

# Growth and Innovation: Venture capital, private equity, and innovation processes in service industries

Eirik Vatne

SNF



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# **SNF Report No. 05/15**

## **Growth and Innovation: Venture capital, private equity, and innovation processes in service industries**

**Eirik Vatne**

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and  
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MISSING

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## Preface

This report brings together results from two different projects. The first is related to WP10 and the first research program of the Center for Service Innovation (CSI-NHH). The mission of this work package is to study service innovation systems, capital markets and structural innovation. More precisely the project includes a study of service innovation systems and a study of service firms supported by financial capital of venture capital (VC) and private equity (PE) funds. CSI partner Argentum has supported the project with data on funds, fund managers and portfolio firms and helped introduce us to informants in the industry. The second project is “MISSING: Measuring innovation in the service systems – indicators on new grounds”, funded by the FORFI program - the Research Council of Norway. Under the MISSING-project, this study relates to WP3 where we utilize data not necessarily collected to serve as innovation indicator data. In part of the study we follow the same agenda as the rest of the MISSING project: a focus on innovation processes and resources mobilized, but related to firms supported by VC or PE.

Maria Blom (SNF), Jarle Bastesen, (SNF) and Kristin Berntsen (HBV) have assisted with the establishment of a database of Norwegian PE funded portfolio firms, and the transcription and coding of interviews. Eirik Vatne has been the project manager and is fully responsible for what is reported here. In the process of this study, we have been helped by many partners of VC/PE management funds and managers involved in innovation projects in portfolio firms of these funds. Without their generous use of time and sharing of knowledge, this project would never have achieved an in-depth understanding of innovation processes as they actually occur in real firms.

This report documents empirical results from these projects. Some of the results will be analyzed in a theoretical context elsewhere.



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## Abstract

This report focuses on service-innovation in firms supported by venture capital/private equity. The first part discusses specific characteristics of services and develops a typology of innovation modes. The second part identifies the importance of service firms among Norwegian firms supported by risk money. Results are reported from a small survey among fund managers focused on motives for investing in their portfolio firms. The last part conveys results from a qualitative case study including 21 portfolio firms in services. It documents development processes and resources used in innovation projects. Few projects were classified as radical innovation. The majority of projects were incremental innovations or based on recombination of existing resources. Technology and software were important elements in most projects. Customers' needs were identified as an important trigger, but the innovation project was mainly initiated by the firm's own personnel. Innovation projects were formally organized, often dependent on resources controlled by the operational part of the firm. This dependency created conflicts, normally solved through informal relations. Innovation projects were seldom registered as R&D. Only crude measures of performance were used. The most important resources for innovation were reported to be the firm's human capital, combined with a culture for change and well-developed social networks. Financial and managerial support from the VC/PE-owner were also regarded as important, but generally, the firms were not involved in larger networks of partners for innovation. Lastly, some implications for innovation policy are discussed. Chapter 6 summarize results from the qualitative study in some more depth.



## 1. Introduction

This publication report from a sub-project (work pack 3) included in a larger project studying innovation activities in the service sector. Consequently, the report must be seen in conjunction with the project's main publication, which reports results from work packs 2 and 4 (Pedersen, Aas, Bentsen, & Branstad, 2015). Both reports are part of the MISSING<sup>1</sup> project funded by the FORFI program, The Research Council of Norway. FORFI is an applied, policy-oriented program meant to develop a better knowledge base, specifically for research and innovation policy. Consequently, our project studies *innovation practices* in service industries, and the implications this could have for innovation policy.

In work pack 3, our main interest is to study innovation behavior in a specific type of growth company: service-based firms supported with capital and owned by institutional investors such as *venture capital* (VC) or *private equity* (PE) funds. This delimitation comes from the affiliation of this project with the Centre of Service Innovation at NHH, and the center's work pack 10 addressed to study service innovation systems with a specific emphasis on the contribution of risk capital and the innovation practices of firms dealing with it.

The general purpose of this publication is to convey empirical results from two smaller surveys and a larger case study. The intension is to unveil the growth and innovation processes in particularly dynamic service-oriented firms supported by an active and professionalized ownership. Through this approach, we hope to be informed by some form of better if not "best practices" in service innovation. These practices could have some relevance for policy. The study is explorative and mainly descriptive. Theoretical arguments are not developed in any length in this context.

### 1.1 The resource–process–system framework

In SNF Report 07/15, Pedersen et al. (2015) use a *resource–process–system framework* to study innovation practices in services. This framework is based on an *innovation management perspective* (Froehle & Roth, 2007) combined with a system perspective. Simply put, this includes the following three elements:

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<sup>1</sup> Acronym for: Measuring Innovation in Service Systems: Indicators on New Ground.

1. Innovation practice is understood as a *dynamic process* at the firm level. The process starts with the identification of a possible new approach to services, service production, distribution, etc., goes normally through stages of selection, implementation, and launching, and ends up as a failure or a contribution to the survival and growth of the firm. *Managing* this process well is regarded as vital.
2. Influenced by the resource-based view (Barney, 1991),<sup>2</sup> Froehle and Roth also add that this process is dependent on the availability of *specific resources* inside the firm's boundary. With reference to Barney, Froehle and Roth suggest that the firm needs *intellectual resources* to, among others, support creativity and idea generation, *organizational resources* to motivate employees, develop incentive systems, organize and manage a project team, etc., and *physical resources* to support necessary facilities, enable communication and external connectivity, etc. (In this project, we will also emphasize the importance of *financial capital*.)
3. In addition, Pedersen et al. add a *systemic* part to this resource–process model. Innovation is seen as an outcome of interactive *learning processes*, including not only resources available inside the firm. Often a substance of *external* knowledge, financial and technological resources are included and complement internal assets used in the firm's innovation process. These resources come from a diverse set of actors: users/customers, suppliers, partners, consultants, public agencies, R&D institutions, etc. Thereby, a network or system of actors contribute to innovative activity. The theoretical inspiration for this addition to the Froehle and Roth framework comes partly from the resource-dependent view of the firm (Pfeffer & Salancik, 1978)<sup>3</sup> and from the literature focused on innovation systems, interactive learning, industrial dynamics, and innovation policy (Lundvall 1992, Carlsson 2007, Edquist 2005, Asheim, Boschma & Cooke 2011).

Pedersen et al. (2015) use this framework to study patterns of innovation activities in four categories of service firms: scale-intensive network services (e.g., telecom, banking, insurance), scale-intensive physical infrastructure services (e.g., transport, wholesale), personal services (e.g., tourism), and knowledge-intensive services (e.g., engineering, consulting, ICT services). This four-

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<sup>2</sup> For a critical review of this theory, see Kraaijenbrink, Spender, and Groen (2010).

<sup>3</sup> See Drees and Heugens (2013) for a recent review.

legged taxonomy is based on Castellacci (2008) and Kuester, Schuhmacher, Gast, and Worgul (2013) and their empirically based analysis of the clustering of innovation practices in services.<sup>4</sup>

The taxonomy above suggests that innovation activities and challenges differ within the heterogeneous service industry. This belongs to a strand of research that tries to identify the specificities of innovation in services through differentiation. Pedersen et al. therefore suggest that we should expect to observe different innovation patterns—resources used, processes observed, and dissimilar systemic behavior—between these four types of services. To document such possible differences, their report first analyzes longitudinal CIS data<sup>5</sup> for Norway and second qualitative interview-based observations on these four types of services.

Their result indicate that a differentiation exists if we use crude register data to identify innovation processes, but such differentiation is not easy to detect if you go deeper into the innovation process and study these in a diverse set of service firms. For further information on this study, we refer to the above-mentioned report.

## 1.2 Processes, resources, and relations supporting different forms of innovation

In the study reported here, the basic resource–process–system framework is the same and the focus is on innovation practices, but the context for the research is different. For an introduction to the resource–process–system framework, the reader should inspect Chapter 2 in Pedersen et al. (2015). Here we do not emphasize the taxonomy of the service industry at any length. Thus, a comparative approach to the study of innovation practices in the service industries is not our primary goal.

Rather, our entry to studying innovation practices and innovation processes is a quest for deeper and better understanding of: 1) the *activities that drive the processes* relevant to small- and medium-sized and dynamic service providers, 2) *what kind of resources* are seen as most important in service innovation, and 3) to identify the *specific forms of innovation* that seem to be important in services.

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<sup>4</sup> This taxonomy builds on Miozzo and Soete's (2001) technological-based view that suggests that the service sector can be divided into four broad groups of activities. Those dominated by 1) supplier-dominated activities (restaurants, laundromats, education, etc.), 2) scale-intensive physical network (transport, wholesale), 3) information network (finance, insurance, telecommunications), and 4) specialized suppliers/science-based activities (software, business services, research/laboratories, etc.).

<sup>5</sup> The Community Innovation Scoreboard (CIS) is the most important pan-European database on innovative activities in European firms.

We strongly believe that the process of developing new knowledge and generating new ways of operating service activities is an *interactive learning process*. Innovations are developed by individuals interacting with service providers, customers/users, and a wider set of internal and external actors. This adds a systemic dimension to our study and a search for models of innovation dynamics in services.

Incremental or step-by-step forms of innovation are also part of a continuously ongoing development that is wholly or partly integrated in the operations of a dynamic firm. The separation of innovation, continuous development, and changes that occur in dynamic firms are therefore a particular challenge.

We put a specific weight on the *financial infrastructure* supporting ventures with high growth potential. More specifically, this is financial support in the form of equity combined with active involvement and ownership in the development of the firm. Financial institutions and support are often seen as a part of a wider innovation system, and consequently an important part of innovation policy in most countries.

We further believe that firms backed by VC and/or PE are recognizably dynamic and involved in many forms of innovative activities typical for the service industry. This population of firms should therefore be well suited to the study of *successful* innovation practices relevant to the service sector.

Our entry to the study of innovation practices is therefore concentrated on innovative activities relevant to fast-growing service firms and the influence of VC and PE financing on growth and in particular innovation. This involvement can take the form of high-risk investments in new ventures (seed or VC) where one should expect that innovations are an important part of the formation of the firm. Or, it can involve less risky investments in existing service firms with a high growth potential. In such cases, a buyout procedure involving a PE firm will change the ownership of the firm, and actively take over the control of the strategic development of the firm. Most often, this will result in the implementation of a focused, change-oriented growth strategy. Both forms of risk financing are expected to influence the dynamic development of the firm and indirectly its innovative activity.

Firms supported by VC/PE institutions are carefully selected by investors with deep understanding of the grow process and how values are created in businesses. By choosing this kind of firm, we

are picking cases from a highly selected group of service firms, firms with a high potential for growth. Growth normally involves scalability, that is, the possibility to scale up activity and take advantage of economies of scale. However, a growth strategy also means a professionalization of the organization, a focused development of the core skills and services of the firm, and changes in many elements of the organization: the product(s) itself, the way it is produced, and the distribution, marketing, and internationalization of their products and services.

The main goal for the investor is value creation, not innovation. However, change, recombination, and incremental and sometimes radical innovation are often essential to reach this goal. Hence, we see this setting as a vibrant scene in which to study innovation practices as they appear in dynamic and well-managed service firms. This is surely not a representative panel of service firms, but a sample where it is possible to identify something along the lines of a better practice of innovation in the service industry.

The rest of the report is organized as follows. In chapter two the purpose is to introduce some important theoretical elements to the study. Omitting the resource–process–system framework (see Pedersen et al., 2015), this chapter first discusses the specificity of services. Next is an introduction to a theoretical and characteristics-based approach to studying innovation in services. This approach analyzes how specific competencies and technologies, used by the service provider and the client (user), can stimulate a change in the characteristics of a service or create the groundwork for a new service. From this model, different forms of innovation can be identified: radical, improvement, incremental, recombination, formalization, and ad hoc. Chapter two ends with a short introduction to an understanding of a systemic relation of innovation and the concept of innovation systems relevant for policy.

In chapter three, we give a short introduction to the VC/PE industry and the industry's involvement in innovative activity. The chapter continues with a short introduction of the PE industry in Norway and these actors' involvement in service industries. Particular emphasis is on the industrial sectors they support and their motives for investments in service firms.

In chapter four, we analyze the activities performed and resources mobilized to develop the specific innovation important to service firms. In-depth information from 21 case firms is used to inform us about “real world” innovation practices. Firstly, we identify the innovation modes relevant for the 21 different innovation projects analyzed. In a compact form, we subsequently report on the

experiences these firms have with: 1) the process of generating “something new”—a change or innovation; 2) the specific internal resources used and the involvement of a wider set of agents including the client(s); and lastly 3) the importance of the financial agents as supporters of innovative activities and the innovation systems involved in different kinds of innovations.

Lastly, in chapter five we conclude with some generic insights from the case studies and some aspects that are relevant for policy.



## 2. Service, service innovation, and service innovation systems

This is not the place for a review of the service innovation and service innovation system literature,<sup>6</sup> but the basic challenges have been (and still are) that much of our generic understanding of innovation processes and innovation systems are based on the behavior of larger firms, science-based firms, and firms in manufacturing. Consequently, much emphasis has been placed on radical innovation (identified through measures such as patents or trademarks), radical new products and innovations related to the production of physical goods, especially tangible<sup>7</sup> and intangible<sup>8</sup> product or “hardware”.

Formalized research and development (R&D), research institutions, knowledge production in universities, public funding of innovation, and knowledge transfer agencies have therefore had, and still have, a prominent place in many models of national, regional, and sectorial innovation systems. Such institutions, combined with the importance of the network of firms and private–public partnerships, seem to take a key position in the innovation policy of many advanced economies.

Most studies on innovation in services do not identify formal R&D as an important driver for innovation (Rubalcaba, Gago & Gallego, 2010). New services, innovative forms of distribution, or new business models are difficult to protect with patents or trademarks. Likewise, higher education or research institutions are normally not an important player in service innovation. Rather, in service innovation the customer or user is said to be a prominent actor. Interactive learning processes, interaction, and co-production with clients are often vital in services. New business models for distributing services could also be more important than the formation of entirely new services and the like. The outcome of this is that with the traditional measures of innovation the service industry appears to be less innovative than the manufacturing industry.

One could conclude that service industries in general are lagging behind in terms of innovation, as has been documented in many early CIS-based studies on innovation activities.<sup>9</sup> Alternatively, one

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<sup>6</sup> Vatne's (2012) *Innovasjonssystemer i servicenæringer. Hva vet vi om disse? [Innovation systems in services. What do we know?]* gives an overview of the literature in Norwegian.

<sup>7</sup> e.g., cellular phones

<sup>8</sup> e.g., software stored on a compact disc

<sup>9</sup> These results are partly due to measurement problems. Innovation in manufacturing is better understood, and easier to measure. Innovation in services is different and not measured.

could suggest that these models and measures do not mirror the way innovation processes take place in services. An alternative perspective on innovation, and particularly innovation systems in services, is therefore in need.

Several attempts have been made to study specific sectors of the service industry, such as the knowledge-intensive business service sector (Tether & Metcalfe, 2004), the health sector (Consoli & Mina, 2009), or tourism (Hyalager, 2009), but with few follow-up studies. A more generic and influential conceptualization of systemic innovation in services sees service innovation systems as flexible, changing, and loosely coupled networks of actors (Sundbo & Gallouj, 2000). None of these perspectives seem to form an accepted model for how innovation processes and related networks are interrelated in services. There is therefore still a need for more in-depth case studies that can help us to advance our knowledge of the way innovation processes are organized in service industries.

## 2.1 Characteristics of services

Much of the controversy in understanding the origin of innovation is in the way we understand the specificities and differences between the production of goods and services. These differences have several implications for the production and delivery of the product (good or service), and how this again influences the way innovative action takes place in the context of the production of goods as opposed to services. The specificity of services and service innovation have been discussed at length by others (e.g. see Miles 2005, Tether 2005, Howells 2010).

For our purposes, it is enough to identify the main characteristics of a good and a service as explained by Hill (1999). This is synthesized in Figure 2.1 on the next page.

A good is a *real, existing object* that can be stored, exchanged, and that one can declare a property right over. A service is an *action* produced by one actor (producer) for another actor (consumer/user). The main difference is that in service production, there is a *direct* relationship between a producer and the user of a specific service. This is not the case in larger parts of manufacturing.

A service	A good
<ul style="list-style-type: none"> <li>✓ A service is an <i>action</i>, not an entity. A service is some <i>change</i> in the condition of one economic unit produced by the activity of another unit. These changes to a person or the property of a consumer could be <i>material</i> (car repairs, haircuts) or <i>immaterial</i> (artistic performance, consulting)</li> </ul>	<ul style="list-style-type: none"> <li>✓ An 'entity' (a thing that has a real existence) that is a <i>tangible good</i>, i.e., material (a car, bread, TV), or <i>intangible good</i>, i.e., immaterial (music in a DVD, text in a book, algorithms and interaction design in a standard software)</li> </ul>
<ul style="list-style-type: none"> <li>✓ A service is delivered for the benefit of a customer</li> </ul>	<ul style="list-style-type: none"> <li>✓ Production can be separated from consumption</li> </ul>
<ul style="list-style-type: none"> <li>✓ Services involve a relationship between producers and consumers</li> </ul>	<ul style="list-style-type: none"> <li>✓ A good exists independently of its owner</li> </ul>
<ul style="list-style-type: none"> <li>✓ A service cannot be stored—it must be directly delivered to another actor</li> </ul>	<ul style="list-style-type: none"> <li>✓ A good can be stored</li> </ul>
<ul style="list-style-type: none"> <li>✓ One cannot declare a property right to a service (one can own a user right/license to a service)</li> </ul>	<ul style="list-style-type: none"> <li>✓ An entity over which owner rights may be established</li> </ul>
	<ul style="list-style-type: none"> <li>✓ The producer can transfer the property right to a user</li> </ul>

**Figure 2.1** Characteristics of tangible/intangible goods compared with services. Source: Hill (1999: 437)

Next, you cannot own a specific service: it is consumed as it is produced. When your car is repaired or your house painted, that particular service is consumed in the moment it is produced. The service is not the tool or paint used, but the action of repairing or painting. When you buy a flight service, you do not buy a share in an airplane or a booking system. You buy the action of being transferred from A to B in the most convenient way, as regards your preferences for price, time, or comfort. To consume this service you have to be present on the flight produced at the time you have agreed. If you miss it, that specific flight service can still be produced, but consumed by other passengers, not you. If you take a later flight, a new flight service has to be produced.

These characteristics place stronger restrictions on place and time for the supply of services compared with the production and delivery of goods that can easily be stored, transferred, and change ownership. This also influences the ability of services to take advantages of economies of

scale and the standardization of products and production. It also influences the location of production.

## 2.2 A characteristics-based approach to production

Several attempts have been made to promote an alternative approach to innovation in services. The one used here belongs to the “synthesis approach”<sup>10</sup> and adapts a neo-Schumpeterian, evolutionary framework to explain innovation. Along with product and process innovation, the Schumpeterian approach also includes organizational, marketing, and “input innovation” as important features in the evolution of new or more efficient ways of producing goods or services.

The starting point here is Lancaster’s (1966) suggestion that the consumer does not ask for a product in itself. Rather, the user asks what the product (good or service) offers in terms of attributes/features that can help to solve a specific need. Lancaster call these attributes the “service characteristics” of a good or service. A physical product such as a watch differs greatly from brand to brand even if all of them help you to tell the time. The same will apply to a hotel visit: there are many characteristics, other than a room and a bed, which are important for the user.

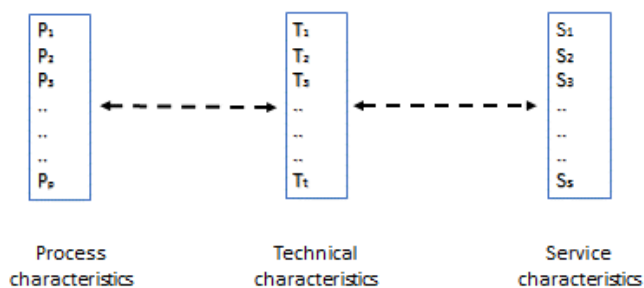
Based on this framework, Saviotti and Metcalfe (1984) state that firms compete in the market believing that their service characteristics will be more attractive for the consumer than the attributes offered by competitors. The implication is that a firm offers a distinct set of attributes within a larger set of possible service characteristics. Another firm can offer the same or another combination of service characteristics associated with their product.

In manufacturing, there is normally a direct link between the *service characteristics* of a good and its technical characteristics, as illustrated in Figure 2.2 on the next page. The product’s service characteristics, such as the sharpness and connectivity of a TV, are dependent on the physical and technical characteristics of the TV. *Technical characteristics* are again dependent on the *characteristics or sophistication of the production process* (see Figure 2.2). The characteristics of this process in the neo-Schumpeterian framework are dependent on tangible assets (such as factories and equipment), as well as intangible assets (such as patents, human capital, organizational resources, etc.). The process characteristics in Figure 2.2 therefore range from

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<sup>10</sup> An approach that tries to develop a unified model of innovation, usable both in manufacturing and in services.

design via production to marketing and distribution to the market. Innovations can take place in all of these three elements.



**Figure 2.2** Relation between process, technical and service characteristics as suggested by Saviotti and Metcalfe (1984). Source: illustration in Windrum and García-Goñi (2008: 651)

### 2.2.1 A model of innovation

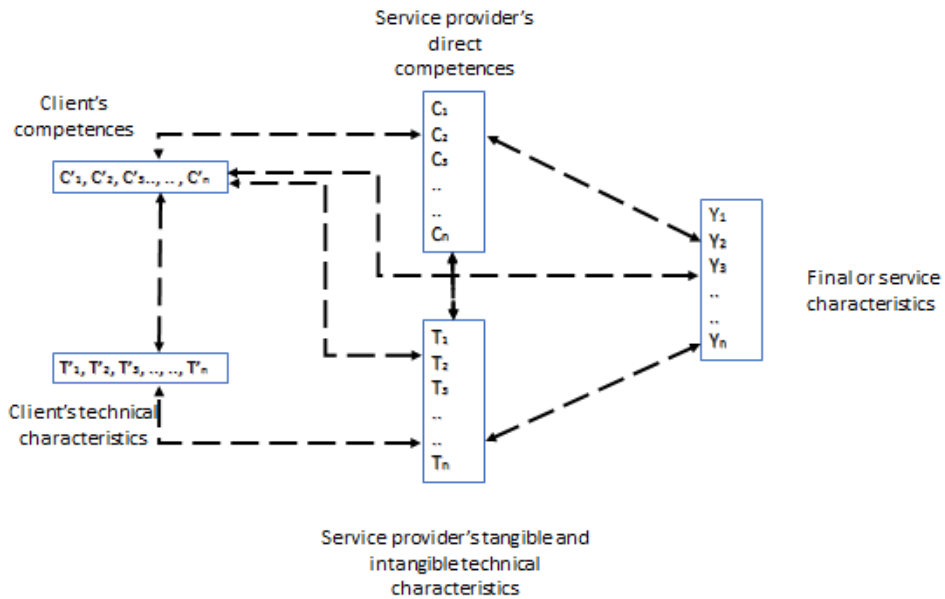
Gallouj and Weinstein (1997) used this basic framework to study innovation in services, more specifically in knowledge-intensive business service firms. In contrast to the Saviotti–Metcalfe model (Figure 2.2), they suggest *replacing* “*process characteristics*” with “*producer/provider competence*” when the process is predominately based on knowledge resources (see Figure 2.3).

In consulting, it is the provider’s knowledge that is used to produce a service. This knowledge is most often combined with the clients understanding of a specific problem and previous experience (the client’s competences). As Windrum and García-Goñi (2008) suggest, this is a reasonable approximation in knowledge-intensive services, but not for all sectors in the service industry.<sup>11</sup>

Gallouj and Savona (2009) further suggest that process characteristics, or what they call the provider’s competences, are *directly* related to service characteristics, that is, the specific service on offer. This relation is due to the fact that the production process and product characteristics are often strongly interrelated in services but separated in manufacturing (see Figure 2.3). In services the product is normally *intangible*, cannot be stored, and has to be produced and consumed at the

<sup>11</sup> For example, ICT-based automated processes will produce financial services or communication services in scale-intensive networks.

same time and place.<sup>12</sup> In consulting, for example, the provider’s competences are part of the specific service characteristics delivered to a client. The same regards a dentist’s service, an artist’s performance, or the flight service of an airline.



**Figure 2.3** A service product represented as a mix of vectors describing the client’s and provider’s competences and technical characteristics. Source: Djellal, Gallouj, & Miles (2013: 112)

However, even in services the production or distribution of a service often depends on the technical characteristics controlled by the provider. ICT-based hardware and software related to the service is particularly prominent, but many providers of large-scale network-based services, such as telecom or rail services, are highly dependent on technical solutions to be able to provide their services. As seen in Figure 2.3, there is therefore also a *direct relation* between technical characteristics combined with the provider’s competences, and the product’s service characteristics.

