing service innovation, derive lessons from it and use these in new rounds of managing service innovation.

5.1 Reflections on further research

Stimulating service innovation and "capturing the ways in which companies are innovating services" is regarded as one of the top-ten research priorities for the science of services (Ostrom *et al.*, 2010, p. 12). In our view, the potential of a combined service innovation management/DCV of the firm is still underutilized and offers many promising avenues for further research. We are certainly not the first to flag this potential. Sundbo (1996), combining the RBV and service (innovation) management perspective, concluded that there are not that many prescriptive service innovation models available. Gallouj and Weinstein (1997) were among the first to link competences of both service provider and its clients in their characteristics-based framework. Similarly, Möller *et al.* (2008) focus on the role clients' experiences and capabilities play in client-provider value creation. The move from a goods-dominant towards a service-dominant view as articulated by Vargo and Lusch (2004a, pp. 5-6; 2004b, p. 326) is also consistent with RBV and DCV.

Based on the conceptual framework presented, we see at least three major research challenges. The first challenge is linking service innovation efforts and results to overall firm performance. This can be seen as a variation in the link between innovation in general and firm performance or productivity development (which is not self evident, see Klomp and van Leeuwen, 2001; van Leeuwen and Klomp, 2006). Being a successful service innovator is no guarantee for an overall high-firm performance, as there are many determinants of firm performance. We therefore propose in future

service innovation research to assess the management of service innovation as a specific business process and to take the outcome of this individual business process as a measure of its effectiveness.

The six dimensions of service innovation outlined in this paper can in our view be used as a specific performance measurement for such a business process. We hereby build on the approach adopted by Ray *et al.* (2004) who used the effectiveness of a particular business process as performance indicator – in their case the customer service business process – instead of overall firm performance. Eisenhardt and Martin (2000, p. 1108) interestingly also proposed earlier to adopt the outcome of an individual business process for assessing the effectiveness of the same business process. This also addresses one of the major challenges for the RBV as identified by Priem and Butler (2001, p. 36), i.e.: "to answer the how questions" and start identifying the "causal hows and whys" (p. 34)[15]. By using a dedicated service innovation performance indicator we expect to be able to provide in future studies more insight into the ways regular firm resources and capabilities are leveraged, created and combined to arrive at service innovations in a sustained fashion.

A second research challenge is a more detailed understanding of how the dynamic service innovation capabilities relate to each other as well as to the dimensions of service innovation. We expect that especially the "conceptualising" and "learning and adapting" dynamic capabilities are linked to all the other five dynamic capabilities and impact upon all six service innovation dimensions. However, the other four dynamic capabilities are expected to be linked to different mixes of dynamic service innovation capabilities and service innovation dimensions. To assess this, empirical studies testing and elaborating the framework in this paper are needed.

A third research challenge is to contextualise our conceptual framework for strategically managing service innovation. It can be hypothesized that different types of firms, in different industries, firms of different sizes and firms adopting different firm strategies will most likely master a particular mix of dynamic service innovation capabilities that is relevant for their type of firm, their type of industry, their size and is aligned with the particular service strategies chosen. However, this requires rigorous formal testing of the proposed conceptual framework in both explorative case studies and large-scale surveys.

5.2 Managerial implications

Our contribution is conceptual and our framework cannot be used as a prescriptive management tool yet because it needs empirical testing. However, some reflections on the managerial implications of our dynamic service innovation capability framework can be made.

First, dynamic capabilities come at a cost (Winter, 2003) and the returns derived from them must be in line with the investments required. An organization cannot develop all the potential dynamic capabilities that might be useful at some point as they are costly to develop and maintain. Service innovators therefore have to be selective in nurturing existing and developing new dynamic service innovation capabilities which are key for sustaining or gaining competitive advantage. This is also an important driving force for cross firm cooperation in order to exploit complementary capabilities for service innovation (Chesbrough, 2003). Finding the right balance between under and over-investing in dynamic capabilities and deciding when and how to strategically

align with collaborators possessing complementary dynamic service innovation capabilities is therefore a key management challenge.

