

5 Institutions and spin-offs: determining factors for establishment and early market entry success of innovation based spin-offs from KIBS-firms

Kjersti Vikse Meland and Tatiana A. Iakovleva

Introduction

AQ 1

Spin-off is, in general, a highly successful phenomenon in terms of competitiveness, innovation, growth and has a positive effect on the socio-economic environment. This specific form of entrepreneurship is seen by European policy makers as both a driver and a result of the shift to the knowledge-based economy.¹ Corporate spin-off, which has proven to be a successful mode of entrepreneurship in Norway, has been given little attention by politicians and funding agencies (Nås and Sandven, 2003).

Much of the literature on entrepreneurship has examined the attributes of individuals, the networks of affiliations in which those individuals are enmeshed, the resources they assemble and the openings present in the competitive environment (Hwang and Powell, 2003). The focus has been on capabilities of individuals or organisations to recognise entrepreneurial opportunities. Legal and political conditions that support entrepreneurial behaviour and the wider ecosystem that serves as barriers or promoters of entrepreneurial activity, such as institutions, first received increased attention during the past decade (Hwang and Powell, 2003).

Institutional theory (Scott, 1995; Scott, 2000) suggests that institutions and business environment affect firm birth rate, churning and dynamics. Scott (1995:p.33; 2001:p.48) defines institutions as: 'social structures that have attained a high degree of resilience. They are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life. Institutions operate at different levels of jurisdiction, from the world system to localised interpersonal relationships. Institutions by definition are subject to change processes, both incremental and discontinuous'. Institutional studies examining institutional aspects of entrepreneurship have been criticised for a narrow focus on culture (Busenitz, Gomez, and Spencer, 2000). Many of them have linked Hofstede's (1983) cultural dimension, especially individualism, to examine a country's propensity to engage in entrepreneurial activities. Studies on global diffusion of entrepreneurial institutions (Gereffi and Hempel, 1996) provide support for the notion that culture alone is insufficient to describe cross-country differences in entrepreneurship. Economic, political and legal institutions play an important role in fostering or prohibiting entrepreneurship and should be

considered in future studies (Djankov, McLiesh and Ramalho, 2006). In the spin-off literature, the role of contextual conditions has been largely overlooked given the largely person-centric view that still dominates (Gilsing, van Burg and Romme, 2010). To try to address these gaps, this paper will focus on how institutions at different levels of the national innovation system condition the effectiveness of establishment and early market entry of spin-offs.

A spin-off is defined as a firm whose intellectual capital originates from its parent institution, such as a university, research institute or another company (Chesbrough, 2002; Mustar *et al.*, 2006). Using Fryges and Wright's (2014) typology of spin-offs highlighting *context*, i.e. whether they originated from a university or commercial context, and the *mode* of the spin-off, i.e. whether it is based on new or existent activity, this paper will focus on commercial spin-offs based on innovations, either product or service that is new to the market. Such spin-offs might be either corporate (Bruneel *et al.*, 2013; Clarysse *et al.*, 2011) where a parent company contributes to equity, or employee spin-off (Fryges and Wright, 2014). We focus on corporate innovation based spin-offs.

In this paper we study spin-off processes from one specific kind of firm, i.e. knowledge-intensive business service (KIBS) firms. KIBS firms are a particular part of the whole service sector. They are defined as firms that provide knowledge-intensive goods and services for other business firms. KIBS are distinguished as T-KIBS (those with high use of scientific and technological knowledge, such as R&D services, engineering services, computer services) and P-KIBS that are more traditional professional services (such as legal, accountancy, management consultancy and marketing services). Based on empirical data from three different sectors in Norway, the Maritime/Marine, Oil and Gas and the ICT sector, this paper will focus on spin-off processes from T-KIBS firms. The ICT sector is a typical KIBS sector with a large amount of knowledge intensive service firms, whereas the Maritime/Marine and Oil and Gas industries are represented by KIBS companies in certain parts of their value chain, i.e. within architectural/design, technical services, engineering activities and related technical consultancy (technical testing and analysis etc.).