<sup>12</sup> Some of these competences can be codified and included in a (tangible) report, but much of the exchange of knowledge takes place in face-to-face interactions and has to be “consumed” or transferred in this process.

The last major deviation from the Saviotti–Metcalf model in Figure 2.2 is that often *a co-production exists* in terms of service characteristics, or a direct relation between the client and the provider. This is not the case in none-customized goods production. The user or client must take part in the process, adding part of the competence needed to provide the final service produced. This producer–user relation or *interactivity* is one of the important characteristics of many services, including consulting, healthcare, entertainment, etc. However, as Windrum (2007) argues co-production or the active participation of the user is not necessarily important in traditional scale-intensive services such as retail banking, insurance, transport, or telecommunications where the service product is highly standardized and the distribution is automated. Nevertheless, as a common set-up, the *client's competences* and *technical characteristics* are included in the revised 2013 model, as seen in Figure 2.3.

De Vries (2006) suggests that the original model of Gallouj and Weinstein should be enhanced to also include a possible interaction between the competence and technology vectors of *different providers* in a partner network. This will open up the possibility for the delivery of services by networks of providers. It will also enable a provider–client interaction and co-production that goes through technological channels. This is particularly important with regards to the application of ICT in services and for the concept of recombination explained later in the report. This suggestion of a multiple set of service providers is not included in the model above, but will be illustrated later in the case study.

### 2.2.2 A vector-based definition of services

If we again look at the vectors represented in Figure 2.3, we could say with Gallouj and Savona (2009: 163) that:

- *Vector [Y] represent the service characteristics or the final users' value of the product.*
- *Vector [T] (and [T']) represents the technical characteristics of the product (good or service). Underlying vector [T] is the process (technological or non-technological) employed to produce vector [Y].*
- *Vector [C] and [C'] indicate the competence sets of the supplier and the customer/user, respectively.*
- *The vector product [C] [C'] is the supply–delivery interface between producers and users.*

Based on this framework, Gallouj and Savona (2009:163) suggest a rather abstract definition of the delivery of a service:

*“[...] the simultaneous employment (and relationship) of technical characteristics (material and immaterial) and competences (internal and external) ultimately used to produce the service (or final) characteristics.”*

This was more simply said by Djellal et al. (2013:111):

*“[...] a service can be defined as the mobilization of internal or external competences and internal or external techniques (tangible or intangible) to produce final or service characteristics (that is to say user values).”*

To deliver a service with a specific set of characteristics, the provider needs to control a set of knowledge and capabilities combined with a set of technical infrastructure, systems, and tools that correspond to their clients' capacity to absorb and transfer knowledge and to understand and communicate their own needs. As seen in Figure 2.3, both the provider of the service and the client normally need to take part, exchange knowledge, and develop a common understanding of the problem that should be solved, and from there the service in demand.

This general model can be used to suggest several types of services. For example, a *pure service* will include the employment of competences and service characteristic vectors only. To produce a *pure material good*, technical and service characteristics will be employed. Employing vectors for competences with the vectors for technical and service characteristics can identify a *self-service* outcome or many other services dependent on the utilization of ICT.

In principle, innovation can be seen as changes influencing one or several elements of one or more vectors and the characteristics embedded in them. Innovation can take place throughout the whole spectrum of activities and attributes involved, in the service characteristics of the product, in technical (process) characteristics, or in the set of competences used. There can be strong interrelations between the different elements within the innovation process. Changes in one characteristic will influence others, making innovation a rather complex activity to perform.

### 2.2.3 A typology of innovation

In their abstract world, Gallouj and Savona (2009) propose a typology or modes of innovation:

- *Radical innovation* can be seen as a situation where a new set of vectors for competences, technology, and service characteristics are created.
- *Improvement innovation* takes place if the vectors are the same but the prominence or quality of some dimensions (characteristics) included in the competence vectors change.



- *Incremental or stepwise innovation* means that a new dimension is added, or an existing dimension is changed or deleted in some of the existing vectors.
- *Innovation based on recombination* normally means a change in the relation between the service and technological vectors.
- *Innovation based on formalization* takes place if one or several of the characteristics in any of the vectors are formalized. Normally this will lead to a “materialization” of the service through a standardized technological solution.

A more controversial suggestion is:

- *Ad hoc innovation* such as that related to knowledge-intensive and customized services. This creates changes in one or both vectors for competences and often a change in the immaterial aspect of technology.<sup>13</sup>

Ad hoc innovation could be particularly relevant for wider sectors of the service sector, as many service providers are specialized in solving specific problems for the client. Together with the client, the service provider has to come up with a unique set of new or recombined competences to understand the problem and to find a solution not previously known. This form of innovation adds new dimensions to the competence vector of both parties. However, it will not necessarily end up as a new service product or a new procedure (service characteristics) that diffuse easily across a population. It could end up as a *non-reproducible solution* to a client’s specific problem.

Some will say that this is outside the definition of an innovation. A Schumpeterian understanding is that an invention becomes an innovation first when it is adopted by users, diffuses into the economy, and influences the performance of that economy. If the invention is not reproducible, it cannot diffuse and an innovation does not exist. As Drejer (2004) suggests, this form of knowledge development therefore could just be *cumulative learning* and part of the daily life of business, not innovation.

On the other hand, for the service provider a unique, customized solution to a specific problem often requests the development of new, and by that innovative, knowledge, competences, and capabilities, not only the recombination of existing knowledge. This development of a new understanding of a specific problem normally takes place as an interactive learning process. The knowledges of the client, the service provider, and possibly external partners are pooled. A new or

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<sup>13</sup> In the 2013 version of the characteristics-based approach to innovation, ad hoc innovation is dropped as an innovation model (Djellal et al., 2013).

better understanding of the problem can be combined with the development of new or improved technical characteristics or tools and software that conjointly solve the problem for the client. This newfound competence could be used to solve other, similar problems in the future. Much of the intangible, “ad hoc” innovations in services therefore go well beyond the simple customization of knowledge.

The intersection between a problem related to the ongoing or future operations of a business, the client’s needs and ambitions, and the service provider’s capability to find a solution is a cradle for creativity and innovativeness—if, of course, there is no well-known solution to the problem. In fact, such problem-solving activities are the core business of many knowledge-intensive business services (KIBS). In line with Tether and Metcalfe (2004), we could see KIBS as a central actor in an interactive system of interdependencies where the main mandate is to understand the client’s needs and fine a solution to this demand in interaction with many and different partners. As far as this depends on the development of new solutions, such a system could be seen as an innovation system.

As with all innovative activities, this learning process results in fragments of cumulative and new knowledge for the parties involved, but it does not necessarily finish there. The unique solution that is produced for one particular customer may not be fully reproducible. However, the service provider can recombine fragments of the new knowledge that was developed with other competence characteristics from internal or external sources. In doing so, it can generate unique, innovative solutions to other problems. New knowledge created in this way can also generate new knowledge that can open up new opportunities in the market. Indirectly, this kind of problem-specific knowledge developed through an “ad hoc” innovation process can therefore also diffuse into the market as incremental innovation, or innovation based on improvements or recombination.

The consequence of this characteristics-based understanding is that innovation can have many different faces—not only product and process, or radical or incremental innovation. Some innovations will change the characteristics of the service product itself. Others will influence the way a service is produced, or the interface between the provider and the client. Innovations can also change the way we organize service provision and the way we distribute, market, and deliver a service.

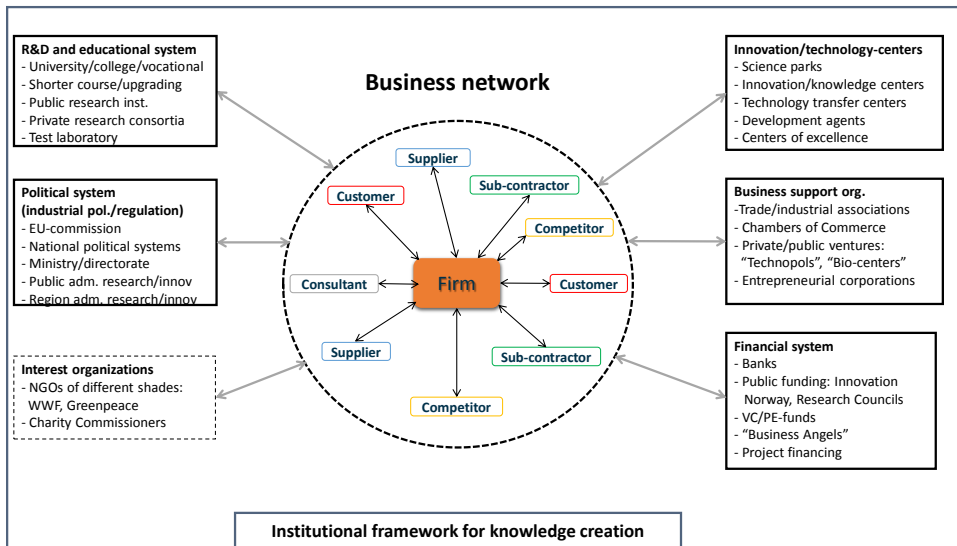
The Gallouj and Weinstein typology of innovation modes has been used in a few empirical studies. Based on case studies, Gremyr et al. (2014) suggest that firms go through several of these modes before an innovation is consolidated. They suggest that innovations evolve over time and move through a trajectory of innovation modes in realistic, dynamic situations. Still, much more research is needed before any concluding model of service innovation emerges.

We will utilize this framework and typology later. Not for testing, but as a framework for analyzing the observed innovation activities in the 21 cases of service firms we have studied.

Before we close this chapter, we must also introduce the concept of an innovation system.

### 2.3 An innovation system

Figure 2.4 illustrates a general model of an innovation system.



**Figure 2.4** A general innovation system

In the core of the illustration is the innovative firm. This firm controls and organizes a set of internal resources that are important for innovation. As already suggested by Froehle and Roth (2007), inside this “black box” exist several resources that are important for innovative behavior. They could be intellectual resources as competences and capabilities: such resources support the commercial operation of the firm and add creativity and ideas for new elements that could enforce

the firm's value creation. They could also be physical resources or technical characteristics within the firm's processing system and organizational resources that put the firm's resources and capabilities to work for a specific purpose. Inside the firm, we will also find employees and management, important actors for the functioning of the daily operations of the service production and for learning and innovation processes that take place internally.

As the figures illustrates, firms do not exist in a vacuum. They develop relations with the market and its customers, and thereby the users of the services they provide. They interact with suppliers of equipment and business services, or partners or subcontractors important for their production and service provision. Once in a while, they use consultants if they need help to access information or need to reorganize their process or change business model. They also keep an eye on their most important competitors and are influenced by their actions, improvements, and innovativeness. Together these actors comprise the firm's nearest external relations, and form a *business network* of accessible external resources that is often important for the formation of new knowledge and the firm's capacity to innovate. Among the actors of this inner circle, we will under normal circumstances be able to identify the most important contributors to improvements and changes taking place in the firm. These are external resources that add features to the innovative capacity of the firm, and take part in interactive processes that drive incremental innovations forward.

Outside this basic business network, a framework of institutions exists that can contribute to knowledge creation and diffusion. This includes many institutions financed by the public sector or through public-private partnerships.

One important box in Figure 2.4 is institutions, whose most important task is to *produce new knowledge* (R&D) and transfer this knowledge to individuals through *higher education*. Some of the knowledge produced and transferred from these institutions is important input, both for a firm's absorptive capacity and for the access to new radical or existing knowledge.

A *political system* provides resources and regulations that are important for innovation. Examples include a legal system that protects intellectual property and policy that forms education and public research in line with the needs of market-based actors. Another, new regulations that introduce stricter claims on energy efficiency. It also includes different forms of industrial and innovation policy, including specific incentives and support to encourage innovations and to lower risk.

Several new institutions are created to help the *transfer and assimilation of new knowledge*, and to *facilitate interaction and collaboration* focused on the creation of knowledge that has commercial potential. Many *business associations* and *business support organizations* are also involved in advancing firms' capability to innovate.

A *financial support system* is also developed outside the traditional financial institutions such as banks. Asymmetric information, high risk, and market failure in financing radical innovation are important barriers to innovation in private firms. Public funding of high-risk innovation activities or start-up firms therefore seems to be important. The same can be said about access to VC, and in many cases also PE, to support the growth of potential dynamic firms. In this report we have a specific focus on this part of an innovation system.

The last group included in Figure 2.4 is institutions with a potential to influence knowledge creation and business development. Here we include non-governmental organizations (NGOs) and some lobby groups pressing for societal change. This box is stippled, indicating that they have a more indirect influence on firms' performance. These institutions press for new regulations, stricter measures, new solutions, and more environmentally friendly or socially focused development that in the end will influence firm behavior. They also use their power to defuse information, educate the public, and lobby for change. NGOs can be seen as vanguards that open up new business models or services and in doing so invite more or less radical reformulation of existing production and products.

In the coming analyses we will keep this wider understanding of systemic innovation in mind as we analyze the innovation process as it appears in our case firms.

### 3. Venture capital, private equity, and innovation in firms

Most new ventures are simple reproductions of already existing business models, or they produce goods or services already available in the market. 50–70% of them fail; most new ventures do not grow, but stay small and under the control of the original entrepreneur. Just a small share develop into fast-growing enterprises (Vatne, 2009).

A fraction of these are based on an idea that develops and launches a radically new or modified product (good or service), a new idea of how to do business, or a better way of serving customers. New ideas, new approaches, or innovations are at the forefront of the development of these firms. The more advanced, radical, or innovative the idea behind the venture, the longer it can take to get from an idea to a marketable product, and the more costly the process from idea to cash flow can be. The entrepreneurial and financial risk increase as well, but often the same also happens with a potential payback if one succeeds.

Some established firms also have good potential for growth, which could also add economic value to the firm's operations and to its shareholders. Particularly if the product(s) they sell is solid, unique, well placed in their local market, and the business model can be scaled up. In many mature sectors of the economy, the potential for economies of scale, standardization, and structuration of the industry is open for entrepreneurial action. Expansion into national, foreign, or global markets could be another option for firms with a proven record of performance.

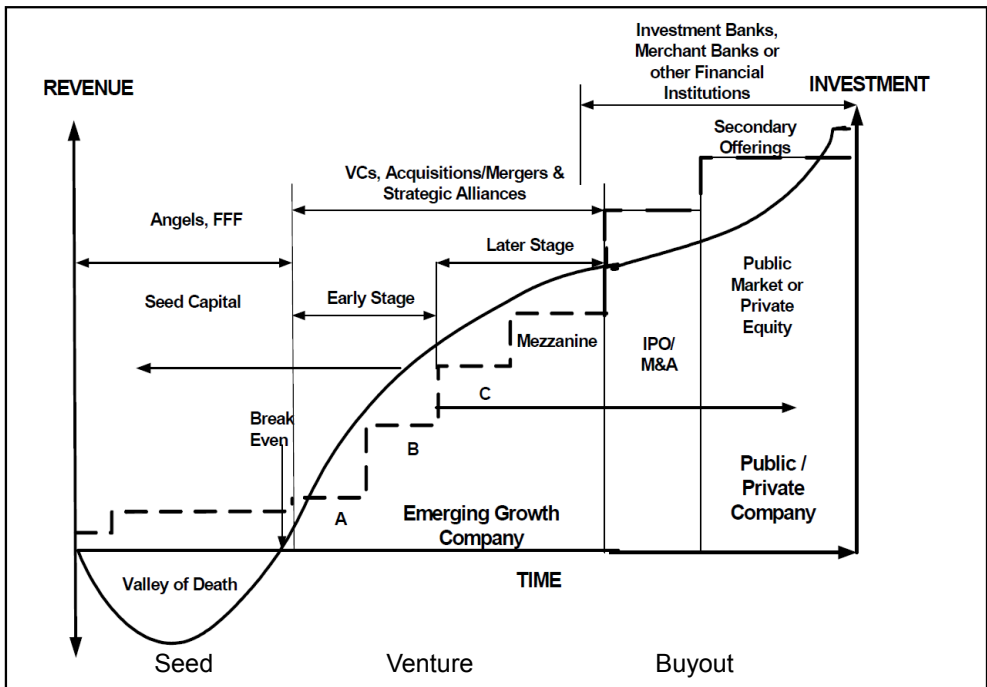
Nevertheless, the expansion and growth of a firm meets many challenges. The organizational set-up must be changed, and new capacities and capabilities have to be developed. The marketing and distribution channels must be improved or radically changed. New business models could help the growth process, etc., etc. Many firms with potential have not been able to take advantage of this possible growth and in so doing have missed the opportunity for increased value creation. There are many reasons that can be given to explain this: the entrepreneur is not willing to delegate control and professionalize the organization; there is no clear vision or strategy for the way forward; the shareholders are in conflict; or the firm's own economic resources are not enough to bear the burden of fast expansion.

In sum, fast growth is often demanding, requiring new knowledge and creative ideas about how to grow and run a company under rapid expansion. In most of the firms of this type, innovation is not

part of their main growth strategy. Still, many diverse kinds of smaller innovative steps are required if the firm is to meet its ambitious goals. Again, the entrepreneurial and financial risk increase the more radical or bold the growth target is.

### 3.1 Financing new ventures

The development of new ventures is often modeled as stages, as illustrated in Figure 3.1.



**Figure 3.1** The stage model of new venture development and different regimes for venture capital. Source: US Department of Commerce—ITA.

It starts with an entrepreneur and some novel idea for a potential profitable venture that is believed to meet some need(s) in the market. If a potential market is identified, the venture can turn into a growing and profitable firm. The S-curve used in the figure indicates the need for investments that will exceed the revenues generated by the firm for a long time if the ambition is to expand the firm's activities.

### 3.1.1 The “Valley of Death” and seed capital

In the first stage, revenues will be almost inexistent, but there is still a need for capital to invest in the development of the idea, to do market research, to develop a prototype or set up a pilot, etc. This is the “Valley of Death” where the financial situation is highly stressed and many ventures do not succeed. This “seed stage” is normally financed by the entrepreneur(s), their family/families, and friends. In more advanced projects, financial sources could also include “business angles,” potential grants of public money from research funds, or entrepreneurship programs; for a few, it could include equity from a *seed capital fund*. Such funds are normally backed by public money or a mix of private/public money. At this stage of development, private funds are normally not willing to invest due to the very high-risk and highly uncertain forecast of future revenues. Asymmetric information exists<sup>14</sup> and ends as market failure in financial markets. Under such circumstances, the pricing of the risk will be so high that, in practice, fresh capital as debt or equity is not available through ordinary financial markets. In this early phase, the need for investments is normally moderate, but can still be substantial. Due to the very high risk of funding a firm in this phase, the supply of capital often depends on several sources taking smaller shares and dividing the risk among themselves.

### 3.1.2 The growth stage and venture capital

If the firm survives the “Valley of Death” and starts generating business opportunities, the prospect for expanding sales and revenues will lower risk and open up the possibility of more investors willing to buy shares in the company or banks willing to lend the company some money. To grow the company there will be a need to generate and expand the equity base so that it is able to finance the initial growth phase. Growing revenues are often not sufficient to finance further development of the product, to scale up production, or to hire more employees and invest heavily in marketing and sales and continuously upgrade the firm’s portfolio of products. The strategy of establishing and growing a company could also, at a later stage, include acquisitions of or mergers with other companies that add capacity and competence, complementarity and synergies. Buying other companies will also depend on a solid financial position.

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<sup>14</sup> The entrepreneur sits on much more information about the project than the financial investor does.



As many of these ventures have no or small collateral, a standard bank loan is difficult to acquire. Rapid expansion is often important to reach a critical size, but this is difficult if it is only based on the firm's own earnings or the entrepreneur's capital. External sources of capital are therefore needed. Financing up a new venture follows a stepwise procedure where the equity of the firm must rise with the expanding operations, as seen in Figure 3.1. In the later stages of the venture period, mezzanine financing is possible. This is a hybrid of debt and equity financing: debt-based capital with an option for the lender to convert to equity if the loan is not fully paid back. VC firms or investment banks provide these forms of risk capital.

VC is a time-limited financing of equity. VC firms hold minority or controlling<sup>15</sup> positions in new ventures, sometimes along with other VC firms. They will invest in several steps as the venture develops and demonstrates progress. VC firms are based on family-based wealth funds or funds open to institutional or individual investors with substantial free capital, including public financing. The VC firm manages the fund and invests in new ventures or "portfolio firms." In the VC industry, funds often specialize in specific industries or regions that are well known by the fund management. In this way, the problem of asymmetric information is substantially reduced. The fund management often have a deep understanding of the technology or service in question, and understand the dynamics of this specific market well. The VC firm invests in their portfolio of firms over a period of  $\pm 5$  years. They could hold their position for a longer time if necessary, or exit earlier if the prospect of success is bleak and before it costs too much. The goal is to create a sound and stable basis for the further development of the firm.

At some point in time, they will sell. Their return on investment is normally not generated as profit or dividend, but through the values created over a longer period of business development. This value will first materialize when they (often together with other shareholders, often including the entrepreneur) sell their shares to other individual investors, a PE firm, or to an industrial partner taking over the firm and integrating it in their own operations. More seldom, a venture firm could also turn to the stock market and sell all or part of their shares through an initial public offering (IPO).

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<sup>15</sup> Larger than 33%.

The key point in our context is that these ventures are normally based on an innovative idea with a potential for high growth and/or an extraordinary margin of profitability. High risk combined with the prospect of a high return is one of the important drivers for the development of the firm.

### 3.1.3 The later stage and private equity

PE investments occur at a later stage of a firm's formation. They will normally invest in a venture with a solid basis, or more often they will buy a majority position in an existing mature firm that has good potential for growth but a need for better strategies, management, and new approaches to take advantage of the growth potential. Many of these firms could be undervalued for several reasons, and therefore suffer under credit constraints. One reason for underperformance could be that the existing management is not able to bring the firm from an entrepreneurial stage into a more mature, professionalized stage. A creative and often chaotic organization of activities should be replaced with a situation in which professionalization of the organization is in focus and new capabilities for the routinization of operations are implemented and new and better approaches to expanding the business are found. Another challenge could be that a problematic shareholder mix in a family-owned company often are counterproductive for the management of the firm and a barrier to growth. There could also be a situation where further expansion of a well-managed firm needs more financial muscle than the previous owner can come up with, as they suffer from a lack of collateral for further credit, etc.

In the buyout stage, the risk of investing in the firm has been considerably reduced compared with the venture stage. Accordingly, access to funding is easier. A PE firm will establish funds and invite institutional investors such as pension funds, banks, insurance companies, or other investors with substantial capital to join. The fund would be set up for a period of, for example, five or eight years. A (guaranteed) return on their investment should occur after these years in addition to a prospective dividend that is normally better than most other options in the capital market. The risk of losing some of your investment is still present. In addition, there is a chance to take part in the sharing of an extra premium if the fund management really succeed in their choice of portfolio firms, the development of these firms, and lastly the price achieved when the holdings are sold. In this process, the fund management firm and their partners can achieve a substantial premium if the performance is good. Strong incentives to create value, and ultimately profit, are part of the foundations in the VC and PE industries.

The partners of PE firms are senior people with experience from consulting or investment banking and/or high-level operational experience from successful firms. Their financial success depends partly on 1) their ability to pick undervalued firms with a high potential for value creation, and partly from 2) their capacity to actively take part in the development of the portfolio firm through an influential position on the board representing the majority owner. Partners of the PE firm often co-invest in the same firm and share risk with the external fund owners.

A PE firm will normally acquire mature firms via a leveraged buyout (LBO). Simply put, this means that they will raise debt finance secured against the portfolio firm's assets and/or future cash flows in addition to the capital they have available through their fund. This gives the PE firm considerable financial strength to facilitate larger transactions. Some indications exist that companies bought through LBOs have increased their profitability by cutting down investments, selling assets, and keeping their operating income constant (Kaplan, 1989). Other and more recent studies provide evidence that many LBOs foster growth by releasing credit constraints (Boucly, Sraer, & Thesmar, 2011) and encourage entrepreneurial action (Wright, Hoskisson, Busenitz, & Dial, 2000). This is not the place to discuss this controversy. The majority of funds behind the short-term "stripping" or "dismantling" approach seem to be *hedge funds*. What we call a *PE fund* normally invests in firms over a longer period and acts proactively to grow and develop firms. This is their strategy for making a substantial profit of the investment.

### 3.2 Risk money, risk premium and innovation

There is no easy pick of firms with the highest potential for growth, value creation, and future profitability. If so, it would be easy to finance expansion through ordinary financial institutions.

