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Managing service innovation: firm-level dynamic capabilities and policy options

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Summary

Service innovations are ubiquitous and do affect our social and business lives intensively. This PhD thesis deals with the switch from a goods and manufacturing dominant to a services-dominant innovation paradigm at both firm and policy-level. We assess the partly idiosyncratic character of service innovation, the organizational routines for managing service innovation at firm level and develop a rationale for and systemic perspective on service innovation policies.

In chapter 1 we introduce the topic of service innovation and signal two core issues. First, we observe that most of our current understanding of service innovation, service innovation processes and service innovation policies is still biased towards the goods and technological paradigm. As a result we are lacking frameworks that are sensitive to the richness of service innovation. A second, related core problem is that, due to a weakly developed organizational, firm-level perspective on service innovation, we lack insight into effective organizational routines and thus prescription for managing the service innovation process. As a result of both core problems, firm managers and innovation policy-makers are still struggling how to manage and facilitate service innovation and how to develop innovative service-dominant firms in innovation systems adapted to service innovation. This is a pressing problem as future competitiveness, economic growth and quality of life are largely dependent on how well firms, industries and wider innovation systems are equipped to support and benefit from service innovation. In this context we discuss how large scale service production and ongoing processes of service specialization combined with increasing competitive pressure make service innovation crucial in gaining competitive advantage and increasing quality of life. We also argue why service innovation thus far is so difficult to assess in practice.

In chapter 1 we also define services and service innovation. We argue that both the intangibility and the customer intensity make service activities inherently different from pure goods and manufacturing activities. In our view the creation of new service experiences and new service solutions, and thus the underlying organizational routines or dynamic capabilities for creating these repeatedly, are significantly idiosyncratic. We also observe here that service innovations are multi-dimensional (i.e. require new combinations of both technological, but above all non-technological dimensions), inter-disciplinary (i.e. required resources and dynamic capabilities reside in various disciplines that need to be combined), multi-party (i.e. are created in interaction with customers and business partners) and often multi-site (i.e. need to be created interactively with the customer at various locations). The resulting 'distributed character' of service innovation is in stark contrast with the archetypal central R&D model that is still more common in goods-dominant firms and industries. In line with the 6D model developed in this thesis, we define a service innovation as a new service experience or solution in 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.

We then introduce the leading question of this thesis: “What are the key dynamic capabilities for managing service innovation at firm level?” as well as ten key questions and the basis for addressing these (see table S.1 below). We also explain our approach and the various studies on which this thesis is based.

Finally we outline our contribution to the literature by indicating how we add to (and benefit) from:

- The service (innovation) management literature and more specifically the marketing and service management, New Service Development, service innovation and interdisciplinary sub-traditions. Although there are many useful frameworks and insights, we conclude that overall current service (innovation) management literature is partial, lacks ‘granulation’ or is still too product-based. It neither appreciates well enough the distributed (intrafirm and interfirm) and non-linear character of service innovation, nor does it provide enough insight into the organizational routines needed at firm level for bringing about service innovations repeatedly. By developing our 6D-model of service innovation and set of six dynamic service innovation capabilities we aim to address these flaws;
- The RBV/DCV of the firm. Current RBV/DCV frameworks are neither specified for a service context nor are they based on the specificities of service innovation. In this thesis we operationalise the RBV/DCV approach specifically to a services context and focus on a particular business process namely the process of service innovation. We

Table S.1 Key questions and where we address these

| | Key question | Chapter(s) |
|----|--|---------------|
| 1 | How can service innovation be defined? | 1 |
| 2 | What dimensions can be discerned for mapping service innovation? | 1, 2 and 6 |
| 3 | What role do service firms play in innovation? | 2 |
| 4 | How is service R&D and innovation managed in practice? | 2, 3, 4 and 5 |
| 5 | How can service (innovation) management approaches and the RBV/DCV of the firm cross pollinate each other to better understand how to manage service innovation? | 1 and 6 |
| 6 | What are the key dynamic capabilities needed at firm level to more systematically and repeatedly develop service innovation and steer the process of service innovation? | 6 |
| 7 | How are service innovation dimensions and dynamic service innovation capabilities linked? | 6 |
| 8 | Is there a rationale for a services innovation policy? | 7 |
| 9 | What options do innovation policy-makers have to support service innovation in firms? | 7 |
| 10 | What role do knowledge intensive business services play in innovation systems in particular? | 8 |

further address the issue of the lack of “causal whys and hows” for which the RBV/DCV of the firm is criticized. We propose a specific performance measurement directly linked to the service innovation business process.