Over the last 15–20 years, interest in knowledge-intensive business services has grown significantly in Europe, both in science and policy (Schricke, Zenker and Stahlecker, 2012). The increased focus on innovation KIBS is related to the efforts of western economies and the European Union to become knowledge-based economies. 'KIBS are likely to become one of the main engines for future growth within the European Union' (European Commission, 2007:p.7). The demand for knowledge-intensive services seems to increase with the effort of European economies trying to maintain their competitive position through development into knowledge-based economies (Schricke, Zenker and Stahlecker, 2012). Therefore, we need a better understanding of how institutional factors impact spin-offs from KIBS firms.

~~One challenge related to KIBS is the differentiation between pure KIBS firms and manufacturing KIBS firms, because manufacturing firms often sell services with their products and vice versa (Baines *et al.*, 2009; Strambach, 2008). There can be significant differences between those two types of KIBS with regard to factors~~

~~that affect birth and market entry for their spin-offs. Another condition that might affect this is related to regional context.~~ Empirical findings show that in regions with many KIBS firms, start-up activities of KIBS are more frequent, where 'both the overall knowledge intensity of the regional workforce and the size of regional market have a positive influence on KIBS start-ups' (Anderson and Hellerstedt, 2009:p.118). Another finding is that regional patterns of KIBS are dependent on the type of KIBS activity (Wood, 2005). Marketing, advertising and service companies specialising in financial businesses are concentrated in core city regions, whereas computer services are concentrated in prosperous regions and technical services appear to be tied to demand from manufacturing and other industries.

To better understand the role and relevance of institutional factors for the establishment and early market entry of spin-offs from KIBS, we have used van der Steen's (1999) and Bekkers and van der Steen' (2003) conceptual model that differentiates among four institutional layers of the national system of innovation as a basis.

The aim of this paper is to develop a more complete and structural picture of institutional factors determining the effectiveness of spin-off process from KIBS firms. We address the following research question: *Which institutional factors and mechanisms on sectoral, regional and managerial levels create favourable conditions for the establishment and early market entry success of corporate innovation based spin-offs from KIBS?*

Corporate innovation based spin-offs

Companies can capture value from their innovation activities in two basic ways: through incorporating innovation in their current businesses, or through launching new ventures that exploit innovation in new business arenas (Chesbrough and Rosenbloom, 2002). The spin-off concept is criticised for its profusion of overlapping terms. In an attempt to improve the awareness of spin-off research, Fryges and Wright (2014) developed a typology of spin-offs by highlighting context and mode. Context is distinguished between commercial environments of for-profit corporations and the non-commercial environment associated with universities, i.e. corporate and academic spin-offs. As the mode of spin-off venture, Fryges and Wright (2014) differentiated between spin-offs involving a new or existing activity. In this study we focus on spin-offs from for-profit corporations involving new activities, i.e. corporate spin-offs having innovation as a foundation for their establishments.

Furthermore, a spin-off can also be distinguished as entrepreneurial or incumbent initiated spin-offs (Van de Velde *et al.*, 2007). Entrepreneurial spin-offs is defined as employees leaving the company to establish their own enterprises, whereas incumbent initiated spin-offs means that the parent company seeks to develop a new technology in a separate company. The focus on of our paper is on incumbent or parent initiated spin-offs. The parent firm decides to establish a new firm for commercializing the new technology, instead of expending the parent's scope of activities or abandoning the new technology (Van de Velde *et al.*, 2007).

The parent company can capitalise on the innovation by keeping a certain extent of ownership of the spin-off company (Goduscheit and Brendstrup, 2012).

In this study we focus on spin-offs created in the commercial environment of for-profit corporations involving new activities initiated by parent firms who wish to realise their business idea in a new company.

Institutions

To better understand the role and relevance of institutional factors in establishing spin-offs from KIBS firms, we have used Bekkers et al’s (2006) theoretical framework as a starting point. The model argues that different institutional layers of a national system of innovation form the selection environment for spin-offs (Nelson, 2001). Because national laws and policy, and management of the spin-off company, lie beyond the scope of our study, we have developed a modified model of Bekkers et al (2006) framework that includes three layers of the national system of innovation: sectoral, regional and managerial institutions.