To reach such goals, a longer development process has to take place and many decisions have to be made about strategy, staffing, and scaling, but also about the development of the core technology and products the firm offers. Some of these decisions lead into foreign terrain and the unknown, risky landscape of change. This includes approaches that are most often new to the firm, but in several cases also radical new undertakings in the market. The more advanced and mature an economy is, the more demanding it can be to start new ventures or grow existing firms. The earlier the stage of development is, the less collateral exists in the holding of the firm, the more uncertain the market acceptance will be, and therefore the more risky it will be to finance these activities.

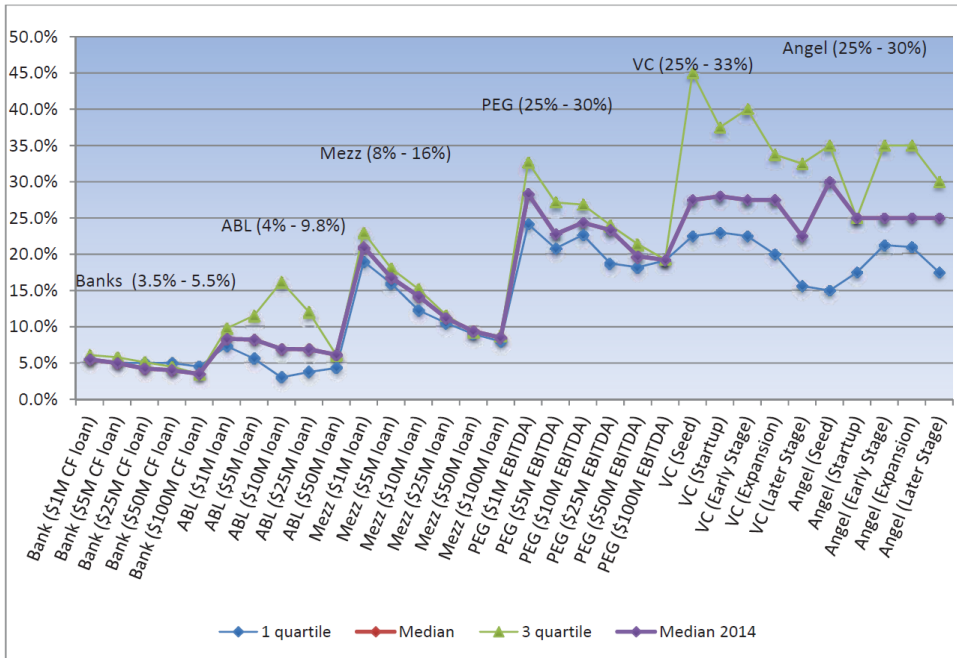
The more complex and innovative the core competences of the firm are, the more capital will be needed and the longer it will take to reach a break-even point were revenues cover the costs of operations.

In this landscape, a fairly new *entrepreneurial finance industry* has developed. The development of the most advanced part of innovative new ventures is dependent on access to capital in this critical stage of firm formation. VC and PE seem to be of particular importance for small- and medium-sized firms, and a critical element for the development of the core competences/ technology and product (good or service) of these firms.

### 3.2.1 The cost of capital

The cost of capital for a small new firm will be influenced by the type of finance used, the size of the firm, and the risk assumed. Ordinary senior bank loans and asset-based lending (ABL) are normally secured with collateral. A mezzanine loan is more risky and secured with an option to transform loan to equity. Accessing capital from private equity groups (PEG) is basically done through equity combined with ordinary loans secured with the solidity of the group. VC and business angels normally support capital for a share of the equity base as a return.

For the US, the “Pepperdine private capital cost of capital survey” documents the difference in annualized gross financing cost (Everett, 2015). As seen in Figure 3.2, the typical cost of a senior bank loan in 2014 was between 3.5% and 5% in the US market. As risk increases and security in collateral disappears, the cost increases tremendously, with seed financing being the most risky and respectively the most expensive. A typical PE investment in a firm expects to see a return on that investment of around 20–30%. Support from a business angel or a VC fund in the seed stage tends to be even more.



**Figure 3.2** Annualized private capital market required rates of return in the US financial market, 2014. Source: Figure 1 in Everett (2015)

In a financial market in balance, the cost should essentially reflect the risk of financing different kinds of ventures. In markets with a shortage of VC, the premium also will reflect the balance between the supply and demand of capital and the asymmetric power between capital owners and capital seekers. Given the cost of VC/PE financing, one should expect that entrepreneurs/owners of firms seeking these sources of capital have a strong belief that their project will be rewarded with a high profit, if successful. The potential for high profit is an indication of a venture that brings something new to the market. We can therefore suggest that such a firm is probably based on some innovative approach to the market they intend to serve - a new service, a better quality or more efficiently distributed service, a better multitask service, etc.

### 3.2.2 Innovation policy and financial support

As part of national innovation policies, seed capital and VC have been on the map for some time. Based on public and private money, funds have been established to support the development of potential good ideas for new products (seed), and to help a start-up firm to take their project into a commercial market (venture). Several of these ventures are also supported by institutions such as incubators, science parks, technology transfer centers, and other instruments from the toolbox of innovation policy. Some also have a direct or indirect relation to knowledge-creating institutions such as universities or other R&D institutions.

A common trend for many new ventures supported by VC is that they see opportunities in the commercialization of new “technological trajectories.” This could be in bio- or nanotechnology, pharmaceuticals, life sciences, or the growing industry of healthcare services. The more mature, but still important, information and communication technology (ICT) is continuously diffusing into new applications. The utilization of computers, software, and the internet is still a powerful platform for offering new information-based services (Castellacci, 2008). This is partly new industries based on “analytical”, scientific knowledge with high prospects for growth. In addition, niches of more mature industries still have a strong growth path due to the implementation and diffusion of ICT-based technologies into all facets of society. In this mature phase, practice-based “synthetic” knowledge is the most important knowledge base<sup>16</sup>.

Several of these emerging, new ventures produce intellectual property (IP) that can be protected with patents or a brand name. A patent or a brand has a value, can be sold, and acts as the possible return for the venture finance institution.

Initially, many of the ventures supported by risk money produce intangible products (knowledge) and are classified as service firms in sectors such as R&D or software. If they succeed, they could transform their intellectual property into a commercial product and move into production. This is not an easy match, as another entrepreneurial step is then needed. It demands the creation of new technological, organizational, and commercial capacities in the firm. The development path is risky without any proven record of success, and very difficult to finance as fairly large investments have

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<sup>16</sup> An *analytical* knowledge is based on a scientific approach to knowledge creation, *synthetic* knowledge is engineering based and related to problem solving, learning by doing and learning by interacting with clients (Asheim & Coenen, 2005).

to come long before the activity materializes into cash flow and profit. To succeed, many of these firms are dependent on risk-willing capital investments. A less risky solution is to sell their patent to an industrial actor who takes IP resources into manufacturing and production. If so, the new venture moves on as a small knowledge-based entrepreneurial company developing new intellectual property. For many entrepreneurs or venture capitalists, the sale of their patent is therefore a real option.

The end product from science-based ventures will often be tangible manufactured goods in the form of an electronic device, a chemical product, a medicine, a medical gadget, or software that offers digital solutions to many aspects of businesses or private living. Regardless, in this phase of a firm's life, there seems to be a *direct link between seed and VC funding and innovative conduct*.

It is more doubtful if the PE industry is involved in innovative activities. PE investments search for underperforming mature firms with growth potential, not specific technologies or sectors. The main goal is to increase the value of the firm and make a profit by selling it.

This could be done through streamlining the firm, merging it with others, expanding its activities, and cutting costs through achieved economies of scale and standardization of the operations. Even if the purpose is efficiency and cost-cutting, the implications for the firm could be radical changes in many aspects of its organization, production, distribution, and marketing. These may not be radical changes for the market, but new, more efficient ways of operating the business that bring with them a high chance of incremental innovative processes taking place inside the growing organization.

An option frequently used is the introduction of entrepreneurial growth incentives in the development of the firm. Top management equity ownership is normal when PE firms invest in their portfolio firms. This creates entrepreneurial incentives to look for profitable opportunities for growth. PE investments can also increase the financial capacity of a firm to act entrepreneurially. With the takeover of a publicly listed firm with a short-term perspective on return, a PE firm will normally make the portfolio firm private. This alteration in itself can open up for entrepreneurial actions that will yield a larger return in a longer-term perspective.

As an owner, a PE firm is demanding. They press for better performance, higher speed, and higher value creation. They will normally involve themselves actively in the strategic development of the

firm and pick the top management. The firm will be benchmarked against the best globally, not only nationally, and they are challenged in their present procedures and goals. Portfolio firms are required to produce or distribute more efficiently and market their services more cleverly. Performance is more strictly measured and should be reported to the board. In sum, this will put strong pressure on the top management to restructure, change, and expand, which again could create a unique opportunity for renewal and innovative behavior.

In the context of VC- and PE-supported firms, we believe that most of these firms perform well and are more focused on innovation than the average firm—small or large. They are carefully selected by professional investors who analyze qualities, growth, and profit potentials in both new ventures and mature firms. In the period from 2000 to 2015, many Norwegian firms have been supported by VC and/or PE funding and expertise. Of these, nearly 60% can be classified as producers of services in one form or another.

We regard this universe as an interesting sample to study good if not best practices of innovation behavior in services. It is not a representative sample of service firms, but a sample of well-managed and dynamic firms. Ongoing innovation processes in these firms can likely inform us and give us a better understanding of the challenges service providers face when they focus on service innovation.

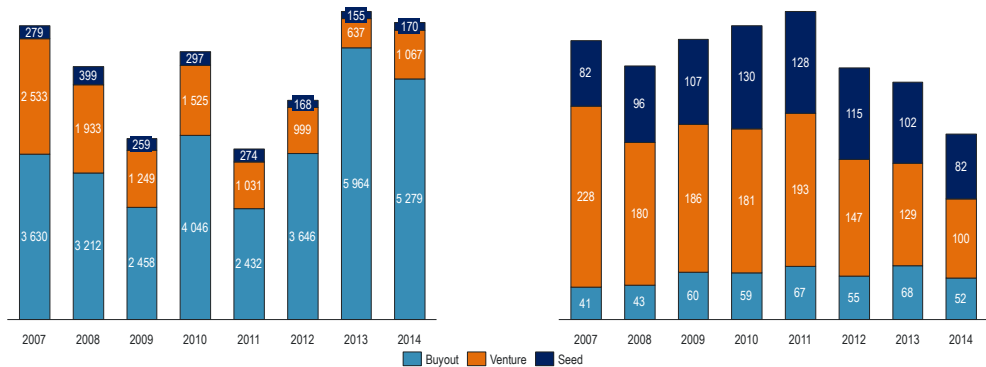
In the next section we will first present a few facts about VC and PE funding in Norway, give an overview of the scale of these investments and forms of exit, and analyze the importance of service industries at different stages of investments. Lastly, we briefly report on a survey that maps the fund managers' motivation for investing in these ventures.



## 4. Norwegian venture capital and private equity investment

In 2014, 18 billion Norwegian kroner (NOK) was *raised* for investment in portfolio firms over a period of two to three years. 1.2 billion NOK was intended for new ventures in the seed stage, 2.9 billion NOK for firms in the venture stage, and 13.9 billion NOK for the later buyout stage (NVCA, 2015). This was the largest amount of money ever raised in Norway, and could be contrasted with the 924 million NOK put forward in 2009 in the midst of the financial crisis.

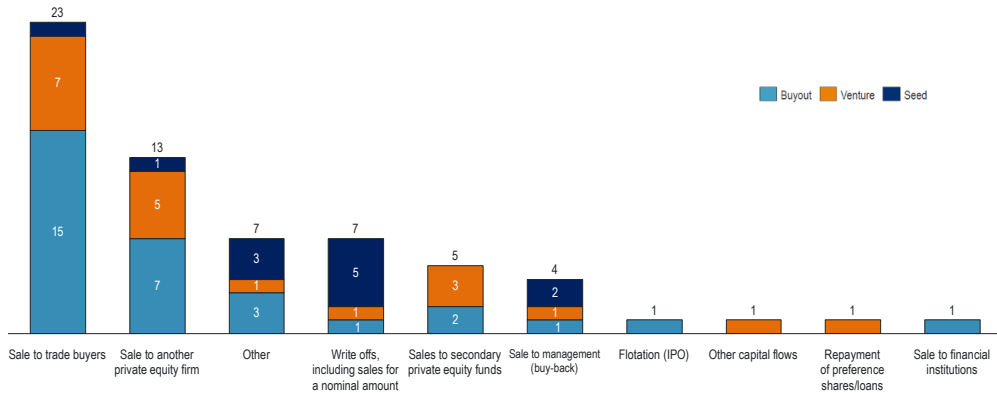
As illustrated in Figure 4.1, approximately 6 billion NOK is annually *invested* in portfolio firms, but with significant variations year to year. The main bulk of the money is invested in mature and less risky firms as buyout investments. Just a small fraction is invested in the seed stage. One reason for this, as we have already indicated, is the risk involved with investments that are in the early stages. This is also reflected in the minority position VC funds normally take at this stage. Another is the actual need for capital, which can be relatively small in the early stages, but much larger in the later stage when a successful medium-sized business project should be scaled up. As can be seen on the right-hand side of the figure, more projects are funded in the venture and seed phase than in the late buyout phase.



**Figure 4.1.** Invested amounts in NOK from 2007 to 2014 by stage and number of investments in the same period. Source: Figure 4, NVCA (2015: 15)

VC and PE are impermanent financing under most circumstances. Divestment is the normal way of making a profit on the investment. As can be seen in Figure 4.2, a sale to an industrial partner

was the most common method of divestment in 2014, followed by a sale to another PE firm for further development of the venture. Particularly in seed funding, many of these projects end as write-offs, or a buy-back sale to the management of firms that do not perform well. This, of course, reflects the risk involved at this stage.



**Figure 4.2** Number of divestments from Norwegian VC/PE firms in 2014 by stage and method. Source: Figure 25, NVCA (2015: 32)

Our own database includes 683 Norwegian portfolio firms partly or fully owned by and under management of 51 different VC or PE management firms. In the period 2000–2014, these firms managed the financial resources of 112 different funds raised for investment in new ventures or buyouts. As already explained, the lifetime of such funds is normally between 5 and 7 years, but some funds, typically those based on family wealth, are not dependent on investors and can have a longer time horizon.

Table 4.1 shows the industrial distribution of these investments by stage. The first observation is that firms that produce services are the most common target for financial support from VC or PE funds. In itself, this is an indication that growth and innovative conduct is actively present in this part of business life, and not only in manufacturing. 70% of the Norwegian VC/PE-supported firms are registered as producers of services. The largest group is “Professional, scientific, and technical services” where SIC 71 “Architectural and engineering activities” dominates (13.5% of the total) followed by SIC 72 “Scientific research and development” (8.1% of the total). The second-largest group is related to information and communication businesses. SIC 62 “Computer programming”

is most popular (11.7% of the total) followed by SIC 58 “Publishing activities” (including software). In manufacturing, no specific industry is eminent.

**Table 4.1** Portfolio firms supported by VC/PE funding by industry and stage. Source: Own data

Stage of investment	INDUSTRIES OF PORTFOLIO FIRMS (SIC 2007)								Total
	Primary/Manufacturing/Infrastructure/Construction 30.1%				Services 68.9%				
	Fishing, aquaculture (01-03)	Mining and oil exploration (05-09)	Manufacturing (10-33)	Retail, wholesale, repair of vehicles (45-47)	Informat. Communication (58-63)	Professional scientific technical services (69-75)	Business services (77-82)	Else	
SEED (N=153)	3,9%	1,3%	19,0%	4,6%	23,5%	40,5%	3,3%	3,9%	100%
VENTURE (N=333)	1,2%	1,8%	20,7%	6,0%	36,0%	28,5%	2,7%	3,1%	100%
BUYOUT (N=197)	2,0%	7,6%	27,9%	18,3%	8,6%	13,7%	8,6%	13,3%	100%
TOTAL (N=683)	2,0%	3,4%	22,4%	9,2%	25,3%	26,8%	4,5%	6,4%	100%

Two important arguments are used when asking partners in VC/PE firms why they invest in service industries. The most obvious is that services in general are growth industries with many expanding markets. Due to this, these sectors are a sound basis for developing expanding companies. The second argument is that investments in services are normally less capital-demanding and risky than ventures in manufacturing, particularly in the venture stage. Investing in the development of hardware is more risky because: it takes a longer time to develop and demands more capital, is dependent on fewer customer groups, scaling up the activity is more difficult, and lastly a position in hardware production is less flexible at meeting technological shifts and the competition from substitutes. Such changes can easily put new ventures on the back foot.

By inspecting the distributions in Table 4.1 and disaggregated data, we can observe that investments in the seed stage are concentrated on firms subscribed to SIC 72 “Scientific research and development” (17% of all seeds) and SIC 71, particularly “engineering” (15.7%) followed by SIC 62 “computer programming” (13.1%) and SIC 58 “publishing” related to the internet (9.2%). We also find small pockets of seed financing in SIC 26 “manufacture of computer, electronic and optical products” and SIC 03, particularly “aquaculture.” These are typical knowledge-intensive industries related to the use of ICT and bio- and nanotechnology.

In the venture stage, an even more concentrated distribution could be observed in the same service industries, but here it is more focused on software-, internet-, and telecom-related utilization of ICT. Smaller pockets of investments related to the “manufacturing of computers, electronic and optical equipment” (SIC 26) and “machinery” (SIC 28) are also related to the venture stage.

In the buyout stage, investments are more broadly distributed. A smaller fraction is related to firms focused on knowledge-intensive activities in “research” (1% of all buyouts) and “engineering” (8%). The largest industry in this mature phase is SIC 46 “wholesale trade” (13.2%) with some investments also in “retail” (4.1%). Investments in “oil exploration and services” (SIC 09) are fairly common (6.1%) as well as in “manufacturing of fabricated metal,” “electric equipment,” and “machinery” (around 3–4% each).

In Table 4.2, investment is related to typical sectors of the economy where venture capitalists see a good potential for growth. Over one quarter of the firms receiving financial resources from these sources focus on the utilization of ICT in one way or another. The energy sector, and particularly oil and gas activities in the Norwegian context, comes next. Healthcare and life science-based activities come in third place. Both sectors have been under rapid growth.

**Table 4.2** Portfolio firms supported by VC/PE funding by sector and stage. Source: Own data

STAGE OF INVESTMENT	SECTOR OF THE ECONOMY							TOTAL
	ENERGY	INDUSTRIAL	CLEAN-TECH	CONSUMER	ICT	HEALTH CARE & LIFE SCIENCE	OTHER	
SEED (N=153)	16,3%	10,5%	3,9%	5,9%	26,8%	21,6%	15,0%	100%
VENTURE (N=333)	15,9%	11,4%	9,9%	6,3%	36,9%	10,2%	9,3%	100%
BUY OUT (N=197)	27,9%	18,8%	1,5%	18,3%	9,1%	7,1%	17,3%	100%
TOTAL (N=683)	19,5%	13,3%	6,1%	9,7%	26,6%	11,9%	12,9%	100%

As seen from the industrial distribution in Table 4.1, there are also fundamental differences in the way VC and PE invest and perceive profitable opportunities. In the seed and venture stage, new firms seek opportunities in sectors of the economy that are on the rise and often associated with the commercialization of new analytical knowledge related to healthcare and life sciences, new materials, or the use of ICT-based knowledge. In the ICT sector, the technology is mature, but internet-related technologies open up many new ways of distributing existing information-based

services or creating new business models and alternative services. In this phase, a unique product that can be launched in the market is crucial to attract venture capital.

In the more mature or the buyout stage, oil services, consumer services, and manufacturing seem to attract most investments. Energy is definitely a Norwegian phenomenon as national and international offshore and subsea oil and gas exploration and production are a very important part of the Norwegian economy.

To understand the motives behind their investments in portfolio firms, we asked the fund managers a few questions about their motives for investing in specific ventures. Around half of the portfolio firms in our database are included in this small survey. The answers reflect the judgment of the fund manager responsible for the specific firm in question. We know that these investments are managed by partners with extensive experience in consulting, investment banking, or the successful management of firms. They are primarily focused on *value creation* over a longer period, *growth* of firms, and the *financial return* of this investment.

We also know that they control a scarce resource: risk-willing financial resources. Many entrepreneurs are desperately in need of capital to develop their venture, and many mature firms with growth potential suffer under credit constraints or mismanagement. In sum, many new firms seek risk money and many mature firms could possibly be a good investment if they were better managed and more efficiently operated. New prospects are introduced to VC/PE firms in the hundreds. They also actively seek undervalued firms with growth potential. Only a fraction of these opportunities are in the end selected to become a portfolio firm of the fund.

Principally their motive could be: 1) to use their extensive experience in developing firms by actively involving themselves in the strategic development of a specific venture, its management, and its access to critical resources, including capital; 2) to buy a firm with potential and, in a shorter time horizon, split it up, merge parts with another portfolio firm, or sell the whole or part of the firm to an industrial partner as part of the restructuring of a mature industry; 3) to put money into a promising venture as a more passive financial placement of capital.

Only 6 of 368 entries (1.6%) are regarded as pure financial placements. The predominant argument for investing in a firm is to support growth and value creation over a longer period through active involvement in the development of the firm (motive 1 above). In new ventures, this was the sole

motive (93%). “Active ownership” was also the most important motive in service industries (85%) and manufacturing (82%). Active involvement was sometimes combined with a focus to create value through restructuring of the industry in question.<sup>17</sup> This combined strategy was related to 13% of the portfolio firms in manufacturing and 5% in services. This answer is of course in line with the industries’ self-promotion as active owners in a positive sense, adding value to the firm through development, change, upgrading, and innovation.

What they actually do, can partly be read out of how long the VC/PE agent is involved in the firm. Over the period from 2000 to 2015, 225 of these ventures were sold on or went bankrupt.<sup>18</sup> The mean number of years for which they hold their owner position is 6 years, with the range of 3 to 8 years as the normal holding timeframe. This long-lasting position indicates that the vast majority of these investments are not a short-term focus on restructuring, stripping, and selling, but a long-term engagement in actively developing the potential of a venture, including the more innovative part of the strategies involved.

In the survey, partners in the VC/PE firms were asked to assess the most important reason for investing in a specific venture. 18 different resources/capabilities related to firm’s development were listed. The respondents were asked to pick and prioritize the five most important arguments for each venture.

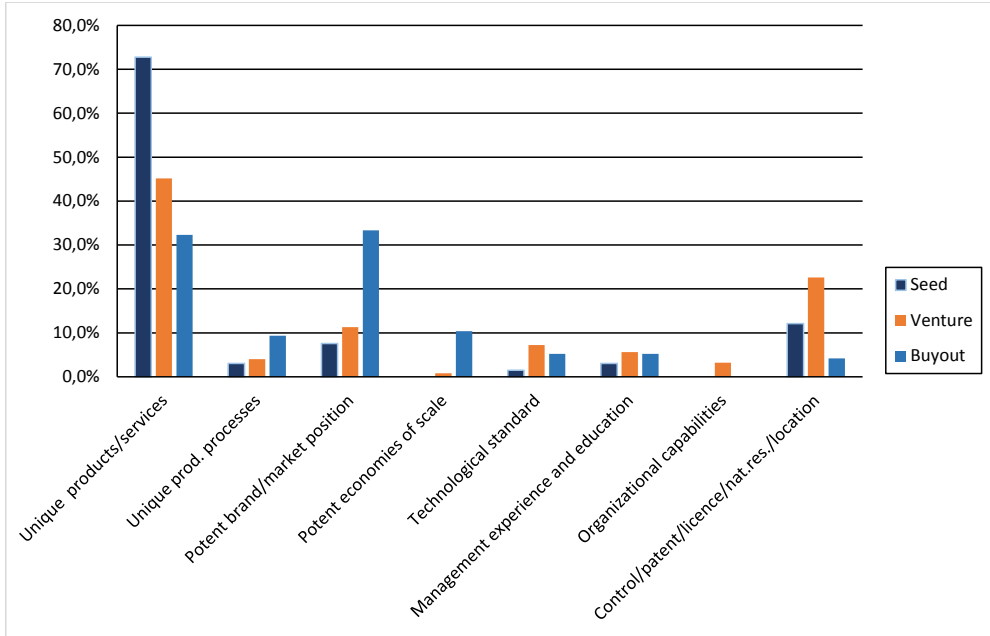
The most important arguments that were picked as the priority for investors can be observed in Figure 4.3 The number one argument for investing in a specific firm is that it controls unique products (goods/software/services). This indicates that VC funds in particular are primarily looking for entrepreneurs or firms based on unique knowledge or capabilities not easily found in the market, that is, unique products with a good potential for growth. Innovative thinking and behavior is often a basic input for such ventures. As seen in the figure, this argument is dominant in the *seed stage*. Venture capitalists primarily invest in entrepreneurial ventures based on an idea for a new or better product combined with a deeper understanding of potential demand. A focus on innovative conduct also counts for the *venture stage*, where the second most important argument is that the new venture

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<sup>17</sup> Through “add on”/“sell off” and restructuring.