- Service innovation policy literature. In practice current service innovation policies are still biased towards technological innovation in a manufacturing setting and a systemic perspective is mostly absent. We address these issues by:
 - extending the assimilation, demarcation and synthesis or systemic approach to service innovation policy and the options for this policy;
 - developing a rationale for service innovation policies differentiating between macroeconomic or contextual arguments, market failures and systemic failures;
 - analysing the various roles Knowledge Intensive Business Services (KIBS) play in supporting innovation at their clients and in the functioning of innovation systems.

In chapter 2 we address the idiosyncratic character of service innovation by introducing a multi-dimensional model of service innovation (which we extend into a six dimensional model in chapter 6) that allows for mapping and measuring individual service innovations. At a more aggregated sectoral level we subsequently identify five patterns of service innovation: (1) supplier-dominated innovation; (2) innovation within services; (3) client-led innovation; (4) innovation through services; and (5) paradigmatic innovation. We analyse these dimensions of service innovation and innovation patterns in retailing, technical engineering, “logistics” industry, financial services (mostly retail banking), and ICT services. On this basis we conclude amongst other things that:

- non-technological dimensions do shape services innovation to a great extent;
- multi-dimensionality and new combinations of new and existing dimensions are the rule;
- cross linkages between the dimensions are forged by those responsible for marketing, ICT, business development, organization and distribution;
- innovation in service firms goes across firm and industry boundaries highlighting the ‘open character’ of processes in service innovation.

With regard to the service innovation patterns we conclude that the supplier-dominated innovation pattern is not the most prevalent one in services. We observe a much wider variety of roles of service firms in innovation processes, indicating their more autonomous role innovation. Some services, especially knowledge intensive business services (KIBS, see chapter 8), are seen to function as co-producers of innovation in their clients’ operations.

In chapter 3 we present another sectoral analysis of service innovation, drawing attention to the autonomous innovation taking place in a so-called ‘low tech’ service sector i.e. the Dutch hospitality industry. The analysis shows that innovation in this type of service industries is more prevalent and more varied than reported in regular statistics. It subsequently confirms the more general finding that innovation in most service industries is less formalized, less explicitly managed and less often budgeted separately compared to innovative manufacturing firms. Additionally innovative hospitality firms are clearly shown to co-operate more often in comparison to non-innovative firms. In terms of firm performance, we signal that the impact of innovation should be perceived more widely and also include non-financial impacts. Further, higher innovation intensities are shown to be associated with better firm performance (defined narrowly), suggesting that innovation in a generally perceived ‘low tech’ industry as hospitality matters. Finally, we illustrate that in innovation surveys a differentiation between marginally, moderately and highly innovative firms can be made by including an innovation intensity measure.

In chapter 4 we address specifically the firm level by investigating how 20 European service-dominant firms deal with service R&D and innovation. Based on the cases (biased towards larger service firms) some of the key findings are:

- Services’ R&D and innovation are mostly less formalised, more distributed, less explicitly managed and funded. A dedicated long-term services’ R&D and innovation strategy (and hence management) at management board level is found to be rare.
- Important services’ R&D and innovation activities are hidden behind labels such as business development and service improvement without being recognised as services’ R&D and innovation. They are also hidden in client-specific solutions.
- R&D and innovation in services take place predominantly in cross-divisional project teams. Central responsibility is mostly entrusted to divisions that have relatively high levels of contact with customers (e.g. marketing, product management, sales) and ICT departments.
- Six practices regarding decision making on service R&D and innovation projects are identified. In most cases there is some mechanism for joint decision making on service R&D priorities, although not necessarily at the highest management levels. Also case-by-case decision making is quite prevalent, leaving entrepreneurial employees or ‘free agents’ dealing with service innovation with considerable room to manoeuvre.
- An open collaborative network model of innovation seems to develop in the de facto standard when it comes to services R&D and innovation. This mainly applies to working with other firms and customers. There is room to improve collaboration when innovating between service firms and public research organisations.