The first layer refers to institutions at a sectoral level, defined as the sectoral technology regime, including technological opportunity conditions, variation in technological approaches and patenting behaviour. The second layer reflects institutions at regional level, conceptualised as regional clusters. The third level concerns institutions at managerial level, defined as parent company policies towards spin-off, including parent company strategy towards spin-off and implementation of this strategy. The modified model is presented below.

The framework of Bekkers et al (2006) has provided a coherent framework for understanding the combined role of various antecedent conditions for spin-off creation and success. Bekkers et al (2006) focuses on spin-offs from Public Research Organisations (PROs) and especially on intellectual property (IP) based spin-offs. Their findings indicate that national laws and policy, as well as sectoral characteristics, affect the establishment of IP-based spin-offs, whereas in the presence of a regional cluster, a PRO company policy regarding spin-offs and the management of the spin-off firm itself, affect success chances once established (Bekkers *et al.*, 2006). Extending this line of research, we suggest that the same factors should be

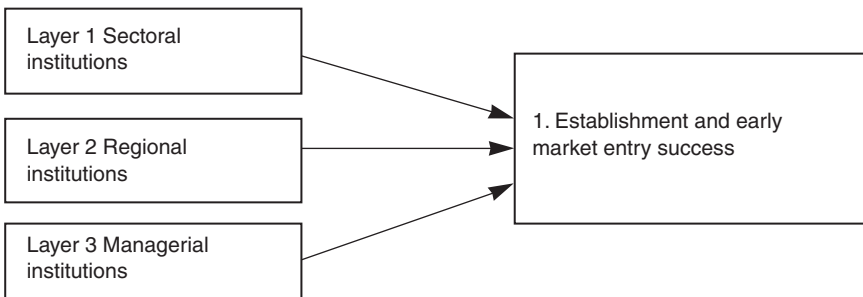


Figure 5.1 Model of institutional layers affecting establishment and early market entry success of corporate spin-offs

important for corporate spin-offs establishment and early market entry success. In this paper, we focus on how sectoral, regional and managerial institutions affect the establishment and early market entry success of spin-offs from KIBS.

Recent calls in the literature argue for not conflating foundation rates from success rates and to keep the process of spin-off creation analytically separate from its subsequent success or failure (e.g. Djokovic and Souitaris, 2008). We find the concept 'subsequent chances of success' rather unclear, both with regard to the kinds of activities included and to the time period. Therefore, we chose to name the phase 'early market entry success' in an attempt to clarify the concept we are studying. We operationalise the phase 'early market entry success' by activities such as registering of the new enterprise, familiarizing potential customers with the product/service idea, involving investors at the early stage, preparing the market by building firms' legitimacy and increasing the visibility of the business, building relationships with potential customers and suppliers and- early sales activities (Foss *et al.*, 2011).

Sectoral institutions

Sectors differ in the extent to which they may provide fertile ground for establishing spin-off companies (Gilsing, van Burg, and Romme, 2010). Shane (2001) argues that the characteristics of technological regimes will have systematic effects on whether or not new firms are established to exploit inventions. It is found that sectors with *high technological opportunity conditions* and a *variety of technological approaches* will be more conducive for creation of corporate spin-offs (Shane, 2001).

High technological opportunity conditions exist when technology is rather immature. This is the case for many parts of the industrial value chain in the Norwegian oil and gas and maritime sectors. Within the oil and gas sector, remotely operated vehicle (ROV) technology, used in pipeline inspection, maintenance and repair and- maritime operations among others, is an example of a technology having rather high opportunity conditions. New versions of ROVs are being developed continuously focusing, for example, on shorter operation time (faster ROVs) and possibilities for operating in deeper ocean areas.