<sup>18</sup> As of January 2015 the VC/PE fund is still the owner of 458 ventures. 40 of the 683 ventures are bankrupt, of which 34 were the subject of seed/venture investments where the risk is the highest.

controls intellectual property protected by patents, or more seldom has unique control over physical resources through ownership, a license, or a specifically attractive location, for example in retail.

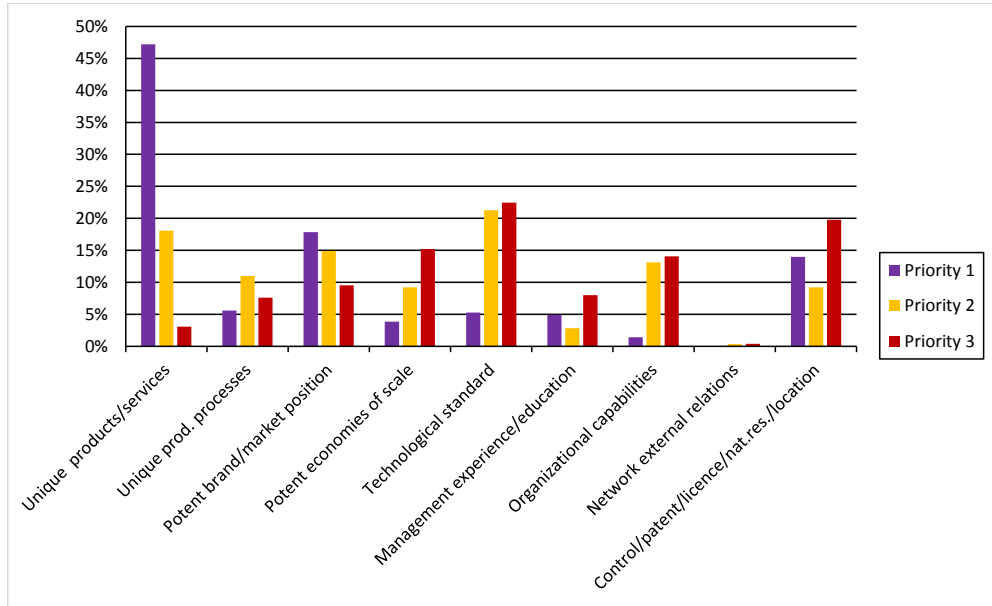


**Figure 4.3** The most important argument for investing in a venture by stage. Source: Own data

In the *buyout stage* and the development of more mature firms, unique products are still an important, but not dominant, argument. In this phase, PE agents are more interested in a proven position in the market. This partly relates to the firm's market share in their existing market(s), and/or the potential value of a well-established brand name. Behind this attractive position is probably also a portion of innovative thinking related both to the product in itself and in the marketing, distribution, and services related to the product. The numbers also indicate that PE agents, in contrast to VC agents, are logically more focused on the potential to utilize economies of scale and efficient production processes.

In the VC phase, one should suspect a focus on innovative conduct related to the development of the venture's primary *raison d'être*—a unique physical object or immaterial service that can match a need in the market—combined with a willingness among users to pay a good price for this solution. In contrast, in the PE phase we can suggest that more efforts are dedicated to increase

sales of an existing and well-accepted product. Innovative conduct in this phase could be focused on further incremental change and differentiation of the existing product(s), but we would primarily suspect that efforts are related to the development of more efficient organization, production, and distribution, the expansion of the market via internationalization, better marketing, and the introduction of new business models.



**Figure 4.4** The three most important arguments for investing in a venture. Source: Own data

Overall, the most important argument used for investing in a venture is unique products/services controlled by the firm followed by the firm's position in the market, and finally some sort of protected control over specific resources, mainly the intellectual property of the firm. From Figure 4.4 we can read that the most commonly used second and third priority argument were the technological standard of the firm regardless of whether it is a manufacturing or service firm. Up-to-date information systems or machinery for production are valued similarly to organizational capabilities and the potential to scale up the operation.

Schematically one could say that a venture capitalist is primarily attracted to a good idea with market potential and normally a more or less ready pilot product that adds something new to the



market. To launch this potential product in the market is challenging. Access to capital is one important determinant for growth, but more important is knowledge and entrepreneurial experience. Many venture capitalists are sector specialists. They know the basic technology well, understand the development and competition in the market quite well, and are focused on finding a match with the needs of the users of their services.

They invest in market segments they know, but to grow a company, entrepreneurial action is needed. Much of the selection process is therefore focused on the quality of the entrepreneur(s), if this/these person(s) can take the firm in the right direction and build a new, dynamic organization and sell the product in a demanding market. Much effort is therefore put into the development of a good management team through the selection of the entrepreneur, new recruitment, and direct incentives such as shares and ownership in the venture.

The most important task is to “see” the commercial use of the product in mind, to develop a strategy to serve this market, and lastly to grow the firm to be able to serve this market. Thus, a specific strategy is developed or co-created in a partnership between the venture capitalist, the entrepreneur, and the board, which is supplemented with competence from external sources and core employees. To come to an operation strategy, the new venture is dependent on its employees and their capabilities to adapt to or develop the market in focus, and to add small innovative elements to the product and organization that is underway. Capabilities to learn, to change, and an enthusiasm to grow are crucial in this phase of development. Competence and the combination of knowledge is therefore more important than financial capital in itself.

The same could be said of the buyout phase. In the venture phase some sort of innovation is an obvious element of a new venture. In the more mature buyout phase, the prime focus is to add competence to an existing organization with a fairly well-positioned product and a proven cash flow. The PE capitalist selects firms with potential: goods or services that are well placed in a local/regional market with stable or increasing demand and products that can be scaled up, that is, sold in new markets and under conditions where economies of scale are present. Simultaneously, something has so far hindered or slowed down expansion in most of these firms.

Capital restriction is one element, but more serious is a lack of competence to release the potential to grow and create value. In accordance with the “good governance” postulate, PE partners often see themselves as active and demanding owners of firms. They operate through the board and a

careful selection of the top management team. This team need to be willing and able to put a specific strategy, strongly influenced by the board, into action.

The professionalization of the board, the management team, and the organization are the core activities in the first period after takeover. This also normally implies restructuring, a number of changes, and a more focused approach to the growth of the firm. Benchmarking toward the best in the industry is a normal procedure for setting targets and goals for improvements. Professionalization of the organization and scaling up sales and production is part of a growth strategy. The same is done to streamline distribution and to go international. Mergers and acquisitions are a common strategy to add competence and capacity to the firm. Many small steps of change and improvements in operations and expansion are part of this professionalization. Many of them are not innovative, but here and there new approaches and problem-solving demand the development of new knowledge and incremental innovation in products, production, distribution, marketing, and the organization of a complex set of activities.

As the CEO of one of the case firms said:

*“I formulated a strategic plan for N.N., where we should be in 2010. [...] The goal was very ambitious and “hairy”, but we reach all of them regarding the turnover, products, and countries we should approach. In the development process based on these goals, quite a lot of creativity and innovation was released.”*

## 5. Innovation in service firms – a case study

To learn more about innovation processes in services, we asked several VC/PE firms to suggest a few of their portfolio firms as candidates for a case study of innovation processes in services. This is clearly not a random selection of firms, but hopefully a selection of “better practices” or what we could expect to be fairly well-managed innovation processes representative of a dynamic and expanding service firm. We had the intention to cover several segments of the service industry, including sectors with more or less attention to innovation. As seen from Table 5.1, 21 different firms were selected for a 2-hour in-depth interview focused on one representative innovation project for each firm.

**Table 5.1** Cases selected by service sector, funding, size and age

Firm	Industrial sector	Focus	Form of investment	Sale mil. NOK <sup>1</sup>	Employed <sup>1</sup>	Age
Venture 1	Support services for oil and gas exploration	Energy	Venture	170	110	16
Venture 2	Support services for oil and gas exploration	Energy	Venture	470	30	9
Venture 3	Retail trade, wholesale trade	Consumer	Buyout	1700	2500	26
Venture 4	Retail trade, wholesale trade	ICT	Buyout	300	130	17
Venture 5	Software publishing	ICT	Venture	170	70	16
Venture 6	Software publishing	ICT	Venture	40	40	3
Venture 7	Software publishing	ICT	Venture	110	120	23
Venture 8	Computer programming, operation of ICT systems	ICT	Buyout	420	260	15
Venture 9	Computer programming, operation of ICT systems	ICT	Venture	20	10	11
Venture 10	Computer programming, operation of ICT systems	Business Service	Seed, Venture	50	40	12
Venture 11	Information service activities	ICT	Buyout	390	340	15
Venture 12	Information service activities	ICT	Venture	630	340	17
Venture 13	Professional, scientific, and technical activities	Energy	Seed, Venture	30	20	7
Venture 14	Employment activities	Energy	Buyout	480	70	17
Venture 15	Office/business support activities	ICT	Buyout	220	80	18
Venture 16	Office/business support activities	Industrial	Buyout	90	70	18
Venture 17	Office/business support activities	ICT	Venture	370	210	14
Venture 18	Office/business support activities	Business Service	Buyout	910	470	31
Venture 19	Human health activities	Healthcare	Seed, Venture	4	10	6
Venture 20	Human health activities	Healthcare	Buyout	420	540	14
Venture 21	Human health activities	Healthcare	Buyout	360	290	16

<sup>1</sup> Numbers rounded up or down

Table 5.1 gives an overview of the selected cases, including their industrial sector, area of focus, initial type of VC/PE investment, revenue in 2014 in millions of NOK, number of employees, and age in 2015. Not surprisingly, there is a very strong correlation between sales and employment, but the same also counts to a lesser degree for the correlation between age and the size of the firm<sup>19</sup>—the older, the larger. These firms grow over time, from the initial investment to their actual size in 2014. The numbers include both organic growth and capacity added through mergers and acquisitions.

As seen from the table, a wide variety of service sectors are included. Three of the ventures have been supported with capital from the seed stage, eight from the venture stage, and ten have been bought at a mature stage and only supported by PE. The smallest firm is a new venture on its way into the market with a commercial product, a tiny turnover of 4 million NOK and around 10 employees. The largest is a mature retailer with 1.5 million NOK in turnover and around 2,500 employees.<sup>20</sup> For many of these firms, ICT is an important medium for the development and the distribution of the services they offer. Five firms focus on individual consumers. The majority serve institutional markets and trade business services.

The objective of the interviews was to be informed by the respondent's experiences executing an actual innovation project. The study is by this means explorative and not designed to test a theory. The aim was to collect the respondents' experiences in their own words. The researcher's role was to structure the conversation, listen, ask elucidating questions, but not to lead. All interviews were taped and later transcribed in two operations. This information base was later coded and analyzed using a software tool for qualitative data analysis.

The interview started with a short introduction of the respondent's position, experience, and capabilities, the basic elements of the present firm's strategy, their focus on innovation, and their relation to VC/PE support. The rest of the conversation was directed toward a specific innovation project developed by the firm. First, a short description of the innovation, its history, complexity, and technical substance was communicated. Next, the innovation process for this project was described: from its origin as an idea, the selection and implementation process, the organization

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<sup>19</sup> Pearson correlation = 0.807\*\* between sales and employment, 0.643\*\* between age and sales, and 0.488\* between age and employment.

<sup>20</sup> Many part time.

and accomplishment of the project, the tools used to manage the process, the goals set for the project, and the measures used in the process. Thereafter, we devoted time to talk about the resources used in the process: human capital, organizational and physical resources and facilities, and financial, social, and cultural capital. The last two concepts were explained before we talked about them. The respondent(s) was/were asked to name the three most important resources used in the specific innovation project in question. In the last part, we talked about the use of external partners in the project, the use of publically produced resources, and the firm's involvement in a larger innovation system. The interview ended with a focus on the VC/PE agent, the resources this agent added to the firm's development, and potential conflicts involved. A short, structured questionnaire was in the end handed to the informant and answered right away or answered later and returned via e-mail.

### 5.1 Goods, services, and the importance of technology

As seen in Table 5.1, the case firms are generally medium-sized firms with one or two decades under their belts. All of them are listed as service firms according to the SIC standard. They have over the years accumulated a great deal of understanding of their markets, developed their services and organization, and invested money in offices and, for some, retail space, computers, software, distribution systems, tools, and other hardware important for the delivery of their service.

Many of the firms are software companies or ICT-based companies that serve other companies by storing, processing, and analyzing information that often belongs to the customer. Some serve activities in the offshore oil and gas sector, others consumers like you and I. The feature that they have in common is that most of these firms are heavily dependent on hardware and technology to be able to serve their markets. The implication of this is that innovations in these firms are not only "soft," intangible, and "behavioral" services, but services that are partly embodied in technology or dependent on the support of technology or physical equipment.

Service innovation, in our context, therefore also includes technological aspects. In these firms, "pure" services with no infusion of technology are seldom observed. Even in the healthcare sector, innovative services can be based on internet technology or embodied in an app on your smartphone.

At the same time, the main product these firms offer to their customers possesses much of the properties belonging to services, as suggested by Hill in Figure 2.1. The service is delivered for the

benefit of a user and it normally involves a direct relationship between the service provider and the user, although not necessarily as face-to-face contact, but still a direct relationship. It is difficult to declare a property right to the service and even more difficult to sell the outcome of the service to others. The service cannot be stored, and can be seen as an action executed by the service provider that influences the user's belongings. This last aspect is obvious in healthcare where a clinic or a health studio delivers a service that directly influences the customer's body and health condition. In offshore services, the provider solves a problem for the customer by fixing a malfunctioning instrument, collecting and analyzing information on a well, or placing equipment belonging to the customer in a specific position underwater. The action of doing this is the service product, not the tools used to make this possible. Several of the firms have developed tools, equipment or software for this purpose. Some of these tools or software are protected by patent or copyrights. The firms do not sell this equipment, only the services made possible because they control the intellectual property rights to unique tools.

In business services, the action can be to store, process, and analyze data. This action is not a physical good, and the act of processing information cannot be stored. The same relates to a consulting service. The service provider does not have the property right to the outcome of advice dedicated to the customer's specific needs.

In retail, the service is not the items on the shelf of the shop, but the act of bringing these items to a convenient place that is accessible for the consumer so that they can easily observe, ask for information, make a choice, and finally purchase a good.

For many of the software producers, the outcome of their production can be commodified. A general software program can be stored on an open CD disc and sold as an immaterial good. If so, the program could change owner with some restrictions and be transferred to other users. If so, it is not a service but a good that is offered.

All software producers included in this study invested large sums of money, manpower, and knowledge in their software. New elements are continuously added and different products can be combined. The software is at the center of the firm's core capabilities. With this tool in hand, they can analyze complex problems for the client and suggest solutions or report results. The core technology and/or software is not sold, but kept in-house. Sometimes the software is distributed to

the user over the internet as a license to use it for a specific period, but not for download. What is sold is not the software as such, but the services that can be produced utilizing this software.

A wave of centralization of ICT services is an outcome of improvements in the internet and the development of cloud technology. More and more ICT functions (the processing of data) are being outsourced to specialized ICT companies that service many clients by storing, processing, and analyzing the clients' data. They sell no material or immaterial goods, only services.

In sum, almost all case firms are serving their markets based on investments in knowledge development that are embodied in tools and software. These assets enable the firm to deliver unique services to their clients, and in a VC/PE context, it also form the platform for scaling up the activities by offering the firms services to new clients and in new markets.

## 5.2 Innovation activities in the case firms

Let us first report some descriptive statistics from the small survey handed out at the end of the interview. A standard five-point Likert scale was used with the lowest value being 1 (no/not important/absolutely disagree) and the highest being 5 (to a very high degree/absolutely agree). Of the 21 firms included, 10 were mature firms supported by PE. Eleven were fairly new firms supported by VC, of which three had also received seed financing. The median value of sales in 2014 was 405 million NOK for the buyout firms and 110 million NOK for the venture firms, a significant but not surprising difference. The venture-supported firms are for obvious reasons also significantly younger than the buyouts (median age 12<sup>21</sup> and 19, respectively).

Both age and turnover indicate that the case firms were well-established firms in their respective markets at the time of interviewing. Several of the firms have a longer history as a part of other firms before they were separated, bought out, and restarted as a "new" firm. They are all past the initial formation phase of a firm, with the exception of two of the smallest firms, which were still in their early venture stage. The case firms therefore *do not represent the early entrepreneurial phase* of a firm's life cycle, but a phase where innovation is part of the strategy to maintain a position in the market or to increase market share and revenue.

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<sup>21</sup> Remember that the venture capital has been supporting the growth of these firms for several years at the time of the interview.

**Table 5.2** Degree of involvement in innovation

Question	Mean value	Standard deviation	Lowest value	Highest value
To what degree would you say that innovation is an important part of (firm name)'s strategy for growth and development?	4.24	0.625	3	5
To what degree are you directly involved in innovation activities?	4.29	0.561	3	5

N = 21

As seen from Table 5.2, the focus on innovation is important in all case firms. The full involvement in innovation activities also counts for the persons interviewed. Thirteen of the respondents were the acting or former CEO of the firm and three were the acting CTO and head of innovation. Three acted as SVP and head of product and development, one held the position as the CFO of the firm and one as the CIO. The respondents also to a large degree reported that their firm had introduced a new type of service during the last three years (mean value = 4.10; st.dv. = 0.944), changed existing services by adding new elements (mean value = 3.67; st.dv. = 0.796), and to a lesser degree reported introducing new ways of distributing their services (mean value = 3.52; st.dv. = 1.123).<sup>22</sup> Again, this tells us that we are not investigating a random selection of service firms, but firms focused on innovation as an important part of their strategy.

**Table 5.3** Firms involvement in innovation activities crossed with the dynamics of competition

		Dynamic competition				Total
		to a lesser degree	to a certain degree	to a large degree	to a very large degree	
<b>Innovation as part of strategy</b>	to a certain degree	50.0%	50.0%			100.0%
	to a large degree		25.0%	66.7%	8.3%	100.0%
	to a very large degree			71.4%	28.6%	100.0%
<b>Total</b>		4.8%	19.0%	61.9%	14.3%	100.0%

N = 21, Pearson chi-squared asymmetric significance = 0.020

Table 5.3 indicates that the firms' involvement in innovative activities is predisposed by external factors and to what degree the competition in their markets in general is based on rapid change and innovation. As the numbers indicates, the more dynamic the competition is in the firm's market niche, the more innovation is a part of the firm's main strategy. Competition "forces" the firm to be innovative.

The respondents were also asked if the firm's most important service was directly dependent on technological support of any kind. The mean value to this question was 4.33 (st.dv. = 0.913) and

<sup>22</sup> 3 = to a certain degree, 4 = to a large degree.



reflects the strong dependence most of these firms had on some form of computer/internet-aided support, both for the development of the service and for the distribution of the service to their customers. The delivery of their services (fully or partly) was to a lesser degree automated and based on some form of self-service (mean value = 3.33; st.dv. = 1.017).

In the service innovation literature, the customer and customer's needs are often accentuated as the most important source of ideas for innovation. Service providers help to solve problems or cover customers' needs. To do so, a new approach and/or a new solution is often needed. The panel in this small survey agree, as can be seen in Table 5.4. However, the employees of the case firms are also recognized as important initiators of ideas for innovations in the firm. This could be the frontline or sales personnel, who have direct access to customers and their needs. However, more commonly among these firms it is a specifically talented technician, programmer, designer, manager, etc. These persons "see" a new way to serve the market or a new twist to the existing product or distribution system. Normally, this is a person with extensive interaction with external sources and information about the market, the technological frontier, etc., that is, a social network well beyond the customer. From Table 5.4 we can also see that suppliers and competitors are of far less value as generators of ideas for innovation.

**Table 5.4** Summery statistics. The importance of different agents for new ideas for innovation in services and the importance of the customer as co-producer of innovations (lower part)

Question	Mean value	Standard deviation	Lowest value	Highest value
To what degree are your customers an important impulse for innovation in services?	4.10	0.768	2	5
To what degree are your own employees an important impulse for innovation in services?	4.05	0.740	3	5
To what degree are your suppliers an important impulse for innovation in services?	2.86	0.910	1	5
To what degree are your competitors an important impulse for innovation in services?	2.86	0.655	2	4
To what degree is the customers' physical presence important when you deliver a service?	3.00	1.517	1	5
To what degree do the customers' directly take part in the development of the innovation (co-production)?	2.95	0.973	1	5

N = 21

In the "service based view," the customer is highlighted as an important actor of innovation and directly involved in the innovation process (see Vargo & Lusch, 2008). The customer takes part as a co-producer. As seen from Table 5.4. (the lower part), our panel does not fully agree with this statement. Neither do they say that the customer must be physically present to be able to deliver

their service (as is the case in health services, personal services, some transportation services, etc.). Still, as seen from the standard deviation, the customer's presence is very important for a few firms, but for most of the case firms, it is not. The customer is important because many of the service firms make a profit by solving problems the customer encounters or helping their client to develop a more efficient production or a new opportunity in the market. The client is important to identify this potential arena for new approaches, but they do not necessarily take part in the development of the specific solution to the problem.

In Table 5.5 we show summery statistics from a battery of statements about drivers of innovation in a specific firm. The case firms seem to agree that innovative activities taking place in the firm are in accordance with their long-term strategy and the resources available (including risk capital). In other words, investments in innovation are mostly planned, proactive, and in general driven by the strategic decisions of the firm.

**Table 5.5** Summery statistics. Different statements about the drivers of innovation and a measure of agreement/disagreement sorted by importance

Do you agree or disagree with the following statements <sup>23</sup> :	Mean value	Standard deviation	Lowest value	Highest value
Innovation in N.N. is basically based on N.N.'s long range strategy and the resources available in-house	4.24	0.700	3	5
Innovation in N.N. is normally based on specific problems among our customers, problems we help to solve with new approaches	4.00	0.775	2	5
Innovation in N.N. is normally based on access to new technological opportunities that are adopted and adapted to our services	3.76	0.436	3	4
Innovation in N.N. is normally based on open dialogue with external partners and systematic feedback from the market	3.67	0.730	2	5
Innovation in N.N. is normally based on intuition and coincidence, driven forward by the management's openness to new solutions	2.76	0.944	1	4
Innovation in N.N. is normally based on what our competitors come up with in terms of new solutions	2.33	0.796	1	4

N = 21

Given this overall strategy, customers' needs are the most important driver for the direction of innovation in the firms (with a few deviations). Access to new technological opportunities is also important as a force that activates innovation, but to a somewhat lesser degree. The same can be said about interactions with external sources as part of some form of network for knowledge development. In general the case firms disagree that innovation in their firm is a coincidental ad hoc process and most often *not* an adaptive imitation game to what the most important competitors are

<sup>23</sup> (1) fully disagree (2) partially disagree (3) neutral (4) partially agree (5) fully agree

doing. Partly due to the small number of firms, we could not find any significant differences between VC- or PE-backed firms, small and large firms, or firms in specific sectors.

The battery of statements tried to map the firm's involvement in specific activities that are relevant for advancing the innovative strength of a firm. The statements are partly inspired by Edquist's listing of activities that ideally should take place inside systems of innovations—see appendix A (Edquist, 2011: 1729).

**Table 5.6** Summary statistics. Different statements about activities important for a focus on innovation, mean values, standard deviation and a truncated frequency table for the degree of agreement

Statement	Mean value	Standard deviation	Disagree	Neutral	Agree
We continuously work with the company culture to enforce the firm's ability to innovate	4.00	0.548	0	3	18
We are very dedicated to systematic development of knowledge through different forms of training and continuous education	3.71	1.007	3	5	13
We have a continuous focus on the identification of new markets for our products	3.67	0.796	2	5	14
Access to risk capital is essential for the possibilities we have to develop new services	3.62	1.117	3	6	12
We have to a large degree developed systems for continuous feedback from the demand side	3.43	0.676	1	11	9
We have to a large extent changed our organization with the purpose of developing a better structure for innovation	3.43	1.028	5	5	11
We have to a large extent formalized a longitudinal commitment to develop our abilities to change and innovate	3.38	0.865	3	9	9
We continuously survey changes in laws and regulations as an option for the development of new approaches	3.19	1.209	6	6	9
We utilize available incentives from public agents to advance innovation to a large degree	3.10	1.179	6	8	7
We have a systematic focus on the development of relations with external partners to impose our capacity to innovate	2.86	0.793	6	11	4
We often use consultants as advisers when we accomplish innovation projects	2.62	0.921	10	7	4

N = 21

Table 5.6 reports the summary statistics from this part of the questionnaire. The responses are sorted by how much the respondent, on average, agreed with the statement (the highest agreement is on top). Again, the respondents were asked to what degree they agreed/disagreed with the statement, including a neutral position (see footnote 23).