- Most surveyed service-dominant firms are not well connected to the R&D and innovation policy scene (apart from those performing extensive technological R&D themselves). Existing R&D and innovation schemes are of limited value to them as it is hard or unappealing to get access to or participate in them. At the same time, nearly all the analysed companies do not have an internal structure for supporting the systematic acquisition of funded R&D projects.

All in all, the case studies underline that a majority of the firms surveyed show a suboptimal ability to repeatedly and systematically develop, innovate and manage service innovation.

Chapter 5 presents a firm-level analysis of the Randstad model of corporate innovation in the temporary staffing industry. It again underlines that innovation processes and practices in services are multi-faceted. Their management involves the coordination of business intelligence, product and service development as well as the diffusion of best practices throughout the entire organization. It further shows how the particular innovation strategy, structure and decision-making at Randstad have helped to create organisational routines and features that promote organizational learning (defined in chapter 6 as dynamic service innovation capabilities). Important R&D and innovation activities are found to be embedded in various activities ranging from optimising large scale administrative processes, business concept development, co-innovation with major clients and creating an open corporate culture in which ‘bottom-up’ innovations are valued and where needed adopted by senior management for further diffusion. This supports the view on service innovation as a distributed activity requiring input from persons broadly spread throughout the organization. Finally, the Randstad case illustrates how service innovation in practice means enriching, blending and customising the company’s core activities into well-defined and profitable service concepts that can be rolled out swiftly.

In our key chapter 6 we discuss the six dimensions of our 6D service innovation model in its final form. We define the following dimensions: (1) new service concept; (2) new customer interaction; (3) new value system/new business partners; (4) new revenue models; (5) new service delivery system (organizational component); and (6) new service delivery system (technological component). We show their relevance by providing empirical evidence taken from the sectoral and case study analyses as presented in chapters 2-5. We observe that service innovations are predominantly combinations of several dimensions that are interlinked. We conclude that most service innovations are combinations of these. Innovations where (almost) every dimension is innovated are defined as business model innovations.

We further introduce in chapter 6 the notion of dynamic service innovation capabilities. We define these as those hard to transfer and imitate higher-order service innovation capabilities firms possess to develop, (re-)shape, (des-)integrate and (re-)configure existing and new resources and operational capabilities. These are needed to successfully offer

existing and potential clients a new service experience or new service solution and market these in a sustainable fashion and hence swiftly adapt to a firm's changing environment. We differentiate six capabilities and link these to the results of sectoral and case study analyses as presented in chapters 2-5. We formulate eight propositions as to how these individual service innovation capabilities are linked to the six service innovation dimensions that we discern in the 6D-model of service innovation (see table S.2 below).

Both the 6D-service innovation model and six dynamic service innovation capabilities contribute to an overall integrated, firm-level framework for the strategic management of service innovation (see figure 6.3). This framework for the strategic management of service innovation extends both the service (innovation) management and RBV/DCV literature (see sections 1.7, 6.1 and 6.3) individually and in combination – the latter by proposing six service innovation dimensions as performance measure for the particular business process of service innovation.

In chapter 7 we address the bias in existing innovation policies towards technological innovation in a manufacturing context i.e. we focus at the policy level. We apply the three well-known approaches towards services innovation (assimilation, demarcation and systemic) to service innovation policy. We develop a policy menu with policy options taking these three approaches as point of departure. We also forecast that the development towards service innovation policies at the various levels will be evolutionary rather than revolutionary.

Additionally, we discuss possible policy rationales for service innovation policies and identify three varieties: a contextual and macroeconomic rationale; a rationale based on market failure; and a rationale based on systemic failures. We conclude that macroeconomic reasons to consider service innovation policies are self-evident given the key role services play in processes of economic growth and innovation, but are nevertheless still too often ignored in policy practice. With regard to market failure argumentation we observe that this category of arguments is oddly enough still predominantly associated with technological R&D in a manufacturing context. We argue that all four categories of market failure identified here (uncertainty and asymmetric information, externalities, scale economies and market power) in principle apply to services, but not all to the same degree and in all service activities. We observe that especially the discussion on the presence of externalities in service markets is a thorny one. We argue that in those cases where service-dominant firms have to deal with long and expensive learning processes when investing in service innovation and where the risk of (lower cost) imitation is real, knowledge externalities can be said to exist. However, we acknowledge that more detailed analysis is needed on this particular point. Further, we recommend looking more closely into systemic failures when designing service innovation policies. Our argument is that it will be difficult to cope with service innovation if innovation systems are not suited to facilitate and benefit from service innovation. We then show