A variety of technological approaches means that a technological challenge can be solved by various technologies. More environmental friendly propulsion systems can be developed by replacing fuel with natural gas, battery, fuel-cell technology, hydrogen, etc. The reason why a *sectoral technology regime* has a positive effect on spin-off establishment is that incumbents will be able to pursue only a limited number of technological opportunities, given specialised capabilities and scarce resources. Furthermore, it is also related to market entry costs. In the early stages of a new technology, markets are too small to justify investments by large established firms. Instead, independent entrepreneurs with low opportunity costs tend to exploit new markets. These conditions are found typically in sectors with immature technologies, such as software, microelectronics, biotechnology and multimedia (Gilsing, van Burg, and Romme, 2010).

Another sectoral institution assumed to affect the creation of corporate spin-offs is the *sectoral IP regime* (Gilsing, van Burg, and Romme, 2010). The sectoral IP regime refers to the extent to which inventions can be patented and these patents can be effectively defended against infringement. With a patented invention one is assumed to have less aggressive competitors and easier access to investors because the potential of economic rents is larger. Innovative KIBS firms are challenged by the fact that service innovations are hard to protect from imitations (Gallouj and Weinstein, 1997). Intellectual property protection mechanisms in services differ from those in manufacturing (Howells, 2001). Patents are rarely used, while copyright seems to be very relevant for certain KIBS sectors. Miles (2001) argue that KIBS firms have other mechanisms that offer strong protections, such as being a member of a professional association, to document certain quality standards if professional accreditation is necessary. Reputation and secrecy seem to be very important to establish trustful relationships in which knowledge can be transferred and shared (Miles, 2001, p. 97f). Most of the KIBS firms in this study sell services in combination with their own developed and often tailor made equipment. Patents, therefore, are assumed to be of relevance for these firms.

Thus, we expect that sectoral institutions in the form of the technology regime and a strong IP regime would be important for both establishment and early market entry success for spin-offs from KIBS.



Regional institutions

The *cluster* literature has often pointed to regional factors, such as the availability of state of the art knowledge, experience, capital, talent and housing as factors supporting the development of regional clusters in the form of attracting specialised companies to the cluster (Bekkers *et al.*, 2006). We refer here to clusters as geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries and associated institutions (e.g. universities, standards agencies, trade associations) in a particular field that compete but also cooperate. Such clusters may show good performance in terms of productivity and innovation (Porter, 1990; Porter, 1998). With such dynamics, regional clusters are assumed to be a good breeding place for start-ups and for IP-based spin-offs in particular (Mowery and Ziedonis, 2001). This thinking is also applicable to corporate spin-off firms, which often form clusters together with their parent companies and partners.

Geographical clusters were found to be of importance for the establishment of both start-ups and corporate spin-offs. Delgado, Porter and Stern (2010) found significant evidence of the positive impact of clusters on corporate entrepreneurship. They found that industries located in regions with strong clusters (i.e. a large presence of other related industries) experience higher growth in new business formation, start-up employment and formation of new establishments of existing firms (spin-offs), thereby influencing the location decisions of multi-establishment firms.

Geographical clusters were found to be important especially during the first phase of the IP based spin-offs in the ICT and life science sectors in the Netherlands and USA (Bekkers *et al.*, 2006). The IP-based spin-offs benefitted largely from

geographical closeness within the cluster in the form of exchange of tacit knowledge with the PRO, firms, informal contacts with former colleagues and— of possibilities to use laboratory equipment and options to attract new talents (Dahl and Pedersen, 2003). Another benefit from the regional cluster was the availability of start-up capital. Regional clusters were also important in leveraging the potential of IP based spin-offs, in view of tacit knowledge exchange and other proximity related benefits (Bekkers *et al.*, 2006). Proximity of the parent company, venture capitalists and possibly technical facilities and incubation parks formed key ingredients of such a cluster for the IP-based spin-offs in the first phase after establishment.

Summarising, proximity to a strong regional cluster is assumed to be an important explanatory factor for both establishment and early market entry success of spin-offs from KIBS firms.