One top, almost all firms agreed that they continuously worked to develop a company culture that is open to the advancement of the firm's capacity to innovate. This is not a particularly surprising result. Still, openness to change, acceptance of and flexibility for making alterations, and capabilities to "see" new or better ways to deliver services or organize production are important. The *attitude* among employees and the *balance between routines and change* is deeply rooted in a

company's culture. Such attitudes are crucial for a dynamic and growing organization, and for the capacity to be innovative.

Two important elements could explain this focus on creating a change-oriented, innovative culture in the firm. First, there is a natural tension in most firms between operation and innovation. Smooth operations often demand standardization, routines, and efficiency in the provision of services. Innovations ask for changes that can disrupt a complex and stable set-up. Operations generate the cash flow, which is necessary to accumulate resources for new projects and the short-term cash flow. Operations also serve the firm's customers on a daily basis, often with the attitude that customers' ordinary needs or problems come first. Change, as an outcome of innovation, is therefore not always welcomed, particularly if employees have to handle change at the same time as they are asked to deliver the best possible operation. This dilemma must be handled in any fast-growing firm. A clear focus on change management and innovative behavior is therefore very important.

Second, for many of the PE-supported firms, fast growth and expansion are secured through mergers and acquisitions, which are sometimes argued to add capacity to the firm, but quite often also to add new capabilities or new services. Again, a corporate culture of change and innovation is important to handle the frictions coming out of the merger of different operations, technologies, cultures, and corporate identities.

62% of the firms agreed that they were dedicated to the advancement of their knowledge base through systematic training and continuous education of their personnel. This brought this activity to the second most important in table 5.6. Still, eight of the case firms did not invest much in competence building. An strong effort to find new markets for their products was an apparent approach for many firms, indicating a willingness to explore new and unknown markets and new ways of marketing their products. Not surprisingly, many firms also agreed that external risk capital was essential for their efforts to develop new services, but for several of the firms risk capital was first of all important for the growth and expansion of the firm, not for innovation. Most firms had also developed some kind of feedback system from the demand side, but fewer had done this in a systematic way.

The elements with the lowest score were typical attributes of innovation policy: a focus on networks of knowledge providers, the use of consultants to advance the firm's capacity to innovate, and use

of public policy incentives or institutions to promote and activate innovation in the firm. Many firms agreed that they used “Skattefunn” (taxation incentives to stimulate innovation), but few utilized incentives available through Innovation Norway, the Research Council of Norway, or support schemes and institutions available at the local/regional level.

A self-reporting survey such as this is influenced by the respondents’ enthusiasm for their own achievements as well as the relative evaluation of their own performance compared with others. The number of respondents is also small. As a result, caution should be taken in the interpretation of the scoring in Table 5.6. One method to reduce this bias is to collapse the two agree or disagree categories into one on each side (as done on the right hand side of the table), but this does not exclude the whole influence of personnel scaling.

With caution, we can still suggest that the case firms are only moderately involved in activities that are part of a systematic focus on innovation. One important reason for this is that most of these firms are not only dedicated to an innovative conduct, but to developing a company that will expand, utilize economies of scale, and emphasize the economic performance of the firm. Innovation is part of this strategy, but not the whole strategy. Most of the VC-backed firms are also at a stage where commercialization of their services is at the forefront of their strategy.

To go deeper into the innovation processes of these firms, we turn to the qualitative study and the information given by the respondents of each firm.

### 5.3 Innovation processes, resources, and network arrangements

Two hours were chosen as the setting of the semi-structured interviews (see appendix B). The interviews had an open, explorative form, but followed a thematic structure in line with the study reported in Pedersen et al. (2015). The intention was to learn as much as possible from the innovation practices taking place in the case firm, and as already said, not to test a theory or measure innovation activities.

The interview was organized more like a conversation, where the researcher’s job was to give structure to the conversation, allow the interviewee to express their own view with a minimum of guidance, and ask follow-up questions if there was a need for further explanation or if important elements had been overlooked. In this way, we were hopefully able to identify real processes as

they took place in the case firm. The project was reported in retrospect and a bias from self-reporting was obvious. At the same time, the respondents spoke freely, sometimes critically, about the accomplishment of the project, and gave a trustworthy description of a bumpy process and the outcome. The respondents were all actively involved in the innovation project and held a top level or line management position in the firm. The chosen innovation project and activities therein were explicitly said to be representative of the way the case firm developed a novel idea.

Only one (in three cases two) person(s) was/were interviewed in each case. The implication is that a specific view of innovation represents each case, not a view based on a broader set of informants that could have modified individual predispositions. On the other hand, we can argue that the informants interviewed are all centrally positioned in their firm, with extensive experience in managing firms that are open to change and innovation. Their experience is in itself valuable. It can give the research community a better and deeper understanding of the complexity of innovative behavior in services. It is certainly subjective knowledge, but still valuable as a contribution to our understanding of a field of knowledge that is not well understood.

To be relevant and concrete we asked the informants to focus on a significant and specific innovation project that had been accomplished over the last couple of years, a project the informant knew well.

### 5.3.1 Innovation modes

Let us first try to classify the modes of innovation in which the different firms are involved. We use the typology suggested by Gallouj and Savona (2009) described earlier in this report. The classification is based on the respondent's description of the innovation project they chose to talk about, the activities performed in the project, the resources used, and the persons and institutions involved. For the classification, particular attention was devoted to changes in service characteristics of existing products or new services with different characteristics, the competencies and technological resources involved on the hand of the service provider, the client, and in many cases a third party (external firm or institution). Table 5.7 reports this classification.

**Table 5.7** Classification of innovation modes based on Gallouj and Savona's typology

Industrial sector	New service	Changing service attributes	Service provider's competence	Service provider's technical charact.	Client's competence	Client's technical charact.	Third party competence	Third party technical charact.	Innovation mode
Support services for oil and gas exploration	-	yes	yes	yes	yes	no	yes	yes	incremental/ad hoc innovation
Support services for oil and gas exploration	yes	-	yes	yes	yes	no	yes	yes	radical innovation
Retail trade, wholesale trade	-	yes	yes	yes	no	no	yes	no	incremental innovation
Retail trade, wholesale trade	yes	-	yes	yes	yes	no	no	no	innovation based on recombination
Software publishing	-	yes	yes	yes	yes	no	no	no	incremental innovation
Software publishing	yes	-	yes	yes	yes	no	yes	yes	radical innovation
Software publishing	yes	-	yes	yes	yes	no	yes	yes	innovation based on recombination
Computer programming, operation of ICT-systems	-	yes	yes	yes	no	no	no	yes	innovation based on formalization
Computer programming, operation of ICT-systems	yes	-	yes	yes	yes	no	yes	yes	radical innovation
Computer programming, operation of ICT-systems	yes	-	yes	yes	yes	yes	yes	yes	innovation based on recombination
Information service activities	-	yes	yes	yes	yes	no	no	no	innovation based on recombination
Information service activities	-	yes	yes	yes	no	yes	yes	yes	incremental innovation
Professional, scientific, and technical activities	yes	-	yes	yes	yes	no	yes	yes	radical innovation
Employment activities	-	yes	yes	no	yes	no	yes	no	improvement innovation
Office/business support activities	-	yes	yes	yes	yes	no	no	no	incremental innovation
Office/business support activities	-	yes	yes	yes	yes	no	yes	yes	incremental innovation
Office/business support activities	yes	-	yes	yes	no	no	yes	no	innovation based on recombination
Office/business support activities	-	yes	yes	no	yes	no	no	no	innovation based on recombination
Human health activities	-	yes	yes	yes	no	no	yes	no	incremental innovation
Human health activities	yes	-	yes	yes	yes	no	yes	yes	innovation based on recombination
Human health activities	-	yes	yes	yes	no	no	no	yes	incremental innovation

Remember what we said about this typology:

- *Radical innovation* is a situation in which a new set of vectors for competences, technology, and service characteristics are created.
- *Improvement innovation* takes place if the vectors are the same but the prominence or quality of some characteristics included in the competence vectors change.
- *Incremental innovation* means that a new dimension is added, or an existing dimension is changed or deleted in some of the existing vectors.
- *Innovation based on recombination* normally means a change in the relation between the service and technological vectors.
- *Innovation based on formalization* takes place if one or several of the characteristics in any of the vectors are formalized.
- *Ad hoc innovation* creates changes in one or both vectors for competences and often a change in the immaterial aspect of technology.

Four firms were involved in “pure” *radical innovation*. All of them were new ventures supported by VC. Three of them could in some way be classified as “producers of tangible.” Their services were based on the development of specific equipment and/or software as a tool to collect more and better digital information from an oil reservoir, a production process, or from the internet. The fourth developed a new software-driven support system including a better interface for customer-involvement. In these firms, the innovation demanded heavy investments in formal/informal R&D (with weight on D) and a longer development process, partly in collaboration with a client. Most instruments of innovation policy, as seen in Figure 2.4, were in place in these cases. They utilized public financial incentives, collaborated with R&D institutions, and had access to support from a VC manager. Even if the radical shift was the development of their technology/software, the commercial result was a novel or much better service. As previously stated, they sold services based on this new, patented technology, not a device or a software.

Five other firms also developed new services, but their approach was a typical VC/PE strategy. Several of them bought other companies, internalized their core skills in the firm, and combined different product or service lines into unique, new services. Others combined the separate services of existing firm into new services. We could call this *innovation by recombination*. It results in a



new service, not only as change in the service characteristics of an existing product as suggested by Gallouj and Savona. Elements of the technological vector of the service provider were important, but also specific elements of the provider's competence had to be rearranged and complemented with new knowledge. In these cases, most of the resources in use came from internal sources and PE-supported firms were in the lead.

An inspection of Table 5.7 tells us that most of the innovations emphasized by the case firms changed the attributes of an existing service. These changes were *incremental* in nature, and most often included some form of change in the technical vector of the service provider. New hardware or software was often a prerequisite for the offering of a better service. We can also observe that the client was often involved in the innovation process, but not as an absolute necessity for the production of the services. This form of innovation can be seen as an important part of the continuous upgrading of services and distribution systems that takes place in most firms. New elements are gradually added to existing elements. In this process, continuous feedback on the utility of the firm's service is important.

Among the case firms, only one firm was involved in what we could call *ad hoc innovation*. That is, services customized for one client in need of some kind of new knowledge, modified tools, or new procedures to solve a specific problem. Most service providers in our sample produced customized services, but in a fairly routinized way. The service was adapted to the client's assets and needs, but no innovation was involved in this kind of service provision. If a customized service resulted in a feedback loop, reflections, and a quest for improvements of existing services, such projects could result in innovations that are transferable to other services. If so, ad hoc innovation could be seen as incremental innovation, as suggested in the table.

We could also suggest that a customization approach to innovation (unique knowledge developed for a unique customer) does not necessarily combine well with a strategy of growth and expansion. To sell a service on a larger scale often demands some form of standardization of the service in question, not full customization.

As our cases are particularly dedicated to growth, one should suspect that innovation focused on *formalization* is important. Only one of the innovation projects picked by the firms could be allocated to this class of innovation. This is surprising, as some form of standardization was

important for several of the case firms. One firm was involved in *improvement innovation* where the main activity was to increase the quality of the existing vectors included in the activity.

*In sum, incremental innovation and innovation based on recombination seems to be the most common mode of innovation in these highly dynamic and expanding service firms.*

### 5.3.2 The origin of the idea behind an innovation

The first question asked was where the idea or trigger for the project came from. In the service innovation literature, the dominant actor is said to be the customer. In our case study the customer, or more correctly the user, is an important trigger for an innovation, but not the dominant trigger.

One classic argument is that the customer has a serious problem and calls the service provider to help them find a way to solve the problem. Often such problems can be solved with existing knowledge, systems and equipment. Now and then, new knowledge or tools have to be developed and combined with existing solutions, to solve a user-specific problem. Many service providers have this as part of their business model, but only one of the firms included in our case panel could be said to follow this innovation strategy in full.

Another user–producer interaction that triggers innovation is related to feedback from the customer on a product already provided by the service firm. This is, of course, often related to suggestions for improvement of parts of the service or system delivered.

Several respondents indicated that this could be an important trigger, but at the same time some argued that such feedback is often problematic and not directly useful. One reason for this was that the user only “saw” one functionality, but not how this function was systemically integrated and therefore how it would trigger many other changes that could affect the functionality or other parts of, for example, an information system. As informant 10 said:

*“When a suggestion for an improvement or new function comes from a user, it is important to expand the view a bit. We have to take all values that should be part of the product into consideration, not only the limited need one customer has. Modules have to be integrated with the whole. What counts is that there perhaps is another user profile also using the same module, but in another way. A change in this module can influence the flow of data in the systems on other sub-systems. The outcome could be a disadvantage for other users. It is difficult for one customer to see this.”*

Another reported problem was that users often did not know what they want of *new* services, other than the improvement of already-existing services.

Feedback from the user is not always communicated *directly* to decision-makers in the firm. Rather, it is channeled into the firm via front-line employees that have close relations with the firm's customers. Then it is a combination of signaling from the user and observation of use from an employee, which ends up as a general input from employees rather than directly from the user side. As expressed by informant 1:

*“The most important thing is to work with our people that are working externally (on the customer's premises). They report suggestions for improvements both on the way our tools are working, and ideas for other ways to organize our service or other segments where we could use our competence.”*

Relatively few of the case firms have more systematic, formal procedures to catch new ideas from their users. Those who report that they regularly engage users with the sole purpose of receiving user-based feedback say that they receive useful information for the development of new applications or a change of functionalities.

One firm had a major focus on user experience when their users logged on to their internet-based services. Nevertheless, this consciousness was based on the firms' self-reflection, comparing themselves with foreign competitors, etc., and not feedback from their users. As explained by informant 5:

*“In this case we define it (user experience) as a challenge and give all our departments a clear message to work on this. At that moment many creative processes starts. We compare ourselves with “best practices,” decide where we should be, and look at where we stand today and what we have to do to reach that level in a year or two. What kind of competence do we have today and what do we need in the future to develop a product with a much better user experience. We outline the goal and delegate to mid-managers of different units to develop a plan to reach this goal. What happens is that this releases a lot of creativity in our teams. They return with good proposals, but we also see that it is important to have the right competence in the right positions. Knowledge that was important before is not necessarily what is important in the future. To get people in and out of positions is therefore also a part of the innovation process.”*

Inspiration comes from users and competitors, but the creative, active actions come from employees and the management team in combination.

A typical example of an idea that is reported is from an individual with much experience in several of the product areas of the firm and a well-developed understanding of the market and the needs of the customers. This person identified a possible market niche not covered by any service provider, a niche where it could be possible to combine two separate services of the firm. A creative and technology-interested person in the lead, supplemented with a small team of internal persons with different competences. This group came up with a solution that was approved and developed to an important product for the firm.

In buyout firms, a rather normal growth strategy is to buy and integrate small, new ventures. As they do, a new product or technology comes along. New and entrepreneurial employees with innovative ideas also normally come along if they are offered the right incentives. To combine these new assets with existing products and knowledge can often lead to innovative conduct.

The top management is also an important generator of new ideas. In small entrepreneurial ventures, an innovative idea is the core of the whole business plan. The entrepreneur(s) of a start-up is normally the creator of this idea and is seen as a most valuable resource for the commercialization of the idea, even when VC is investing in the firm.

In several cases, the respondents reported that the idea behind an innovation came from the CEO or someone else in the top management. In their position as a CEO in a growth firm, the person's job is to suggest a strategy for expanding the firms' activities into, for example, new products or new markets. To achieve this one needs to professionalize the organization, create better business models, more efficient ways of delivering your services, etc. Many of the CEOs in ventures or buyouts are hand-picked and passionately involved in the growth of their firm. In this process, they develop a deep knowledge of the firm and the market they are heading for. No wonder that this can generate many ideas as to what must be done to reach the goal of growth—some of these ideas are genuinely new and innovative and at least new for the firm.

Several examples were also mentioned where PE partners were the source of ideas for an innovation. This is not surprising given the long experience many of these partners have in developing and growing firms. They often know the industry and market in depth and have an extended network of relations from a diverse set of sources, where they tap information at the frontier of technological and commercial development.

To some extent, the firms used their competitors as inspiration for incremental innovation in their own firm, as seen in the practice of comparing one's firm with the best in the industry. It is normally not a direct imitation of what the competitor has done, but more likely an identification of possible development paths that can be implemented in the firm. As the quotation above indicates, this benchmarking can speed up a goal-oriented process of generating ideas for new products, business models, marketing projects, etc.

In sum, the case firms pointed to internal resources and employees as the most important sources of specific ideas that end up as innovation projects. However, these specific ideas were often inspired by information from and observation of external actors, specifically customers. For two of the 21 innovation projects included in this study, a supplier was involved in the pre-phase of idea generation, and three other case firms mentioned external partners as an important trigger for the project. Users of the service seemed to be rather more involved in the innovation process than as a generator of ideas triggering innovation.

### 5.3.3 The selection of ideas

In most firms, many ideas with innovative capacity float around, but never materialize. No company has enough resources to follow all ideas for new approaches in the growth process. A selection process has to take place. In the vast majority of the case firms, this selection process was somewhat formalized, and not based on ad hoc decisions. Ideas generated near the top management had easier access to decision-makers. For this reason, several firms also run workshops among their employees to generate ideas for further development of their services, ideas for new products or modules, ways to pack together services, ways to distribute the services in new ways, etc., etc.

In any case, ideas have to be communicated to some of the decision-makers or a selection team. The normal procedure seemed to be a formal evaluation of ideas and a ranking if many ideas compete. The potential project has to conform to the strategy of the firm. In the evaluation process, the selection team generally analyze the magnitude of the resources and time needed to develop the idea into a commercial product, the potential financial return of this investment is important, how it will interrupt the daily operations of the firm or integrate with existing products, etc. The evaluation report normally ends up on the table of the management group where a selection of the ideas with the best potential is made. Partly depending on the resources needed, the final decision

is taken by a line manager or the CEO. If it is strategically important and needs voluminous resources to be developed, it often ends up on the table of the board.

*“In the last couple of years we have developed a list of priority innovation projects. First, we produce a report describing the different projects. They are analyzed and prioritized by the leader group. Then we take a rough look at what kinds of resources the different projects will need, and finally decide what the priority should be. It could be that some of the resources required are not available in-house. If so, we stop the project. We just do not start them.”* Informant 8.

Innovation is obviously dependent on existing resources inside the firm and the opportunity to source and integrate external resources. It depends on human as well as financial resources. There is normally a need to combine different forms of competence to develop and add a new element to an existing product or procedure, or a new way to organize or market the services offered. If critical resources are not available, it is often seen as too risky to initiate such projects.

Dedicating resources to an innovation project will also influence the rest of the organization. Once in motion, it will use resources that alternatively could be used in the running of operations. If the project succeeds, it can influence other parts of the organization, which is important to understand first-hand. A strategic understanding of the implication of the project is therefore important before it is started. As informant 7 formulated it:

*“As we are organized today, I am “the owner” of all new initiatives. It is my responsibility to root the new projects in the leader group. Yesterday, we had such an investment up for discussion. This project had been developed over several months before the decision. The case was established in the software department, and we finally decided that we would go for it. This and this should be done, and the implication is a trade-off of the normal (operations). This is the most important process here. When you decide to implement something new, what would the total cost be and what kind of activities will it generate later. It will include economic challenges in the market, as it can take capacity away from what could have been an incremental development. The new project generates a trade-off and calls for more explicitly strategic decisions on the table. I see this as absolutely necessary.”*

#### 5.3.4 Organizing innovation projects

Professionalization could be the key word for organizing an innovation project. Both in the selection and the organization of the development process. All informants argued for the importance of having a dedicated “owner” of the project—a project manager. Almost all firms also

followed an ordinary or modified project management plan including monitoring, milestones, and control systems.

The professionalization of the organization, including a professional top management, is obviously one important reason why most of the case firms used formal procedures in the selection of innovation projects. As there is almost unanimous recognition of this among the case firms, this is possibly the result of the influence of VC/PE capital and a professional board. Some informants reported that earlier when the firm was in the entrepreneurial phase (before VC/PE capital) these decisions were taken much more informally and ad hoc. As informant 6 expressed it:

*“It has not always been like this. Before ideas roamed in the corridors. It was a bit accidental what was landed. I felt that was stupid, because there are many good ideas that lie around and float about. What was communicated was very dependent on persons. Now we want to develop a product management, but also simply to activate a data system where ideas for new projects can be placed.”*

On the other hand, can formalization also kill some of the intuitive enthusiasm behind new and innovative ideas? A firm sold and integrated into a multinational corporation pointed to changes from a local and intuitive approach on innovation toward a much more bureaucratic procedure. In the new position as a small unit in a large multinational firm, the main office on the other side of the world had to approve the project and took the final decision. This process could take many months and killed some of the dynamics of incremental innovation that had existed in the earlier stage of the firm.

Another informant talked about the capacity to innovate in his firm, and said:

*“What I feel as a challenge is that I am sure there are many others in our organization that could contribute who are not dragged into this. We normally organize projects with a project manager, and dedicate some people to work on this. Then they put in a lot of effort and once in a while send out some information on what they are doing. [...] Maybe we should have organized some innovation campaigns, asked if someone had something to contribute and welcomed such initiatives. We should have involved the whole organization more. We want everyone to feel the importance of innovation, not only the project leader, the management, and some technologists. Everyone should be allowed to contribute.”*

Formalization took place as soon as the innovation project was accepted and thereby was allocated some resources for the development process. All informants argued for the importance of having a dedicated “owner” of the project—a project or product manager. Many had a steering committee that supported/controlled the project and almost all firms used normal project management tools to monitor the development of the project.

Most of these firms did not have their own R&D department, but several of the software-related firms have a CTO who in principle functions as being responsible for many of the innovation activities of the firm. Still, specific innovation projects are organized as time-based activities with a start and an end. For firms without permanent teams of developers, personnel normally working in the line organization on running operations are allocated dedicated resources and freed from their normal job, wholly or partly, to run the project.

This means that resources are available on a temporal basis (e.g., hours to use, money to spend) for the project manager and for larger projects, including a small team of developers. However, often the project needs complementary resources from the rest of the organization. As many informants reported, it could be problematic to ask for a couple of day's work from persons with specific knowledge who are already fully occupied with other duties in the firm. Personal relations, informal incentives, the exchange of services, and an organizational attitude supporting innovative conduct were important supplements that made the innovation process run smoothly.

On one hand, you need dedicated personnel devoted to the development of the new element. On the other hand, you also need the project anchored in the rest of the organization and directed toward customers' needs and the commercial outcome. Informant 8 expressed it as follows:

*“What worked out well was to decide what we should develop, to delegate responsibility to a product owner, and to include the team around N.N., which was a well-functioning development team. What we missed was some parts of the functions around us that should operate it, and a receiving organization, someone who should use it. This was because the development team happened to work in some kind of isolation, both in terms of design, decisions, and a lack of, let's say, somebody who could act as customer at the other end. It is a challenge for organizations such as ours that are mostly operational and serve customers directly. If someone burns for the customer, they will let all long-term activity go. This is a challenge for organizations like ours. We have not been large enough to particularly dedicate resources for development. To some extent, we have this now.”*

In most of the case firms, this was a challenge they were aware of, but nobody had an easy fix. It is a situation that the firm has to face, restricted as it is with the limited resources available. Informant 9 indicated the same problem:

*“It was not a real team, but one which was dedicated to work on the portal and consulting others in the line, one working with the technology, another with design. The problem was to isolate the different contributors to the project, particularly when it began to burn in some part of the operation. I listened to a talk from a N.N. person once. He said that those involved in innovation could not be placed in the operation. But, when it starts burning and we have to solve an urgent*



*problem immediately, it is easy to use the resources intended for innovative activities for other purposes.”*

Another informant (13) said:

*“My team is the only team fully focused on change. The rest of the organization is focused on production. They are measured according to how satisfied the customer is, or how many deviations there are, and so on. Then I arrive and want them to make many changes. It is damned to curl up. If I arrive and am seen as noise because I come with a stack of tasks that need to be solved, then I will not receive the help I need to produce a good solution.”*

Still, most of the case firms found a way through the process, through improvising, learning, and adapting. Interactive learning and exchanges with resources outside the development team was important in the process. Because of this, it was said by many that the cultural capital of the firm and the project leader’s social capital was a critical resource for a smooth development process.