the applicability of four subcategories of systemic failures (capability failures, institutional failures, network failures and framework failures) to a services context. As a result the arsenal of potential policy options to spur service innovation can in our view be broadened considerably. We argue that alongside ‘pure’ R&D and innovation policies, other types of policy actions – i.e. policies not originally designed to facilitate R&D and innovation – might prove helpful and are probably less costly in furthering service innovation. Finally, we forecast that in every individual innovation system, a specific (temporary) mix of instruments and policies will eventually develop that is suited to the particular macro-economic context and institutional set-up as well as relevant market and systemic failures.

In chapter 8 we combine a more detailed analysis of the ‘innovation through services’ pattern with an innovation systems perspective. We analyse in detail how KIBS co-produce innovation at their clients by acting as facilitators, carriers and sources of innovation. This analysis is based on sectoral analyses of KIBS such as ICT services, business consultancy and engineering services. It is shown that this basically two-way knowledge exchange involves, in addition to discrete and tangible forms of knowledge exchange, process-oriented and intangible forms of knowledge flows. Four dichotomies for analyzing these knowledge resource flows are offered. We further observe how KIBS in a wider innovation systems perspective may function as valuable intermediaries. KIBS can be perceived as a knowledge clearing house where various types of knowledge are confronted, enriched and translated into practical solutions for client firms. Additionally, KIBS may function as dissemination agents of best practices among their clients ‘carrying’ their professional knowledge and experience from client to client and, at the same time, feeding back problems encountered in their day-to-day practice to academic research or fellow KIBS. Finally, we put forward the concept of KIBS as a ‘second’ knowledge infrastructure next to the formal and institutionalized ‘first’ knowledge infrastructure. We suggest this is a temporary phase before public and private knowledge bases start blurring altogether.

In chapter 9, drawing on the key empirical and theoretical findings in this thesis, we present the following three overall conclusions on respectively service innovation, service innovation management and service innovation policy:

1. Service innovation is about the creation of new (but reproducible) service experiences and solutions in a joint process with customers and is intrinsically multi-dimensional, inter-disciplinary, multi-party and multi-site, and therefore tougher to create and manage than mostly anticipated. The 6D-service innovation model developed in this thesis differentiates between new service concept, new customer interaction, new value system/business partners, new revenue model, and new organizational or technological service delivery systems. It can be used both as a tool for mapping and analysing discrete service innovations and for systematically creating new service experiences and solutions.

Table S.2 Six dynamic service innovation capabilities and propositions on their links to the six dimensions of service innovation

| Dynamic SI capability | Proposition |
|----------------------------------|---|
| Signalling user needs | <i>Proposition 1A.</i> Service firms with strong capabilities for signalling user needs are better connected to actual and potential clients, are more capable of making sense of information stemming from different sources (also if these are contradictory), and are more productive in collecting ideas for new services compared to their peers/competitors in similar markets. These firms therefore outperform their peers/competitors in particular in the ‘new service concept’ and ‘new customer interaction’ dimensions of service innovation. |
| Signalling technological options | <i>Proposition 1B.</i> Firms with strong capabilities for signalling technological options, are better connected to actual and potential technology partners, are better capable of making sense of technological information stemming from different sources (also if these are contradictory) and translating this into a service innovation context compared to their peers/competitors operating in similar markets. Those service innovators who master this capability outperform their competitors especially on the ‘new delivery system: technological’ dimension and the ‘new customer interaction dimension’ (which are both to a large degree technologically mediated). |
| Conceptualising (service design) | <i>Proposition 2.</i> Service firms with strong conceptualisation capabilities are particularly good at transforming an initial idea for a new service into a fully operational new service offering and the service process and service organization needed to realise it. This requires a strong conceptualisation and prototyping capability – or one could say conversion process from idea to first real life service experience – involving many practical decisions. Firms excelling in this particular capability outperform their peers/competitors on probably all 6 performance dimensions of service innovation, but in particular on the ‘new service concept’ and ‘new delivery system (organizational)’ dimensions of service innovation. |
| Bundling & unbundling | <i>Proposition 3.</i> Service firms with strong bundling, unbundling, enriching and blending capabilities are particularly good at creating new service experiences and solutions by either bundling or unbundling service elements in new service offers. This can be done by making smart service combinations with a ‘one stop shopping’ character or by unbundling services and stripping these down to their bare essentials as basis for either highly specialised services that are really tailor-made or more standardised services. Both require well developed conceptualisation capabilities and especially the strategy of bundling also requires highly developed orchestration and stretching capabilities. We hypothesize that firms with well developed (un)bundling capabilities outperform their peers/competitors particularly in the ‘new service concept’, ‘new value system/ business partners’ and ‘new revenue model’ dimensions of service innovation. |
| Co-producing & orchestrating | <i>Proposition 4.</i> Service firms with strong co-producing and orchestrating capabilities know how to co-produce and co-design with clients (benefiting from customer interaction and access to a set of customers) and other trusted partners and stakeholders newly configured business concepts and subsequently orchestrate these temporary partnerships. This dynamic capability therefore actually refers to the capability to manage service innovation across the boundaries of the individual firm and mostly requires executive capabilities. Firms excelling in this particular capability are likely to outperform their peers/competitors in two service innovation performance dimensions notably ‘new value system/business partners’ and ‘new revenue model’ associated with the new service. |