Managerial institutions

Our third institutional factor is related to the parent strategy towards spin-off and the implementation of this strategy. For parent companies, spinning off activities can be seen as a means to isolate new and exploratory initiatives from the core activities of the parent company (Woo *et al.*, 1989) and, thereby, represents a way to set up a play-ground for riskier activities without jeopardizing the health of the company. On the other side, academics (e.g. Christensen, 1997) argue that incumbent firms with proven success in existing technologies and markets often exert strong firm-internal pressure to conform to established ways of doing things and, thereby, often ignore disruptive developments. Also, Hellmann (2007) argues that incumbent firms only invest in corporate ventures if these build upon current technologies and business, investing much less in spin-offs unrelated to their current technologies and established way of operating.

Bekkers *et al.* (2006), comparing IPR-based spin-off processes in the Netherlands and USA, found the lack of **general interest** and absence of a consistent technology transfer policy were hindrances to the establishment of IP-based spin-offs in the Netherlands. The opposite was the case in the USA where most PROs had adopted policies for encouraging entrepreneurship and spin-offs, in the form of a university policy, with regard to sharing royalty rates between inventors and university, which was important for the establishment of IP-based spin-offs. Furthermore, PRO policy with regard to equity investment in the IP-based spin-off also played an important role in the establishment of IP-based spin-offs in the USA.

Spin-off companies typically lack cash, which limits their possibilities to cover patent costs, up-front license fees, cost of research facilities and marketing activities. Di Gregorio and Shane (2003) found that universities' equity investment in their spin-offs was more important than availability of formal venture capital in the early stages of a spin-off creation. It was found that universities' active pursuit of an equity programme stimulated the establishment of IP-based spin-offs (Bekkers *et al.*, 2006). Another factor of university policy affecting establishment of IP-based spin-offs was the availability of incubator parks, which allowed the spin-off to develop the university technology further in close proximity with

scientist inventors. In addition, incubator parks were assumed to reduce development costs through offering subsidies and the possibility of sharing overhead costs. The communication and marketing activities of Technology Transfer Office (TTO) personnel were assumed to affect the creation of university spin-offs (Markman *et al.*, 2004). Related to commercial spin-offs, it is assumed that parent company strategy to spin-off in the form of policy related to ownerships right, equity investment, availability of co-locating and offering of subsidies, will be important for the establishment of the spin-off.

Whereas parent company strategy towards spin-off is assumed to affect the establishment of spin-offs, implementation of the spin-off strategy through organisational set-up, level and type of support, type of contractual arrangements and degree of formal distance between parent company and spin-off, will affect the spin-off's early market entry success. For a US IP-based spin-off, the transfer of Technology Transfer Offices into professional specialised teams with top experts on patent application, licensing negotiations, successful business people and spin-off entrepreneurs, had a positive effect on the subsequent chances of the spin-offs' success (Bekkers *et al.*, 2006). The TTOs functioned as professional learning organisations with professional teams of highly motivated people. This ongoing professionalizing of TTOs in the USA was assumed to positively enhance the chances of success of IP-based spin-offs (OECD, 2003).

Bekkers *et al.* (2006) argue that the importance of parent company strategy towards spin-off on establishment and subsequent success depends on whether a strong regional cluster is present. If so, such parent company support may not be needed. Research has shown that in strong regional clusters, IP-based spin-offs were supported through strong interaction with PRO staff, businesses, capital providers and entrepreneurs in comparison with areas where such regional clusters were less developed. Further research has found that an actively supporting role by the PRO (parent company) had a positive effect on the success chances of the spin-offs by offering support and facilities to overcome a lack of resources. It was found that secretarial and other facilitative support, options for housing, access to facilities such as laboratories, libraries and support in finding additional sources of funding are important for supporting spin-offs (Matkin, 2001).

Summarizing, we argue that *managerial institutions* defined as parent company strategy towards spin-offs and implementation of this strategy, are important factors for both establishment and early market entry market success of **spin-offs** from corporate KIBS firms.