One common agreement seemed to be that it was important to lift the development team out of the running production for a shorter or longer time. If not, the developer(s) would be difficult to shield from ordinary customer projects that normally have first priority. At the same time, such a team needs a demanding “customer,” such as a steering committee that can steadily keep the focus on the final use, and an impatient but realistic pressure on how much time and how many resources can be devoted to the innovation project.

The close relation to operations also meant that most of the innovation projects were adding new elements to existing products or combining existing elements into new approaches. Therefore, most projects could be described as incremental innovation or innovation by recombination of existing resources. This is stepwise innovations, that more or less continuously add new qualities or capacity to the firms’ services. This fact also had implications for the understanding of the project as an innovation project.

Smaller innovation projects that were near the daily operations and that added new elements to existing products were often *not* seen or registered as innovation. It was part of the daily struggle to update services and serve customers better. Consequently, many of these incremental, stepwise improvements based on new or differently combined knowledge were perceived as part of the running routine of the firm.

Many of the innovation projects analyzed were technology- or software-driven because ICT systems were a crucial tool for delivering the services of the firm. For other projects, the customer and the sales unit were leading the project, supplemented by the technical/software unit of the firm.

Some firms had developed specific incentives for their employees to reward creativity or hard work in developing new elements. However, this was not common, but something several were thinking about. One informant said that earlier in the history of the firm it was a reward in itself just to be seen and listen to and to experience your ideas materializing.

We had expected to observe many more collaborate projects in the case firms, projects where resources from partners, customers, or suppliers would be activated over time and added to the knowledge base. What was factually reported was that most of the projects were fully run with in-house resources. Some external advice and input were needed, but only as a supplement.

Some case firms said that they were using resources from other parts of the company to a larger extent. Several firms had small units of competence in other countries. This could be a product of mergers and acquisitions as part of their growth strategy. But, for some it was part of an active search for specific knowledge. For several firms, it had been difficult to recruit foreign specialist to come and settle in Norway. The alternative was to set up a small unit in locations where this specialized knowledge was available, be it in Stockholm, Silicon Valley, Warsaw, or Bangkok. These specialized development teams were highly involved in some of the innovation projects reported.

The customer was not often mentioned as a vital contributor to the innovation process. This was also a surprise. In some of the oil service firms, a large customer with complex problems that needed to be solved was actively involved in the innovation process. Among the ICT-based firms, a supplier was more relevant to contribute to the innovation process than a user.

One reason for the nonattendance of the user could be that many of the projects in this industry were oriented toward developing “add-ons” or new services where complex software development was part of the product. Signaling needs from the user was of course important for the direction of the project, but not for the development process in itself.

As the quotation below suggests (informant 7), customer involvement was often focused on small adjustments, customizations, and small improvements instead of new approaches and innovation.

*“The innovation needed as seen from the customer’s perspective is the need they saw in the past. We had a philosophy that 1/3 of our time for development should be used to improve existing functionalities, 1/3 on new functionalities that the customer asked for, and the rest on pure innovation. But the reality is different. Instead of 1/3, we use 50% to 90% of our resources serving our customers’ needs and little to no time to do real innovation in the daily operations of the firm.”*

### 5.3.5 Budgeting and measuring innovation

The normal way to budget innovation projects was to delegate a specific number of hours, days, or months to this activity, for example, 100 or 5,000 hours available for a few dedicated persons allocated to the project. Seldom will these activities have a monetary budget, as they mostly consume labor in the service industry. Hours used will explicitly be registered as innovation activities. The larger the project, the more likely it is that it will be registered as resources used for innovation.

Smaller projects “are taken in between” when there are free resources available in operations. Most of these firms are highly dedicated to growth and operational activities. This means that many innovation activities are interwoven with operations. Personnel from the operation will be involved on a smaller scale, as well as in larger projects. Partly under the development, as stated before, and partly when a new module should be added to an existing product or implemented as something new. In these cases, the workload devoted to innovation will be part of the existing operating unit. Maybe they need extra personnel to achieve this, but in any case it will most likely end up as part of the operational costs, not as part of the innovation project.

The more user-specific the innovation activities are, the higher the probability that these activities are part of the operational activity and paid directly by the customer, and as such not registered as innovation activities in the firm’s accounting system.

If the activities are organized as a project, this will follow normal procedures with milestones, deadlines, reporting to a manager or team, etc. Most of the firms feel they have control over the cost and the development of such projects—even if it is informally reported. Informant 1, working in a firm dedicated to delivering customized services that solve specific problems for their clients, tells us:

*“Even if the governance of these projects is informal, we feel we have control. We have weekly meetings on everything we are working on, both in this department and for the whole organization.”*

*Many things are on the table: responsibility and delegation of responsibility, who does what, why have you not done this and that, do we keep the budget for this job, etc.”*

It is quite common with organized meetings every second week to monitor and discuss progress and give feedback on what has been done so far. Progress reports are delivered to a higher level every month or third month if the project demands larger resources. Several respondents experienced a dilemma with the formalization of innovation projects. Informant 11 expressed a warning about too strict governance:

*“I believe that innovation should be a bit searching. Trial and error and small steps before you start the large project. In these full-scale projects everybody needs to take part, because then it is difficult to turn. Many ask what the plan says or the board said. It must be the intelligence/the common sense that guides and governs the process. It should be forbidden to say that we do this because our strategy tells us. We should do it because our senses say it is a good reason to do it this way. [...] Test it. Does it work? If not, drop it, but try something else.”*

The recommendation seems to be smaller steps, reflection, flexibility, and correction before a full-scale project is launched.

Evaluation ex post also takes place, particularly if a project fails to meet the goal set. If it succeeds, the most common way to measure this is how many customers are using the new function or product. Experience seems to be that it takes time to increase the frequency of use. If the new function is part of a software and internet-based service, the customer also has to invest in implementation and use of the new element and for some it will take time to learn the value of a new or improved function. Measuring the effect of an innovation therefore should take place over a longer time.

In general, most of the respondents found it difficult to measure innovation. Informant 6, who works in a software company, said:

*“We discuss how we should measure innovation. It is almost so that you should have enough affluent resources so we could set one person on a job only to facilitate innovation. I don't know how we should measure innovation. We could say two new products a year, but that is just stupid to measure. We do not know if it is a success and that kind of thing. Of course you can measure it ex post, but then there is no effect if you fail in a way. One measure could be that we have a person dedicated to working on development projects. Anyway, that's gambling too.”*

Asked how they measure performance of a specific project in retrospect, informant 11 responded:

*“Bad. We do a lot in advance. We map in advance, look at systems and improvement of these, we look for the potential of new elements, speak to our customers and benchmark toward customers, and quite a lot of such activities. Then we decide and run on. It will be very much related to the rate of success on sales. If we succeed selling the new product we conclude that this was a good product and put up goals for future sales.”*

Increased sales or rate of conversion from an old to a new (version of a) product are typical measures. But this is often done by the sales department, not the development unit, and the development cost is not always seen in relation to the revenue side. One firm had just introduced a more detailed measure (informant 10):

*“Before we just monitored the costs of development as I showed you. Then we reported the result for the year directly measured on the product level. Now we take the flip-side of the product. When that product is introduced, it will be the product manager that reports every third month. The sales side have put up a forecast in advance to justify what they do, and now they monitor this forecast, be it a two- or three-year run to reach balance. They produce an account statement and report. How was the forecast? How are we doing? We have not done this before. We have missed that, not only for financial reasons, but also for the sole motivation of those who made it. One thing is to develop a new product and throw it on the market. But afterwards to quantify what you have done, is extremely motivating.”*

*“We can measure innovation through how many licenses (to the new product) we are selling or how many leasing contracts. That is very explicit. For the service part of the full product we do not measure how much we invested and what the return is in this way. In the service part, we have follow-up monitoring on specific criteria. We can see a certain scope of unmeasured cost or benefit, so the whole innovation track is not measured, just selected parts.”*

Many services delivered from one company are related. Selling a new service can expand the sale of another. The tail effect of an innovation with low margins can raise the demand for a high margin service. The positive result is caused by the new element, but this kind of synergy is difficult or almost impossible to measure.

#### 5.4 Firm-specific resources or capabilities important for innovation

To complete an innovation process, the firm needs to access a multitude of resources, most of them internal resources, but some of them also allocated from external sources. As already indicated, specific competences about the firm's market(s), technologies, and organization seem to be important. Access to additional financial capital has been important for several of the case firms. This is not surprising, as we have focused on firms receiving this kind of money. We also emphasized firm culture and relations to external partners as important contributors to the innovation process.

We asked the respondents to reflect on the importance of six different kinds of resources or “capitals” for the performance of the innovation project at hand. Most of the respondents answered in general terms as they saw the same resources as important for most of their ongoing projects. The six types of resources were: 1) human resources or the firm’s knowledge capital, 2) organizational resources important for innovation, 3) technological/physical resources, 4) financial capital, 5) social capital or internal/external social networks, and lastly 6) cultural capital or the internal attitude toward and acceptance of change and innovation.

When asked to name the three most important resources, the majority of firms mentioned their human resources, cultural capital, and social capital as the most important resources for the advancement of innovations.

#### 5.4.1 Human capital

Human resources, their education, and experience contain much of the firm’s competence in general terms. This is important for the standard and complexity of the firm’s services and important for the absorptive capacity of the firm. A diverse set of competences in-house is said to be important for innovation, where different persons can add specialized knowledge to identify new methods or find new solutions to specific problems. Several said that it was particularly important to have individuals among the employees who are interested in change and development. Curious and passionate individuals that are willing to stand up and fight for new ideas, able to engage others, and stubborn enough to run the distance. This also includes a self-interest in keeping themselves updated.

The most dynamic and creative employee was said to be a person with good disciplinary knowledge combined with experience-based knowledge of the needs of users plus a very good understanding of the dynamics of markets. Many respondents agreed with the statement made by informant 10:

*“It is the industrial competence that is important—that we understand the industry and thereby the customer. Then we use technological competence to solve problems. But whoever you talk to, they will tell you the same. It is normally not the same person that has the competence needed. You have a technological team and a market team, and they should communicate, but do not. Then you have a gap. When you have these competences in the same person, then the gap is filled. I have a couple of guys who master this. They are worth gold.”*

From the industrial competence comes a deeper understanding of the product and what it is intended to serve. You need to understand the market, but also the business model, and how your

product can influence the way your customer can organize their business. In the technological team in ICT-based services, the system architect is the one who operate on a higher level and who can more easily identify options for improvements or alternative uses of the firm's technical competence.

A mix of creative developers and persons with deep operating experience was emphasized as being critical for the development and implementation of innovations. The developers are often placed in the project team and temporarily separated from operations. To be able to do their job, they also need resources from persons working in the daily operations. The integration of these two forms of competences is often a challenge, but can be solved by bringing operational competence into the development team.

As one informant (8) formulated it talking about a development project:

*“The team is based on several persons with a good spread in competences. Three to four persons in this team have also been working in operations. They can substitute many working in operations, and do their job right away. That has made it possible not to be denied the help we did not get. Without this operational competence in the team, it would not have worked out.”*

Many emphasize this tension between developers and operators. In essence, the firm produces a service to help their customer to solve a problem, to provide their costumer with better information and knowledge, to make their customers' internal and external communication more goal-oriented, or their distribution or production system more efficient. Operations are the heart of the business, and the purpose is to make their users happy. Thereby they secure a steady and increasing set of return customers, the basis for a profitable existence.

Innovations and changes in the case firms must be seen in this context. The main purpose is to serve customers with a service they will over time be willing to pay for. To this service, it is important to constantly add small improvements, integrate new elements, and broaden the set of services offered. To do this, innovation is critical. But most of the time, these innovations have to be integrated into an existing line of services. Radical new lines of business or radical new services are seldom seen.

Continuously upgrading the firm's competence base is therefore seen as important, including competence for innovation. For some this is done through the recruitment of new employees with

the right competences and retraining some of the existing labor force, but also the gentle outsourcing of people with competencies no longer in demand.

Several firms are heavily based on experience-based competences, supplemented with smaller units of educated “engineering”-based competences. These firms invest money and a lot of time in training and sometimes in unlearning past routines. Not many use external courses, but internal courses specifically designed for their own needs for training and upgrading of their competences. Informant 1, who works in a world-leading oil service firm, said:

*“What is the absolutely the most important resource is our people, no question. And the advancement of those people and the mix we have of all kinds of people. [...] The knowledge base of N.N. is basically experience-based, supplemented with engineering knowledge. A lot of these competences are built up through trial and error, creativity and capabilities to see new solutions, and a lot of training through internal courses. The last one is enormously important. Those who run the courses are foremen or supervisors. Most of them are internal. There are a lot of courses available externally, but for much of what we are doing you cannot buy such courses or go to school to learn.”*

#### 5.4.2 Cultural capital

Culture can be seen as a set of values and norms that are shared to a varying extent by a group. It is a “transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic form by means of which men communicate, perpetrate, and develop their knowledge about attitudes [...]” (Geertz, 1993: 89). It is “in the walls” in most organizations, often unnoticed and not easy to observe for an outsider. It gives the rule of conduct and norms of behavior in a firm, it defines the core values and attitudes of an organization and directs the way we do things, and our behavior and practices.

These values and attitudes are important for every organization as a basis for predictable behavior and efficient operations. It institutionalizes or “programs” behavior, and makes a group think and behave in a predictable way without too much conflict. Institutionalized behavior is good for efficiency, but not necessarily for change. As expressed by informant 7:

*“Cultural capital is something we have developed an awareness for, something that earlier sat in the walls. When you move from a very tightly knit group of 10 people and grow to 300, then it is very easy to lose that entrepreneurial spirit. We have tried to preserve that culture, but maybe that is one of the most difficult tasks to achieve. How one can keep or change a culture is something else, it’s an art.”*



Most firms have grown quickly over the years. Many of them had 5–10 employees 10–15 years ago. A small, close-knit and entrepreneurial team that worked together as a flexible, integrated, and multidisciplinary team solved problems and developed new solutions for a few clients. Innovation and change was in the blood. Over the years, they have grown into larger companies, some with multinational operations. The original innovative service has been improved and standardized, and the production is much more efficient and organized. On the arrival of “active ownership,” the professionalization of the firm has sped up. With this comes a prime focus on the customer and an efficient production and operation of their services. The outcome is better margins and a more streamlined organization embedded in an efficient and more bureaucratic system. Innovation and change are more in the background and sometimes seen as a disturbance to smooth day-to-day operations that serve new and existing customers well.

Over the years, the business culture has changed from an entrepreneurial culture to an efficiency-driven culture. When this is the case, a tension is building up between smooth operations and new and sometimes disruptive processes. As we have already reported, a resistance against disturbance and change can be the consequence. An incentive system geared toward scaling and growth could also influence the attitude toward changes and innovations. As informant 9 formulated it:

*“The leaders of the organization are measured against the customer and how happy they are. Then there will be such conflicts.”*

Many of the respondents felt this dilemma. They were aware that innovation was important for the further development of the firm. They also realized that a focus on efficiency, operations, and the daily life of serving their customer in the best way sets another agenda for large groups of employees. The value and norms of the organization had unconsciously been transformed. Informant 8 saw it like this:

*“In general terms, I believe that people are engaged in improvements in their daily life. But it’s like everyone wants to improve themselves, but nobody will be altered. [...] Then it’s the management’s task to set the direction, illustrate what it is possible to do, what we have to do, and what we cannot refrain from doing.”*

We suggest that this is the reason why many of the respondents highlighted the firm’s culture as being very important to address, particularly if they should advance the innovativeness of the firm. This is so partly because the specific firm culture and its values and norms can enable an

appreciation of change and a search for improvements, and partly because it can take away some of the barriers to change that are obviously present in most firms.

When efficiency and accuracy are the norm of the organization, the attitude toward failure is very negative. As the experience of informant 8 illustrates:

*“The first thing they said to me when I started here was, ‘now you have to get this (development) team productive’. It was a process over 3–4 months. Not with a lot of arguments, but to find out how we wanted this to function. It did not let up before we agreed that all was allowed to fail. So, it was about culture. Before we did something with this, nothing happened.”*

Even if attitudes and norms are institutionalized, they can be changed. Human action can reformulate norms and change attitudes. Again, this is well illustrated by the reflection of informant 9:

*“I also believe that there are differences among people here. Some are much more enthusiastic about change and things around it. Something happened when new people were recruited, people with an interest for change and development. That was a hard core of competence that later spread out.”*

Nevertheless, as the first quotation in this sub-chapter illustrates, most of the respondents felt it was a difficult task to move the firm’s culture toward a change-oriented and innovation-focused state. They still believed that the whole organization should be involved, or at least open to the importance of improvements, new approaches, and new services and changes in most functions of the firm. To address this, a focus on the culture of the firm was important.

For those that had been able to preserve an entrepreneurial spirit and felt that innovation was part of the daily life of the firm, the firm culture was also highlighted as the basis that made this possible.

#### 5.4.3 Social capital

Social relations are also a concept that most respondents referred to as important, particularly for innovation. However, most of them did not have a constant or conscious focus on this as a strategic issue, or as an important source of capital or resource for the firm. Network and social relations were seen as important on two levels.

Inside the organization, social relations was regarded as very important when the development team needed to activate resources from the rest of the organization. One piece of advice here or two hours of work there could smoothly be organized if you had the right connections to people

sitting on critical competences, but outside your budget and group. Such exchanges of information and knowledge are often reciprocal—you do me a favor, next time I will help you. It is based on personal relations and trust, and develops over time. Informant 8 expressed it in this way:

*“I told you about this guy (who has a brilliant understanding of the computer network) you just could go and talk to. That’s what we do too. That’s one of the reasons why we have achieved results, because we have walked over to people, stood in the door, and asked if they could help us. Then you receive help and get on with the project. Without this kind of informal relation, I don’t think we would have survived.”*

Another (informant 14) explained how they received impulses for new market opportunities when they met employees around the world:

*“We travel systematically. The key account manager visits his employees regularly (experts working for another company abroad on a contract). The main purpose is to talk about their job and the project they are involved in, but another important issue is to be informed about what they know is on the agenda with our customer, something we could help with, new ideas or plans coming up, any new opportunities in that region, an important contacts to talk to, etc. We take some of this information up in leader meetings and talk about it, now they need this and this, rumors say that and that. It’s not regular that we do this, but something we maybe should do more often. It gives us information that makes it possible to act proactively and sometimes innovatively.”*

Most firms also use social relations to access information about their industry, technological developments, new trends and consumer behavior, a competitor’s change of strategy before it is implemented, new market opportunities, etc., etc. Informant 7 sums it up:

*“Networking is particularly important if you want to know where this industry is moving. The answer you will get at some point in time, but you should preferably stay ahead. This type of sparring was extremely important at the start. Now we have developed good networks over many years, both personal networks and company networks. These are used. It’s very important.”*

It is not necessarily the case that external relations are important for all activities in the firm. In some activities, routines and efficiency are the most important aspects and a need for new impulses is not important. In other activities, networking is the most important pathway to the new and non-tradable, to tacit knowledge and experience. Personal relations, trust, and reciprocity is what you need to access this form of valuable competences. Informant 10 explained:

*“Depending on what section of the firm we talk about. Mounting and Assembly has no relationship to networking. For Development, networking is import for what you can do. It’s incredibly important because it gives you access to so much “hidden” information you can use in the development process.”*

When your task is to develop something new, you are not quite sure if it will work out or how you should approach the task. You have to solve the problems underway and use all kinds of sources to help you realize the intention of the project. When this is the case, your personal network of experienced colleagues in the same profession is extremely important.

Informant 18 said it in this way:

*“You can have a great education and be smart in every possible way, but the most important thing in this context is experience and networking. The experience your network possesses is of great value. It is on the crossroads between these different experiences and competences that you will find the truth. However, we do not have a conscious focus on this. Everyone will admit that it is important, but we do not use it in a systematic way.”*

As seen from this quotation, most of our respondents are aware of the importance of social relations for accessing non-tradable information and knowledge, but they do not have a systematic approach to building and utilizing such networks. They see the importance and highlight this form of capital or resource. At the same time this is an area where they could do better.

Changing an organization is not done overnight. A continuous focus is needed and the rewards will appear bit by bit. As informant 20 formulated it:

*“We changed many in the management group because they had the wrong profile. They were not good enough or able to think of new approaches. The new coming in creates a different dynamic. [...] over time I believe that if we focus enough and often on our new values of interaction and achievement, then the culture will move in the right direction, as a more dynamic and innovative organization.”*

#### 5.4.4 Other internal resources

For a few of the case firms, control over *physical resources* was important. This was the case for firms whose equipment was an important embodiment of the firm’s core skills, or where full control over, for example, a data or server room was a necessity to establish stability and thereby the trust of the customers. However, ownership of physical assets such as office buildings or retail outlets, computers, servers, or a fleet of vehicles were in general terms not regarded as vital for the operations or even less for the performance of the innovation project. Renting, leasing, and outsourcing was common. This strategy combined with specialization and a focus on the firm’s core skills is a typical result of being under the wings of “active ownership.” Financial capital

should be used for “productive” purposes, not bound up as investments in physical assets if not necessary.

Technological knowledge and competence was an important element of most firms’ knowledge base. For example, knowledge of the different elements and the overarching architecture of an ICT system is highly dependent of technically focused developers, programmers, and operators. Conversely, much of the equipment or “technology” in the ICT industry is mature, standardized, easily available, and easy to upgrade. Consequently, technology or hardware is under many circumstances not regarded as vital for the innovation process, but the software and the “systemic” part is.

Most projects take a longer time and need more resources than originally planned. Therefore, one would expect that access to *financial resources* was important to the success of the innovation project. On the contrary, financial capital was not mentioned among the most critical resources for the working of the innovation process. This is probably because innovation in services is not necessarily capital intensive, but more dependent on the profitability of the firm and cash flow to make it possible to free up personnel to work on activities that will only generate cash in the future. Another explanation is the fact that our case firms already had access to financial capital through VC or PE investments. Therefore, they did not see a lack of financial resource as an important obstacle for the specific innovation process in question. Particularly for the VC-supported projects, financial support was obviously a prerequisite for succeeding with radical innovation and the project.

We have already mentioned the *organizational set-up* and systems as a challenge in mobilizing the human resources available in a firm for innovative purposes. At the same time, the resources controlled by the organization were seen as vital for almost all of the projects discussed in this report. For the innovation process, it is therefore important that the right internal or external resources can be mobilized at the right moment. To make this possible, a flexible administrative system must be present.

For most case firms, the general process of having a project approved as a development project and set up as a small, dedicated project team had improved much over time. This was probably a result of the professionalization of the organization and a more routinized way of organizing activities. This was partly a result of the introduction of VC or PE ownership.

The complex dependence most innovation projects had on the resources available in the operational part of the firm was seen as a dilemma without an easy fix. In the development of new or improved services, an understanding of the customers' needs are important. It is also important to integrate "new approaches" in the firm's existing line of products and distribution channels. Seen from perspective of the innovation project, flexible access to the firm's front line personnel with customer relations and people with deep knowledge of the daily operation of the firm was vital. Necessary resources for the innovation project were therefore under the control of different "resource owners" with divergent agendas and incentives.

Furthermore, the phrase "if only HP knew what HP knows"<sup>24</sup> seems to be relevant in our case firms too—a lot of competencies and knowledge is available in the firm, but is not always easy to identify and combine. As it was in many of the case firms, the manager of the innovation project often had to improvise and use their social capital to access these resources. A more flexible organization with easier access to temporary resources and more incentives that could encourage the sharing of knowledge and other resources was asked for.

## 5.5 Access to external resources and a systemic involvement in innovation

The main part of the resources used in the innovation process came from internal sources. These resources were often available at the head office or units in near proximity. Some elements of knowledge came from other units of the firm that had specialized knowledge. For some specific types of knowledge or actions, most case firms were dependent on access to competence and capacities controlled by external firms or individuals.

### 5.5.1 The business network

Several innovation projects were dependent on specific equipment produced by *subcontractors* or bought as standard or modified machines, tools, or software from *suppliers*. Many of these inputs did not add elements of innovation to the project. However, such transactions opened up access to specific tacit knowledge embedded in the supplier's organization. A deeper understanding of the functionality of hardware, for example, was an important prerequisite for the development of software running on servers from a specific supplier. The outcome of a pure commercial deal could

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<sup>24</sup> John Doyle, R&D/HR executive at HP.

therefore also include fragments of knowledge that were important for some elements of the innovation process.

Few firms mentioned subcontractors or suppliers as an important partner for learning and innovation. This was a surprise, as subcontractors often have a prominent position as a co-developer in innovative manufacturing. This observation could be coincidental, as our informants are small in number and from a special segment of service firms. On the other hand, it could also be a result of the existence of a more modest supply chain and a less sophisticated division of labor in services than what can be observed in manufacturing.