Table S.2 continues on next page

| | |
|---------------------|---|
| Scaling | <p><i>Proposition 5a.</i> Service firms with strong scaling capabilities are particularly good at managing the identification and then diffusion of successful service concepts firm-wide. These capabilities increase the efficiency of the overall service innovation process and contribute to creating a consistent set of service experiences or service solutions through various outlets or channels and add to the brand image of value (which may be subsequently used for brand stretching). This dynamic capability requires strong executive capabilities. Firms excelling in the scaling capability usually outperform their peers/competitors in three service innovation performance dimensions notably ‘new service delivery system’ (both organizational and technological) and ‘new service concept’ (as having a portfolio of strong service concepts is a first pre-requisite for up scaling them).</p> |
| Stretching | <p><i>Proposition 5b.</i> Service firms with strong stretching capabilities are particularly good at – after having developed a strong brand name – entering new, mostly related service markets and launching (related) innovative service concepts using the existing brand name. An important precondition is that stretching of service activities is consistent with overall firm strategy and logical from the perspective of potential and actual customers. We hypothesize that firms excelling in the stretching capability outperform their peers/competitors in the design of new (related) service concepts as well as new customer interaction performance dimensions.</p> |
| Learning & adapting | <p><i>Proposition 6.</i> Service firms with strong learning and adapting capabilities are particular good at deliberately reflecting on and learning from how service innovation is managed currently and looking for improvements to the service innovation management process as a whole. Service firms with a well developed learning and adapting capability that is used by its senior management show a better overall service innovation performance and outperform their peers/competitors.</p> |

2. Service innovation is a process that can be steered and managed consciously and systematically. Service-dominant firms that want to become sustainable service innovators may draw on six dynamic service innovation capabilities, notably: A) signalling user needs and technological options; B) conceptualising (or service design); C) bundling and unbundling; D) co-producing and orchestrating; E) scaling and stretching; F) learning and adapting. They should invest in distributed, firm-specific, idiosyncratic mixes of these dynamic service innovation capabilities and align these with firm strategy. The generic set of six dynamic service innovation capabilities is a tool for firm management to reflect on the firm-specific mix of distributed service innovation capabilities that reside in a varied set of professionals spread over the firm. This distributed model of service innovation is in contrast with the archetypal central R&D management model that we know from technological R&D in manufacturing settings.
3. An innovation systems perspective is lacking in service innovation policies. When defining a rationale for service innovation policies, systemic failures in addition to (rather than solely) market failures should be the starting point. Currently, service innovation policies are dominated too much by assimilation and demarcation

perspectives. They lack the vision as to how services can be better embedded in innovation systems, and how innovative services can contribute to the overall innovativeness and competitiveness of these innovation systems. Knowledge Intensive Business Services (KIBS) may play a key role as intermediaries in these more service-dominant innovation systems.

Finally, we present implications for three categories of actors. For innovation managers we offer a checklist of ‘prescriptive questions’ for the six dynamic service innovation capabilities and some practical implications. For service innovation scholars we take stock of some research challenges at various levels of analysis. We additionally provide a simple model to be used in an RBV/DCV context for systematically developing research propositions in addition to the one already presented in table S.2 above. Lastly, we present key policy implications and ten suggestions for future policy research.