Second, a dynamic service innovation capability cannot be created overnight. It needs time to develop and cannot be switched on and off at will. Teece *et al.* (1997, p. 514) observed what he labelled the stickiness of resource endowment when remarking that "firms are to some degree stuck with what they have and may have to live with what they lack". This in our view also applies to dynamic service innovation capabilities. These cannot be bought from the shelf but have to be nurtured and created over the years[16]. Dynamic service innovation capabilities should be deployed and given time in order to reap the benefits of economies of scale and economies of learning. In evolutionary terms they are path dependent, i.e. historically rooted or can only develop over time to eventually become part of the firm culture and indeed firm DNA. Therefore, service innovation managers cannot switch swiftly to developing new service offers requiring a completely different set of dynamic capabilities. Service innovations have to be built on and are related to historically grown dynamic service innovation capabilities (Gawer and Cusumano, 2002).

Third, these dynamic service innovation capabilities have been described in general terms here. We expect that most common elements can be transferred between firms and organizations. However, apart from the commonalities, we expect that there is a lot of specificity in how dynamic capabilities are translated and implemented in a particular firm (Winter and Szulanski, 2001). Therefore, simply copying and implementing dynamic service innovation capabilities without adaptation seems not enough to become a sustained and successful service innovator. More in general, strategic management of service innovation is a multifaceted challenge, to which this comprehensive conceptual framework should contribute.

Notes

1. Of the 32 dynamic capabilities studies over the period 1995-2005 as reviewed by Zahra *et al.* (2006), six deal explicitly with specific service industries.
2. Which we are pursuing ourselves as we just started a two-year research project on managing service innovation. Part of the programme is devoted to performing 25 case studies in which we test this set of six dynamic service innovation capabilities.
3. Here, we agree for example with Möller *et al.* (2008) who focused in detail on the service co-creation models and proposed a client-provider service co-creation framework.
4. This is an adapted version of the definition of service innovation originally included in van Ark *et al.* (2003, p. 16).
5. For the sake of brevity, mostly referred to as organizational service delivery system.
6. Although this is the dominant dimension through which the technological component enters the model, technology may also affect for example the new service concept, ways in which clients interact with the service provider, and also type of relevant business partner as especially pure service players partner with "technology partners" to offer their service innovations.
7. Prahalad and Hamel (1990) added considerably to the approach by presenting it to a wider audience under the label of the core competence of the corporation.
8. To authors in the so-called positioning school, firm strategy was largely interpreted as driven by the external environment or industry (set of industries) in which a firm had to compete by positioning itself through product-market combinations (Mintzberg *et al.*, 2009).

9. The path ahead a firm can travel is dependent on the current position and importantly on previous investments, routines developed or simply the specific lessons learned by a firm or its history.
10. Evolutionary or external fitness – a phrase introduced by Helfat *et al.* (2007) – indicated how well a capability enables a firm to make a living (as compared to technical capability which refers to how effectively a capability performs its function, regardless of how well the capability enables a firm to make a living).
11. At first, dynamic capabilities were mainly associated with markets with rapid technological change (Teece *et al.*, 1997), but increasingly so, it is acknowledged that dynamic capabilities are relevant in other markets as well, including service markets (Bingham and Eisenhardt, 2008; Zollo and Winter, 2002; Kindström *et al.*, 2009).
12. In our view this implies that – at a basic level – leadership should communicate that it values service innovation. At a more advanced level, the way individual careers, team formation and coaching are shaped do matter when managing service innovation.
13. There is considerable literature on service blueprinting, for a recent overview see Bitner *et al.* (2008).
14. Although one might argue that creating a bundled service offer in practice means combining a firm's capabilities and resources.
15. A similar, though less nuanced and constructive assessment of the DCV is included in Arend and Bromiley (2009).
16. A related observation is that dynamic capabilities are gradual, you can have them, but master them to varying degrees. Or as worded by Helfat and Peteraf (2003, p. 999): "to say that an organization has a capability means only that it has reached some minimum level of functionality that permits repeated, reliable performance of an activity".

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