Those who did mention suppliers as an innovation-partner used as examples a close partnership with a supplier of a generic software that is important for the functionality of the case firm's data systems, or a supplier of customized hardware that is necessary for the distribution and quality of the service provided. Under such circumstances, close relations developed. Knowledge from both parties were used to solve problems and create a platform for the new or modified service.

Most often, a relation with a supplier was basically *traded input*, where a contract defined the scope of the work. The direction of the knowledge exchange was from the supplier to the service firm. Many consulting firms added knowledge to the project in this way—adding specialized knowledge that was necessary to solve specific pre-existing problems. In a few cases, the exchange of knowledge was symmetric and developed into a partnership where the supplier in turn also received input from the case firm—knowledge which was important for their own development. In these cases a more informal governance of the transaction developed. As a reward, the case firm could utilize the suppliers' knowledge base in more depth, or the price for the supplies was reduced.

The *customer* was often mentioned as an important contributor to the innovation process. This influence often came under the initial part of the project or in the late pilot phase. In the early phase of idea generation and the identification of the commercial potential for the innovation, input from existing and potential customers was important for the implementation and direction of the project. Under the first part of the development project, customers were seldom involved in the process. However, when a prototype or a beta version of a software-program was up and running, user-based feedback was essential for the calibration of the quality of the service and for the development of a user-friendly product.

In this late phase, an existing and trusted customer was invited to take part in a pilot project. Several mentioned that in this phase it was important to interact with individuals in the client's organization with whom a trust-based relation had already been established. This would create the best foundation for an open exchange, but also for a willingness to share the risk of using time and capacity on the development of the pilot. Such willingness was normally rewarded with reduced prices on other services, the free use of the new service for a certain length of time, and a position as a prioritized customer. For obvious reasons, the customer was involved to a larger extent if the service was customized to the client's specific needs and assets.

The direct influence of *competitors* as partners in innovation projects was almost nil. Many reported that competitors had an indirect influence on both the direction and content of an innovation project. This influence could take the form of inspiration for or a model of what improvements it was possible to achieve. Alternatively, it could act as a guide to the main trends in the market and from there in what direction the firm needed to focus and develop new platforms or services.

Most firms closely monitored what their nearest competitors did. They met them indirectly when they competed for contracts or took part in trade exhibitions or conferences. They talked to representatives of their main competitors and knew several of them quite well. They also met personnel from competitors in other arenas as part of professional associations and as colleagues. Informal relations and social networks, "communities of practices"<sup>25</sup> for exchange of experiences, disciplinary associations, and "clubs" were all important forums for access to new information, help solving problems, and arenas for learning.

Through social networks knowledge leaks and spills over from one individual and organization to another. To take part in these exchanges, the participants needed an absorptive capacity that was developed through a mix of educational- and experience-based learning and a "membership" in the "club." Such forms of social exchanges contributed to a rapid dissimilation of generic knowledge among the participants. Social relations were also regarded as an important platform for learning in general, and for solving specific problems as they will appear underway in the innovation project. As explained by informant 9:

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<sup>25</sup> A group of people sharing a common craft, profession or line of practice.



*“The most important actors we have been in contact with are not mentioned in your figure (Figure 2.4 Innovation system). It is informal actors, in meta-groups, disciplinary groups, conferences, or informal disciplinary networks organized in the participants’ leisure time. It is through such forums that innovation in software technics takes place and new knowledge disseminates. Interaction with other professionals in such forums is how my people learn. We have also been in touch with Coursera (open internet based courses from top universities focused on data-tech). This type of knowledge source is very important for us.”*

The form and sophistication of these networks are dependent of the complexity of the services and the professionalization of the competencies important for the firm.

Most of the individual contributors to these knowledge exchanges work in or are committed to units that we include in the set of actors called the “business network” in Figure 2.4. In more advanced forums, individuals from academia also take part.

### 5.5.2 The innovation support system

Outside the network of related businesses (the business network), a support system for innovation has gradually appeared, as shown in Figure 2.4. For obvious reasons our case firms have a direct link to the *financial system* as they are all supported by VC or PE. Newer firms with the support of VC in particular have been linked with “Innovation Norway”<sup>26</sup> and received some support from this agency. For the few involved in research-based knowledge development, some support from the Norwegian Research Council was also recognized.

As already mentioned, professional associations are important for learning and for the exchange and dissimulation of knowledge. In some way, these are organized through formal *business support organizations*. These institutions have a mission to contribute to the upgrading of the generic knowledge of business firms. These offers are not specific enough for a unique innovation project according to our informants. Instead, in-house courses and informal, self-organized networks of professionals are regarded as the most important channel for knowledge support for innovation project that are in progress. Together with inputs from other actors belonging to the firm’s business network, this is where dedicated knowledge comes from, *not* from the general support system.

Four VC-invested firms developed radical innovation. They were all based on analytical or scientific knowledge developed in co-operation with a research university. The original

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<sup>26</sup> Innovation Norway is a government-funded agency supporting start-ups, growth companies and clusters, internationalization, and the development of a “green” or environmentally focused businesses.

entrepreneur(s) came from this world, as a PhD student or researcher. The strategy behind the high-risk investment in these firms was to commercialize new, research-based knowledge embodied in hardware or as new algorithms included in, for example, a simulation tool. The commercial strategy was to sell this knowledge, not as something embodied in a good, but as a service made possible by this tool. As the commercialization process moved on, the relation with the R&D institution seemed to slowly weaken. Other aspects of the commercial product would gradually appear to be more important.

However, a link to *R&D and higher education institutions* was still part of these firms' strategy for innovation. Some of them are infrequently involved in collective, user-based research projects including R&D institutions and "for-profit" firms. A few were supported by innovation and technology centers, particular incubators and technology transfer centers in their start-up phase. What these few firms had in common was a focus on technology and the utilization of ICT as their main tool for producing and distributing information to their clients.

The majority of the firms included in this study had none or very few relations to R&D and educational institutions. The same could be said for their utilization of innovation and technology centers. In the few cases that these firms supported master's/PhD students in their thesis, it was (with one exception) technology and software development they contributed to. Pure service-specific problems were never in focus.

*Political initiatives and innovation policy* were neither high up on the agenda among the majority of firms. Almost all appreciated the "Skattefunn" arrangement<sup>27</sup> and some took advantage of financial support through Innovation Norway. Several mentioned that they could have been more eager to seek support from Innovation Norway or take part in some of the collective initiatives started with the support of national or regional business development agencies. Common excuses were that they did not desperately needed this financial support, they were not aware of the instruments and programs available, and that the participation in some of the collective programs demanded a lot of time spend and few commercial rewards.

In general, the attitude was that *financial support* from Innovation Norway could be of interest, as this could free some of the personnel from daily operations for some time, making it possible to

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<sup>27</sup> Tax refund if involved in innovation. 18-20% of the project's cost refunded through lower taxes.

focus more continuously on projects developing new knowledge and services. On the other hand, public support related to *consulting and advice* was in general seen as irrelevant. These services were seen as better devoted to new, small, and not very advanced firms.

We asked explicitly what kind of government support, policy, or support system the firms were in need of. Many mentioned financial support, tax breaks, and so forth as good incentives to speed up innovation activities. Some mentioned support for “specialized conferences” and initiatives taken by local or virtual “communities of practice” for learning and the dissimilation of knowledge.

However, there seemed to be a common agreement that the public sector should concentrate on setting up a useful infrastructure for communication and education, helping start-ups and early stage ventures, and create financial incentives promoting innovative initiatives in firms. A few also mentioned that local or national governments could push for innovation through new or more strict regulations or as a large customer, and create demand for new approaches to serve the public sector or individuals through the welfare system.

Our informants did not see any obvious contributions from an extended innovation system focused on services, more than already listed. This attitude is rather typical for most managers of dynamic service firms, but not necessarily absolute.

The main problem seems to be that in innovation projects of the kind we have studied here, the need for external support is very specialized and not generic. Such dedicated supplements are not necessarily found in the market, but among business partners. To access these resources, the firm needs to relate directly to these sources, not through intermediaries or semi-public institutions. This approach demands relational investments and the development of trust and social networks to open up knowledge exchanges across organizational boundaries—knowledge that should stay private. Such tasks are difficult to support on a collective basis.

In no way were we able to identify a sort of general pattern of an innovation system for the service industry. As already stated, the important players was identified as belonging to the private sector and the firm’s business network. Most of the capacity to innovate had to come from inside the firm with the support of some dedicated sources inside and outside the boundary of the firm.

Under most circumstances, the customer had some influence on the direction and the outcome of the innovation process, but not often as a major contributor of knowledge. Suppliers, consultants,

and sometime subcontractors were normally involved, but again on a minor scale. In the VC-supported firms, we could identify the input of analytical knowledge and deeper relations with R&D and higher education institutions. In the ICT-based firms, much focus was on the technology and software that should generate and distribute the services. For the rest of the service firms, a modest innovation system that including fewer players was identified.

## 6. Conclusions

In this report we have analyzed innovation processes as they appear in 21 firms dedicated to providing their customers with new or better services. Our interest is in understanding innovation processes in service industries, including both the tangible and intangible elements that produce a service. The selection of the innovation projects under study was made by the informants and their organization and was said to be representative. There can be a tendency in the nature of self-selection, that people choose a successful and maybe “sexy” project, reflecting an image of sophistication and “modernity.” Still, our impression was that this was not the case. The project discussed in each firm seemed to be both relevant and of some importance.

All firms are supported by private equity and investments from VC or PE funds. Consequently, this is a highly selective group of service firms and not a representative sample. We should therefore be careful drawing general conclusions from this explorative study. That said, we still believe that this universe of firms supported by an active, professional, and financially strong owner can give us a deeper understanding of how innovation processes are organized and implemented in dynamic service firms.

The main objective for these firms is to grow and increase the value of their enterprise over a period of four to eight years. For VC-supported firms, an innovation or a new, unique product or approach is often the basic foundation of the venture. For PE-supported firms, an existing service and a good position in the market are the starting point for scaling up and expanding the activities and improving the cash flow and the profitability of the firm. In this process of professionalization and expansion, many changes will take place. Several of them include elements of incremental innovation or innovation by recombining the resources and products controlled by the firm.

An important hindrance for innovation is the lack of financial resources available in the firm, that is, capital to support an activity that does not generate cash flow immediately. Almost by definition, innovation comes before sale and cash and is therefore in need of financial support from an operating business, from equity, or from credit. Innovation also means entering a landscape where all solutions are not straightforward, where new knowledge has to be developed, and where the result of this process is unknown and comprises risk-taking. As discussed earlier in this report, this

fact is an important argument for the necessity of allocating investments of unknown return into innovative activities.

In this study, the financial obstacle for innovation has been at least partly solved. We should therefore expect that innovation is a part of these firms' strategies for growth, if, note, this use of the firm's scarce resources is judged as profitable in the short or long run. As the report documents, innovative activities are the reality in all case firms. This special sub-group of firms should therefore be well suited as a field to explore innovation processes in services.

As Chapter 4 documents, services are indeed supported by risk money. Almost 70% of Norwegian firms targeted for investment by VC or PE funds are operating in the service sector, many in information and communication activities or in professional technical services. In general, VC and PE investors are looking for firms that already control unique products or services, have a reasonably good position in the market, high technological standards, and specific skills or assets under the control of the firm. Good potential for scaling up the activity and thereby growing is also essential.

Innovation and innovation activities were high up on the agenda for almost all of the 21 firms we studied. A general impression is that the innovation activity in these firms is partly a reflection of the kind of service provision they take part in and the dynamism of the competition in that sector. External pressure to innovate is high in sectors where the basic technologies supporting the activity are changing fast and in sectors where the market is expanding rapidly. Digitalization of information and the fast development of internet-related services is just an example that underlines many of the innovation projects studied.

As in other studies on initiatives for innovation, the firm's own employees and customers are highlighted as the most important agents for changes that push for innovation. Customer feedback is often about improvements for an existing product, and more infrequently about suggestions for a new service. Frontline employees are often an important "eye" overlooking customers' needs and conveying these observations to the right decision-maker. Technical personnel oversee the technological/software frontier and can see possibilities for improvements to existing information processing or the distribution of services. Sales personnel "see" the dynamic of the market and openings for new services and are an important resource for the identification of the commercial

potential for suggested improvements or new services. The same could be said about the top management of these firms.

To catch good ideas and evaluate their potential, a well-working organization is important. The mobilization of initiatives for innovation inside the organization was still seen as a challenge in some of the firms. In others, many suggestions were a challenge in so far as only a fraction could be followed up. More efficient processes for generating and selecting ideas for innovation was requested.

The CEO and other individuals in the top management, such as the CTO or a product manager, were highly involved in the studied firms. This was regarded as important both for the strategic focus on innovation and for the whole organization to get involved. Top management involvement was also important for the organization of the innovation projects and for the allocation of resources to these activities.

A more professional organization of most activities is suspected to appear in the case firms, that is, a more streamlined, resource-rich, and routinized organization than what would normally be observed in an “average” service firm. This is most certainly a result of the influence of VC and PE ownership and these actors’ focus on corporate governance, efficiency, productivity, growth, and an explicit focus on the commercialization of innovations for the VC-funded firms. This is probably also the reason for the formal organization of innovation projects in most case firms, including dedicated personnel and resources, milestones, deadlines, and reporting and evaluation.

Even though the outcome of the innovation process was an immaterial service provided to the firm’s customer, technology including software development was an important part of most of the projects highlighted by the case firms. In most service sectors, particularly if the client is another firm, technology is an important premise for the offering of a service. The implication is that innovations taking place in service companies are both aided and restricted by the firm’s technological competence and capacity and include more than what we in a narrow sense could call service innovation or changes in the pure service aspects of their operation. Many of the informants stressed a holistic understanding of innovation.

An important challenge in the innovation process was combining innovative activities side by side with running operations. Serving customers with the best service is the main duty of personnel in

operational activities. Coming up with new solutions that potentially interrupt and change existing operations is the task of the innovation team. The daily operational activities are also the base that generates cash flow and financial resources that can free other resources to be used in innovation activities. Innovation, if successful, therefore need to be implemented in the future running operations of the firm. If this should be possible, including operational competence underway in the innovation process, should be an important part of the project.

This interdependence creates a tension in the organization and a potential conflict among the “resource owners” responsible for different activities. These conflict lines go between different incentives, different tasks, and different personnel, who ideally should work for the common good of the firm. A flexible and smooth solution for activating resources from all parts of the firm therefore seemed to on the agenda in many of the case firms, but had not been fully solved. An isolated development team was the highway to failure.

This interdependence and potential for obstacles could also be the reason why three types of resources were emphasized as being the most important for the innovation process.

First, the human capital of the firm was seen as the cornerstone of a successful result from an innovation process. The competence and creativity of individuals, particularly the project manager, were said to be a critical element. A flexible mobilization of a variety of competences from inside and partly outside the firm was also regarded as crucial. To keep the competence for innovation high and to open links to the frontier of market development, new technology and knowledge was important. This upgrading was achieved by a focus on continuously training and monitoring “new approaches.”

Second, a continuous focus on the cultural capital of the firm had the obvious mission of creating a common sense of the importance of innovation and change, and a culture of sharing resources and working for a common goal. A balance between stability and change, creativity and efficiency had to be reached. In the growth process much focus had been on scaling up the existing activity through standardization, routinization, and a focus on efficiency. This was necessary for the goal of rapid expansion and increased income. However, as a byproduct this process also killed some of the entrepreneurial spirit of the smaller and more flexible organization of the past. To keep part of the former vitality present, a focus on the firm’s culture was said to be important. The management recognized the importance of a change-oriented organization. Consequently,



implementing a business culture open to change and innovation was seen as an important task for the firm's development on survival. This is easy to say, but more difficult to achieve in organizations that are dependent on smoothly running operations.

Third, social capital was emphasized as a critical resource if the firm was to be able to be more innovative. Social relations were said to be of importance if the project manager was to be able to mobilize, in a flexible and sequential way, all the internal resources that had to be involved in the different stages of the innovation process. Likewise, social relations were unquestionably important if the firm was to be able to access traded and, specifically, untraded knowledge from partners and other sources outside the firm. For such reasons, many informants said that the firm's social capital was of paramount importance for their ability to learn and innovate. At the same time they recognized that there was not a strategy or even clear vision of how the firm could develop such relations and utilize them in a more systematic way. Most of this was handled by individuals and not coordinated at the firm level.

Regarding external resources, the customer or user was an important agent in the innovation process. Not necessarily as a co-producer of the innovation, but as a voice or feedback mechanism signaling what the user's needs are and suggestions for improvements or new elements that could be added to the existing product or service. This kind of user feedback was partly creative in nature, but foremost a signal of the commercial potential of a suggested innovation. The user perspective is also important in the later stage of the innovation process, when the innovation has to be tuned to the needs of real users and their actual handling and utilization of the new or improved service.

Other external resources were also mobilized to assist in the development process, but in a less stringent way than the user relation. In general terms, internal resources did most of the work, with inputs from users and more infrequently from other parties such as suppliers and subcontractors.

The support from VC or PE investments was said to be important, both for the development of a more focused strategy for growth, and for the professionalization of the organization. The access to long-term finance and a governance focused on long-term goals was important for the development of a framework and atmosphere open to innovation. Even if innovation was not the main target for the development of the firm, the outcome of a focus on growth, expansion, and international competition resulted in an understanding that continuous improvements and change were important parts in such a growth process. For the PE-supported firms, this resulted in a focus

on incremental innovation and recombination. For the VC-supported firms, a more explicit focus on innovation and sometime radical innovation was chosen.

For other institutions included in a full-fledged innovation system, most of the service firms in this study questioned what these institutions could contribute with, related to the specific needs of the innovation project as such. In services, many products are strongly related to the user of the service and in need of a combination of existing but new knowledge and step-by-step improvements. Incremental innovation or innovation by recombination is therefore at the forefront.

Much of the resources available in the support system were said not to be specific enough for well-developed firms and their specific needs. They did not ask for such support either. The general stance was that innovative activities are part of the competition among firms and should be solved by the businesses and their partners. Advice and communicated knowledge from the support system were felt to be too general and more suitable for new ventures and smaller firms. Service firms are also foremost in need of new knowledge to help them organize their activities in an efficient and creative way and understand their market segments better. This was seen as firm-specific knowledge that could not be transferred from higher education or R&D institutions. That said, some of the firms admitted that they could have used some injection from the information and knowledge support system, but did not find the time to do this. Crudely said, much government sponsored initiatives was seen as resulting in unproductive meetings and consuming valuable time.

This observation should be taken seriously, as most of the case firms were fairly well-equipped with competence and capabilities and fairly well placed in the market. The main obstacle for innovation in these firms seemed to be based on a lack of time and a focus on the development of new knowledge in contrast to serving existing and new customers on a daily basis. This tension can only be solved through a combination of profitable operations combined with an organizational recombination where a culture of innovation is encouraged and implemented. This is the task of the top management and heavily dependent on available internal resources and capabilities, not a support system of more generic knowledge and capabilities. To free internal resources for such purposes can best be achieved through financial support. The financial part of an innovation policy was regarded as important and should be strengthened. Their good experience with VC and PE finance as well as support also led to a recommendation of the use of this instrument to advance innovation to a larger extent.

Only one of 21 informants were critical and three neutral to the contributions received from the VC/PE owners. Such owners have a strong hand on the wheel in any firm. They are highly selective in what they invest in and whom they hire as a CEO—be it the original entrepreneur or an external professional. The top management is almost by definition the servant of the owner and thereby a subjective judge. Their positive conclusion of the influence of PE on the performance and development of a firm should therefore be taken for what it is. Even so, our impression is that this form of ownership has a strong influence on the performance of firms and helps to grow firms of importance for the economic development of the future. In this development, innovation has an important role to play.

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## Appendix A

### *Box 1 Key activities in systems of innovation*

- (i) Provision of knowledge inputs to the innovation process
  - (1) Provision of R&D results and, thus, creation of new knowledge, primarily in engineering, medicine and natural sciences.
  - (2) Competence building, for example, through individual learning (educating and training the labor force for innovation and R&D activities) and organizational learning. This includes formal learning as well as informal learning.
- (ii) Demand-side activities
  - (3) Formation of new product markets.
  - (4) Articulation of new product quality requirements emanating from the demand side.
- (iii) Provision of constituents for SIs
  - (5) Creating and changing organizations needed for developing new fields of innovation. Examples include enhancing entrepreneurship to create new firms and intrapreneurship to diversify existing firms; and creating new research organizations, policy organizations, etc.
  - (6) Networking through markets and other mechanisms, including interactive learning among different organizations (potentially) involved in the innovation processes. This implies integrating new knowledge elements developed in different spheres of the SI and coming from outside with elements already available in the innovating firms.
  - (7) Creating and changing institutions—for example, patent laws, tax laws, environment and safety regulations, R&D investment routines, cultural norms, etc.—that influence innovating organizations and innovation processes by providing incentives for and removing obstacles to innovation.
- (iv) Support services for innovating firms
  - (8) Incubation activities such as providing access to facilities and administrative support for innovating efforts.
  - (9) Financing of innovation processes and other activities that may facilitate commercialization of knowledge and its adoption.
  - (10) Provision of consultancy services relevant for innovation processes, for example, technology transfer, commercial information, and legal advice.

Source: adapted from Edquist (2005).

## Appendix B

<b>Intervju-guide</b> <b>Tjenesteinnovasjon/innovasjonssystem, PE-aktører</b>		
<i>Kort presentasjon av prosjektet, casestudien og intervjuer</i> <i>Orientering om taushetserklæring, bruk av intervjuet og tillatelse til opptak</i>		
Person(er) intervjuet	<ul style="list-style-type: none"> <li>• Navn:</li> <li>• Stilling:</li> <li>• Arbeidssted:</li> <li>• Ansatt i hvilken enhet av foretaket/konsernet:</li> </ul>	
	Bakgrunn	<ul style="list-style-type: none"> <li>• Fortell litt om deg selv – utdanning, karriere?</li> </ul>
	Funksjon	<ul style="list-style-type: none"> <li>• Kort om organisasjonen du arbeider i og hvilken rolle du har?</li> </ul>
Foretaket	Eierstruktur	<ul style="list-style-type: none"> <li>• Kort om styringsstruktur - mor og datterforetak og hvem som er dominerende eiere</li> </ul>
	Foretaksstruktur	<ul style="list-style-type: none"> <li>• Kort om konsern/geografisk struktur (utover finnes på web)</li> </ul>
<i>Kort orientering om innovasjonsfokus for studien – vare/tjeneste, vid tolkning av innovasjon + venture/PE-investorer</i>		
Dimensjon	Spørsmål	Info/evt. oppfølgings spørsmål
Strategiske ressurser	<ul style="list-style-type: none"> <li>• Hvilke foretaksspesifikke ressurser/-egenskaper er viktigst for å opprettholde .... konkurransekraft?</li> </ul>	<ul style="list-style-type: none"> <li>• Nevn opptil fem ressurser/egenskaper i prioritert rekkefølge</li> </ul>
Innovasjonstrategi	<ul style="list-style-type: none"> <li>• <b>Har foretaket en uttalt innovasjonsstrategi? I så fall, hva er det overordnede målet med innovasjonsaktivitet?</b></li> <li>• <b>Hvis nei, hva er sammenhengen mellom overordnet strategi, en vekst-/endringsstrategi og en innovasjonsstrategi?</b></li> <li>• Har dere noen bestemt strategi for å beskytte innovasjoner?</li> </ul>	<ul style="list-style-type: none"> <li>• Hvilken type innovasjonsstrategi (proaktiv, analytisk, forsvar, reaktiv) samsvarer best med denne strategien?</li> <li>• Hvordan har dere gått frem for å fastsette de strategiske målene?</li> <li>• Hvor ofte revideres disse? Er det noen spesiell hendelse som skal til for at målene revideres?</li> <li>• Hvem beslutter at målene må revideres?</li> <li>• Hvor store ressurser (midler/årsverk/andel av omsetning) bruker foretaket på innovasjonsaktiviteter?</li> <li>• Er det stor enighet om innovasjonsstrategien i foretaket?</li> <li>• Hvem har ansvaret for at de strategiske innovasjonsmålene nås?</li> </ul> <p>Merkevare, patent, hemmelighold, utviklingstid/forsprang, innlåsing</p>
PE-støtte	<ul style="list-style-type: none"> <li>• <b>I en periode har PE-fond tilført foretaket langsiktig finansiering og strategisk kompetanse. Hvilke kvaliteter ved ditt foretak tror du PE-investorene la størst vekt på?</b></li> </ul>	Be om prioritert rekkefølge.



Vare/tjeneste produksjon	<ul style="list-style-type: none"> <li>• <b>Vi skiller gjerne mellom produkt/leveranser som er av materiell karakter (varer) og produksjon/leveranser av immateriell karakter (tjenester). Hva er etter din mening de viktigste forskjellene mellom de to produkttypene?</b></li> <li>• Hvordan er balansen mellom vare- og tjenesteleveranser i ditt foretak? (%)</li> </ul>	<p>Test Hills argumentasjon:</p> <p><b>vare</b> = fysisk gjenstand eller ikke-fysisk innholdsleveranse omgjort til vare (eks. CD), (produktet kan lagres/eies)</p> <p><b>tjeneste</b> = kompetanse kombinert med teknologi som transformeres til en leveranse som dekker kundens behov og konsumeres (produktet kan ikke lagres/eies)</p>
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*I fortssettelsen skal vi fokusere på den innovasjonen du selv har valgt. Vi skal snakke om prosessen som førte fram til leveransen og de ressurser som ble mobilisert for å nå fram til et vellykket resultat. Først om **selve leveransen/tjenesten** og de nyskapende elementer i denne:*

Dimensjon	Spørsmål	Info/evt. oppfølgingsspørsmål
Innovasjonen	<ul style="list-style-type: none"> <li>• <b>Forklar kort hva denne tjenesten leverer? Hva er de nyskapende elementer i leveransen?</b></li> <li>• <b>Hva er hovedinnholdet i innovasjonen?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hva er kjernen i denne innovasjonen?</li> <li>• Radikal – inkrementell?</li> <li>• Klargjør kundesegment?</li> <li>• Innsatsfaktor eller sluttbruk?</li> </ul> <p>Tjenesteprodukt, leveranse-/distribusjonsprosess, støtte-teknologi, organisering, markedsføring, merkevare, forretningsmodell, vare/tjeneste pakking (servitization) etc.</p>
Historie/sti	<ul style="list-style-type: none"> <li>• <b>Kort om bakgrunn for denne nyskapingen?</b></li> </ul>	Forsøk å spore eventuelle sti-avhengigheter
Bredde/kompleks	<ul style="list-style-type: none"> <li>• Består innovasjonen av flere deler, f.eks. har den utviklet seg i flere retninger?</li> </ul>	
Teknologisk innhold	<ul style="list-style-type: none"> <li>• <b>Hvor avhengig er leveranser av denne tjenesten av teknisk utstyr/teknologi kontrollert av foretaket eller av andre? Kort forklaring.</b></li> </ul>	IKT-systemer, transport-teknologi, utstyr og prosedyrer = maskiner, verktøy, måleinstrument etc.,

Derneest skal vi ta for oss selve <i>innovasjonsprosessen</i> for dette prosjektet:		
Dimensjon	Spørsmål	Info. /evt. oppfølgingsspørsmål
Opprinnelse	<ul style="list-style-type: none"> <li>• <b>Hvor kom ideen til innovasjonen fra?</b></li>   <li>• <b>Er det typisk at ideene om nye tjenester/ innovasjoner kommer på denne måten?</b></li>   <li>• <b>Kommer ideen fra et problem/en utfordring eller fra en oppstått mulighet?</b></li> </ul>	<p>Resultat av:</p> <ul style="list-style-type: none"> <li>• <b>Tilfeldigheter</b>, ad-hoc atferd</li> <li>• <b>Uformell</b> ideskapingsprosess i <b>egen enhet</b>: (hvilke funksjon i foretaket bidrar mest?)</li> <li>• <b>Formell</b> ideskapingsprosess i <b>egen enhet</b>: (hvilke formelle verktøy/modell ble brukt?)</li> <li>• <b>Internalisert</b> prosess i konsern: (dialog/bestilling fra andre enheter i eget foretak/konsern)</li> <li>• <b>Impulser fra eksterne aktører</b>: <ul style="list-style-type: none"> <li>○ Via etablert nettverk av aktører</li> <li>○ Via åpen tilgang (open innovation)</li> <li>○ Hvordan ble ideen i så fall fanget opp i din organisasjon?</li> </ul> </li> </ul> <p>Teknologiske-, markedsmessige, institusjonelle eller organisatoriske problemer/muligheter</p>
Seleksjon og Implementering	<ul style="list-style-type: none"> <li>• <b>Hvordan ble ideen fulgt opp og implementert i organisasjonen?</b></li>   <li>• Ble investeringsbeslutningen revurdert i gjennomføringsfasen av prosjektet?</li>   <li>• Er det denne prosedyren bedriften typisk benytter når den tar innovasjonsbeslutninger?</li>   <li>• <b>I hvor stor grad er implementering og gjennomføring avhengig av at en person «tar eierskap» og styrer prosessen?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Ble det brukt noen bestemt <i>metodikk</i> for å <i>anslå verdien</i> av ideen før dere valgte å investere i den?</li> <li>• Vurderte dere forhold som en <i>balanse</i> av høy og lavrisiko prosjekter eller <i>antall</i> prosjekter før investeringsbeslutning?</li>   <li>• I tilfelle revurdering, hvilke <i>metodikk</i> ble da benyttet?</li> <li>• Ble prosjektet i så tilfelle vurdert opp mot andre innovasjonsaktiviteter, eller andre investeringsformål?</li>   <li>• Følges den <i>samme prosedyren</i> for alle typer tjenesteinnovasjonsprosjekter - eller er det <i>forskjellig evalueringsprosedyre</i> avhengig av prosjektstørrelse, tjenestetype, etc.?</li> <li>• Er dere fornøyd med hvordan investeringsbeslutninger tas innen tjenesteinnovasjonsfeltet?</li>   <li>• Var personer tilknyttet PE-aktøren medvirkende til evaluering og valg av nyskappingsprosjekt?</li> </ul>

Organisering	<ul style="list-style-type: none"> <li>• <b>Hvordan ble utviklingsarbeidet organisert?</b></li>   <li>• <b>Er dette «normalen» for organisering av innovasjonsarbeid?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Som <i>prosjekt</i> eller som <i>egen organisasjonsenhet</i>, del av linjeansvaret eller hva?</li> <li>• Hvem <i>ledet</i> utviklingsprosessen? I så fall; var dette en «profesjonell» prosjektleder eller var det en som også har andre oppgaver?</li> <li>• Har foretaket en egen «innovasjons- eller utviklingsavdeling» som gjennomførte prosessen, eller var det andre avdelinger?</li> <li>• Var <i>ulike</i> avdelinger/funksjoner i foretak/konsern involvert i ulike deler av prosessen?</li> <li>• Var det <i>eksterne</i> aktører involvert i deler av prosessen? I så fall; i hvilke deler av prosessen var eksterne involvert, og hvilken type aktører var involvert?</li> <li>• Ble det brukt <i>insentiver/belønninger</i> for å bedre ytelsen til ledelse av prosjektet?</li> </ul>
Gjennomføring og styringsverktøy	<ul style="list-style-type: none"> <li>• <b>Beskriv prosessen for å utvikle den nye tjenesten: hvilke steg ble gjennomført fra dere besluttet å utvikle tjenesten til den ble kommersialisert?</b></li>   <li>• Ble det brukt noen styringsverktøy/metodikk i løpet av utviklingsprosessen?</li>   <li>• <b>Er det slik utviklingsprosessen vanligvis forløper?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Var det definert <i>milepæler</i> underveis der gjennomføring av prosjektet ble revurdert? I så fall, var vurderingskriteriene forhåndsbestemt?</li> <li>• Hva var det som gjorde at disse beslutningspunktene ble definert?</li> <li>• Hva skulle til for å «komme gjennom» et beslutningspunkt?</li> <li>• Er beslutningspunktene bare «gå videre/stopp», eller er det andre former for beslutninger som tas på et slikt tidspunkt?</li> <li>• Hvem tar beslutninger?</li> <li>• Hvor vanlig er det at prosjekter som er i gjennomførings-fasen stanses? Hvor i prosessen stanses de vanligvis?</li> <li>• Er det en standardprosess som følges? Eller er prosessen forskjellig fra gang til gang avhengig av type innovasjon?</li> <li>• Er prosessen formell eller uformell?</li>   <li>• I tilfelle få/ingen metodikk; hva er årsaken til at ingen/ikke flere verktøy/metodikker benyttes?</li> </ul>

Målsetninger	<ul style="list-style-type: none"> <li>• <b>Hva var det overordnede målet med denne innovasjonen?</b></li>   <li>• Var disse målene konkrete, nedskrevet og forpliktende?</li>   <li>• <b>Tror du resten av organisasjonen oppfatter det gjennomførte prosjektet som en <i>spesifikk innovasjons-aktivitet</i> eller som en del av en <i>generell utviklings-/endringsprosess</i>?</b></li> </ul>	<p>F.eks.: Lønnsomhet, markedsandel/ markedsinntekt, konkurransefortrinn, strategisk posisjon, erstatte produkter eller tjenester, endre merkeopplevelsen, gå inn i nye markeder, forbedre kvalitet, øke kapasitet, forbedre HMS, oppfylle krav fra myndigheter.</p> <ul style="list-style-type: none"> <li>• Hva er forventede effekter hvis dere ikke har noe uttrykt overordnet mål?</li> </ul>
Måling av innovasjon	<ul style="list-style-type: none"> <li>• <b>Hvordan gikk dere fram for å evaluere/måle måloppnåelse, effekt av innovasjonen og gevinst av gjennomført prosjekt? (Mao; hva er grunnlaget for at du mener prosjektet var vellykket?)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Brukes det et <i>forhåndsdefinert rammeverk</i> eller verktøy for å bestemme hva som bør/skal måles?</li> <li>• Er <i>ex post målingen</i> en måling som gjøres like etter prosjektavslutning eller gjøres det målinger også lenge etter prosjektavslutning?</li> <li>• Hvordan måles i så fall svært langsiktige effekter (økt konkurransestyrke, forbedret omdømme, læringseffekter etc.)?</li> <li>• Hvorfor måler dere prosjektytelse etter at prosjekter er gjennomført?</li> <li>• Registreres medgåtte kostnader som spesifikk investering i innovasjonsaktivitet eller som generelle driftskostnader?</li> <li>• Er det noen typiske handlinger som iverksettes etter slike målinger? (oppstart av nye prosjekter, kompetansebygging, endring av strategi/mål etc.)</li> <li>• Hvem er det som gjennomfører ex-post evalueringen?</li> </ul>

Interaktiv læring	<ul style="list-style-type: none"> <li>• <b>Innovasjonsprosesser kan gjerne beskrives som en læringsprosess der interaksjon med andre personer, fag eller enheter er en viktig del av kunnskapsutvikling. Forklar om/hvordan slike læringsprosesser medvirket til gjennomføring av prosjektet?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hvilke disipliner og aktører var de viktigste leverandører av kunnskap til prosjektet?</li> <li>• Endret bidragsyttere/aktørsettet seg gjennom prosjektperioden. Utdyp.</li> </ul>
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<i>Hvilke ressurser har kommet til anvendelse for å lykkes med dette innovasjonsprosjektet:</i>		
<b>Dimensjon</b>	<b>Spørsmål</b>	<b>Info/evt. oppfølgingsspørsmål</b>
Human/kunnskaps-kapital	<ul style="list-style-type: none"> <li>• <b>Forutsetter innovasjonen tilgang til bestemte kunnskapsressurser? I så fall hvilke?</b></li> <li>• <b>Hvordan er forholdet mellom dedikert personell som følger prosjektet over tid og bruk av temporær bistand fra andre enheter i foretaket?</b></li> <li>• <b>Er eksterne kompetansebistand viktig? (Mer om dette senere)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hva slags <i>type kompetanse/kunnskap</i>: <ul style="list-style-type: none"> <li>○ Analytisk/syntetisk/kreativ-symbolsk?</li> </ul> </li> <li>• Hvilke <i>fagområder</i> ble involvert i utviklingen av innovasjonen?</li> <li>• Er det <i>spesialisert eller tverrfaglig</i> kunnskap som er mest relevant?</li> <li>• Var <i>nyansettelse</i> viktig for tilførsel av nødvendig kompetanse?</li> <li>• Er interne og eksterne kurs/videreutdanning viktig for gjennomføring av innovasjonen?</li> <li>• Hvordan fungerer dette?</li> <li>• På hvilken måte brukes eksterne kompetanseressurser i utvikling av denne tjenesteinnovasjonen?</li> </ul>
Organisatoriske ressurser	<ul style="list-style-type: none"> <li>• <b>Forutsetter innovasjonsprosessen eller implementeringen tilgang til bestemte organisatoriske ressurser eller spesielle organisatoriske tiltak?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Forklar</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Kan denne innovasjonen bare realiseres innenfor egen organisasjon?</b></li> <li>• <b>Hvis behov for ekstern bistand, hvordan får man tilgang til slike ressurser?</b></li> <li>• <b>Howdan er forholdet mellom den del av organisasjonen som leverer tjenesten og den del som driver fram innovasjonen?</b></li> <li>• Hvordan går dere fram for å vedlikeholde en organisasjon som fremmer innovasjon?</li> </ul>	<ul style="list-style-type: none"> <li>• Hvilke deler av organisasjonen involveres i innovasjonsaktiviteter, og på hvilken måte?</li> <li>• Hvordan inkluderes denne ressursen i prosjektet?</li> <li>• Er de som leverer tjenesten til daglig også ansvarlig for å forbedre den? Er det en annen enhet som har ansvar for innovasjon? Hvordan er samarbeidet mellom avdelingene?</li> <li>• I hvilken grad og på hvilken måte involverer ledelsen seg i saker som omhandler innovasjon?</li> </ul>
Materielle/ teknologiske ressurser	<ul style="list-style-type: none"> <li>• <b>Hvilke fysiske ressurser var viktig for gjennomføring av denne innovasjonen?</b></li> <li>• <b>Har lokalisering av egne enheter vært viktig for innovasjonsprosessen?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Fysiske ressurser: kontorer, lokalitet, test-lab, teknologi, osv.</li> <li>• Systemressurser: IKT-systemer, distribusjons-systemer osv.</li> <li>• I tilfelle hvordan? Har for eksempel nærhet til samarbeidspartnere vært viktig?</li> </ul>
Finansiell kapital	<ul style="list-style-type: none"> <li>• <b>I hvilken grad krever prosjektet tilgang til større finansielle ressurser? Hvordan ble disse ressursene skaffet tilveie?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Finnes det øremerkede finansielle ressurser avsatt til innovasjon?</li> <li>• Er finansiering av innovasjonsprosjekter ad-hoc bestemt eller finansiert over vanlige driftsbudsjetter?</li> <li>• Bli innovasjonsprosjekter noen gang lånefinansiert?</li> <li>• Har finansiell støtte fra venture/PE-fond vært viktig for gjennomføringen av prosjektet? På hvilken måte?</li> </ul>
Sosial kapital	<ul style="list-style-type: none"> <li>• <b>Etablerte informasjons-kanaler og sosiale nettverk er ofte viktig for tilgang til ny kunnskap og spiss-kompetanse. Har slike nettverksressurser hatt betydning for prosjektet? På hvilken måte?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Systematisk <i>informasjonsinnhenting</i></li> <li>• Etablering av <i>formelle samarbeidsnettverk</i></li> <li>• Ansattes <i>personlige nettverk</i> til ressurspersoner utenfor foretaket <ul style="list-style-type: none"> <li>○ Profesjonelle, faglige nettverk</li> <li>○ Nettverk til kunder, leverandører</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Har foretaket en bevisst strategi for utvikling av sosiale nettverk?</li> </ul>	<ul style="list-style-type: none"> <li>• Hvordan utformes denne strategien konkret?</li> <li>• Er det forskjell mellom: <ul style="list-style-type: none"> <li>• Nettverk for produksjon/leveranse</li> <li>• Nettverk for deling av kunnskap/utvikling av kunnskap?</li> </ul> </li> </ul>
Kulturell kapital	<ul style="list-style-type: none"> <li>• <b>Hva kjennetegner kulturen i foretaket, og hvordan fremmer eller hemmer kulturen innovasjon?</b></li> <li>• Hvordan går dere frem for å vedlikeholde /endre kulturen?</li> </ul>	<ul style="list-style-type: none"> <li>• I hvilken grad er dere <i>åpne for at konflikter</i> kan forekomme i innovasjonsarbeidet?</li> <li>• Blir det å <i>gjøre feil</i> sett på som en naturlig del av innovasjonsprosessen?</li> <li>• Er det å delta i innovasjon, og det å være villig til å <i>ta risiko</i> i den forbindelse, sett på som <i>karrierefremmende</i>?</li> <li>• Blir kreativitet og nyskapingsevner vurdert i forbindelse med <i>rekrutteringer</i>?</li> <li>• Hvordan går dere frem for å evaluere om kulturen legger til rette for oppnåelse av innovasjonsmålene?</li> </ul>
Viktigste ressurs	<ul style="list-style-type: none"> <li>• <b>Hva er de tre viktigste kriteriene for økt innovasjonsevne i ditt foretak?</b></li> </ul>	Teknologisk standard, FoU-kompetanse, ansattes generelle kompetanse, effektiv produksjon-/leveransesystemer, fleksibel organisasjon for kundetilpassning, evner til å forutse markedstrender, evner til markedsføring, nettverksutvikling-/samhandlingsevner etc.

<i>Generell betydning av <b>eksterne ressurser</b> og nettverkspartnere i innovasjonsarbeid</i>		
<b>Dimensjon</b>	<b>Spørsmål</b>	<b>Info/evt. oppfølgingsspørsmål</b>
Aktører	<ul style="list-style-type: none"> <li>• <b>Forsøk å identifisere inntil 10 <i>eksterne aktører</i> som direkte og indirekte har bidratt til utviklingen av innovasjonen?</b></li> <li>• Hvorfor er ikke disse ressurser/kapabiliteter internalisert?</li> </ul>	<ul style="list-style-type: none"> <li>• Hvem er de?</li> <li>• Hvor er de lokalisert?</li> <li>• Hvilken funksjon har disse?</li> <li>• Bidrar de til komplementaritet eller kapasitet?</li> <li>• Hvor stabil er relasjonen til disse aktørene?</li> </ul>
Arbeidsdeling	<ul style="list-style-type: none"> <li>• <b>Hvordan har arbeidsdelingen vært mellom disse aktørene og foretaket?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hvem gjør hva?</li> <li>• Er det forskjell på tidspunkt når disse aktørene er blitt med/avslutter deltakelsen?</li> <li>• Hvordan har avhengighetsforholdet til enkeltaktører utviklet seg?</li> </ul>
Styring av nettverket	<ul style="list-style-type: none"> <li>• <b>Hvordan styres samarbeidsrelasjoner?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Eksplisitte juridiske kontrakter</li> <li>• Sosiale relasjonskontrakter</li> <li>• Kun tillitsbasert</li> <li>• Ulike oppgaver –ulike styringsformer?</li> </ul>
Normer for samarbeid	<ul style="list-style-type: none"> <li>• Ligger et sett av felles normer til grunn for styringen av samarbeidet?</li> </ul>	<ul style="list-style-type: none"> <li>• Atferds-normer og «uskrevne lover» for tillitsskapende samhandling</li> <li>• Er en slik «makro-kultur» nødvendig for å få samarbeidet til å fungere</li> </ul>

Insentiver og barrierer	<ul style="list-style-type: none"> <li>• Bruker dere bevisst <i>insentiver</i> som oppmuntrer til målrettet handling og <i>kontrollmekanismer</i> som hindrer opportunistisk atferd?</li> </ul>	<ul style="list-style-type: none"> <li>• Hva er disse insentivene og kontrollmekanismene</li> <li>• Er <i>selektivt utvalg</i> av samarbeidspartnere og felles <i>makrokultur</i> viktige mekanismer for styring av samarbeidet?</li> <li>• Bruker dere kontrollmekanismer som <i>utestengning</i> eller trussel om «<i>negativ omtale</i>» for å hindre opportunistisk atferd?</li> </ul>
Offentlige ressurser	<ul style="list-style-type: none"> <li>• <b>Mange offentlige institusjoner og virkemidler blir brukt for å fremme kunnskapsutvikling og innovasjon. Er den type eksterne ressurser viktig for ditt foretak?</b></li> <li>• Hvorfor brukes ikke disse ressursene?</li> </ul>	<ul style="list-style-type: none"> <li>• Utdanningssystemet, kursvirksomhet</li> <li>• Finansiell støtte: Innovasjon Norge, NFR, Skattefunn, regionale fond, Seed/Venturefond osv.</li> <li>• Ulike nettverksprogrammer, VRI, SFI, NCE</li> <li>• Forskningsinstitusjoner, testlaboratorier</li> <li>• Teknologioverføring/opplæringsinstitusjoner</li> <li>• Inkubator, forsknings-/næringspark osv.</li> </ul>

<i>Ditt foretak er/har vært støttet av risikovillige og aktivt styrende kapitalfond over lengre tid. Vi er til sist opptatt av den innflytelse disse fondene har hatt for foretakets utvikling:</i>		
Dimensjon	Spørsmål	Info/evt. oppfølgingsspørsmål
Strategi	<ul style="list-style-type: none"> <li>• <b>I hvilken grad har fondsforvalterne/partnerne medvirket til omformulering og spissing av foretakets strategi?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hvordan og i hvilken retning?</li> <li>• Har denne investeringen medført mer aktiv eierstyring enn tidligere?</li> <li>• Hvordan har dette påvirket forholdet mellom styret og administrasjonen?</li> </ul>
Finansiering	<ul style="list-style-type: none"> <li>• <b>Hvilke tiltak ville vært vanskelig å gjennomføre uten tilførsel av risikokapital?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Refinansiering, oppkjøp, kapasitetsoppbygging, oppgradering av teknologisk/ kompetanse, produktutvikling, omorganisering, markedsutvikling osv.</li> </ul>
Organisering	<ul style="list-style-type: none"> <li>• <b>Hvilke organisatoriske endringer er et direkte resultat av inntreden av aktive eierfond?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Omorganisering, «out-sourcing», fusjoner, internasjonalisering osv.</li> <li>• Hvordan har dette påvirket forholdet mellom toppledelsen og resten av organisasjonen?</li> </ul>
Nettverk	<ul style="list-style-type: none"> <li>• <b>Har foretaket hatt direkte nytte av kopling til ressurspersoner eller foretak som eierfondet fremskaffer?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hva bidrar disse med og i hvilke faser blir disse introdusert?</li> </ul>
Innovasjon	<ul style="list-style-type: none"> <li>• <b>I hvilken grad og på hvilken måte er fondsforvalterne opptatt av nyskapende aktivitet, spesielt langsiktige prosjekter?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Har fondene aktivt og direkte involvert seg i endringsprosesser der innføring av nyskapende elementer er hovedfokus?</li> </ul>



Konflikt	<ul style="list-style-type: none"><li>• <b>Er det en latent konflikt mellom eierfondenes tidshorison + fokus på maksimering av kapitaleiers verdier og foretakets mulighet til å utvikle innovasjon?</b></li></ul>	<ul style="list-style-type: none"><li>• Er fondene mer opptatt av effektivisering og stordriftsfordeler enn utvikling gjennom kompetanseheving og nyskaping?</li><li>• I hvilken grad har fondenes krav til avkastning medvirket til interne konflikter og turbulens i organisasjonen?</li><li>• Har slike konflikter vært til beste for den langsiktige utviklingen av foretaket?</li></ul>
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This report focuses on service-innovation in firms supported by venture capital/private equity. The first part discusses specific characteristics of services and develops a typology of innovation modes. The second part identifies the importance of service firms among Norwegian firms supported by risk money. Results are reported from a small survey among fund managers focused on motives for investing in their portfolio firms. The last part conveys results from a qualitative case study including 21 portfolio firms in services. It documents development processes and resources used in innovation projects. Few projects were classified as radical innovation. The majority of projects were incremental innovations or based on recombination of existing resources. Technology and software were important elements in most projects. Customers' needs were identified as an important trigger, but the innovation project was mainly initiated by the firm's own personnel. Innovation projects were formally organized, often dependent on resources controlled by the operational part of the firm. This dependency created conflicts, normally solved through informal relations. Innovation projects were seldom registered as R&D. Only crude measures of performance were used. The most important resources for innovation were reported to be the firm's human capital, combined with a culture for change and well-developed social networks. Financial and managerial support from the VC/PE-owner were also regarded as important, but generally, the firms were not involved in larger networks of partners for innovation. Lastly, some implications for innovation policy are discussed.

# SNF



**Samfunns- og næringslivsforskning AS**

Centre for Applied Research at NHH

Helleveien 30  
NO-5045 Bergen  
Norway

P +47 55 95 95 00  
E [snf@snf.no](mailto:snf@snf.no)  
W [snf.no](http://snf.no)

Trykk: Allkopi Bergen