Research strategy and data collection

In order to grasp the embedded, processual and contextual nature of the spin-off establishment process, a case study design was chosen (Denzin and Lincoln, 1994; Silverman, 2006). Following the theoretical sampling of cases, we build on the argument that multiple cases create more robust theory grounded in varied empirical evidence (Eisenhardt and Graebner, 2007). Therefore, we wanted more than one case in order to reveal the variety of entrepreneurial experience with

regard to starting up a daughter enterprise. The strategy for case selection followed a homogenous sampling strategy (Patton, 1990) as we wanted similarity on issues that could interfere with the conceived challenges of the entrepreneurs. We chose to focus on innovation-based corporate spin-offs from SMEs, and that was our first and major criterion. Second, we chose three industries of major strategic importance for the development of the region in which we were operating, which are Oil and Gas, Maritime/Marine and ICT industries.

Each case includes a mother company and a daughter company. The cases varied in organisational size, although the parent company was typically a SME, defined as no more than 100 employees. Daughter companies often are smaller than mother companies. Cases differ somewhat in technology and market niche. In total, 30 extensive, semi-structured interviews were conducted as part of seven cases in 2013–2014 in Norway. The data were collected through interviews with managers of the parent firm, spin-off founders and third party actors involved in the spin-off formation process. Supplementary data for the study came from websites, accounting information and press releases. The sample was reached mainly by virtue of its 'accessibility,' using a 'convenience approach' (Bryman, 2004). As data collection proceeded, we tried to 'catch' similar types of entrepreneurs so that we explored the same kinds of organisations. We applied a semi-structured interview guide, one version for mother companies and another for daughter companies, based on existing literature. Interviews lasted from 45 to 120 minutes, were audiotaped and transcribed. Following the advice of Corbin and Strauss (1990), we continually compared the data with the existing literature and also searched for new concepts or emerging links.

Analysis

Empirical setting

To address our research question we identified an empirical context where innovation has been crucial for industry development, which is an important for innovation-based spin-offs. The Norwegian oil and gas or petroleum sector and related Maritime and ICT sectors met these criteria.

The Norwegian oil and gas sector's industrial value-chain consists of activities related to oil and gas exploration and field development, petro-chemistry and oil and gas distribution. The Norwegian oil and gas industry has technological and commercial strength in large parts of the global value chain and competes in the global offshore market. The oil and gas industry is characterised by limited product differentiation and, therefore, its price is closely associated with the mechanism of supply and demand. The actors can influence supply through improved methods of production, thus, innovation within the production processes is called for. This industry is capital intensive as drilling and exploration activities are costly. In addition, drilling and exploration take place in increasingly challenging environments resulting in greater use of unmanned installations, subsea technology and drilling techniques (Fagerberg and Verspagenc, 2009). The industry is

characterised by large customers with strong ties to governments yielding considerable market power. The suppliers are more fragmented in terms of company size and market power (cf. Fagerberg and Verspagenc, 2009), however, new entrants into the industry meet barriers to entry in terms of demands for capital and a high level of risk. The demand for new technology gives an incentive for the larger oil companies to invest in smaller, start-up companies. On the other hand, the high risk and cost that characterises the industry, causes it to remain conservative in actually employing the new technology. The deposits on the continental shelf created Norway's main capital industry. The growth of the oil and gas industry contributed to the maritime competency that made new applications in the offshore sector and the development of a strong Norwegian and foreign offshore environment in Stavanger.

The maritime industry in Norway is a world leading maritime cluster characterised by a unique innovation and value creation ability. The Norwegian maritime industry's development is driven by growth in world trade, energy and development of international standards. In recent decades, the Norwegian shipping industry has expanded sharply in offshore related maritime activities. Both within offshore service (e.g. supply) and oil drilling/production, Norway is at the forefront and a dominant player. This makes the Norwegian maritime industry as a whole less vulnerable to fluctuations in the global maritime transport market. Norwegian shipping companies own and operate the most modern offshore fleet in the world. For more than 40 years, shipping companies have contributed substantially to the development of the Norwegian continental shelf. Advanced missions in harsh weather and working conditions in Norwegian waters, have meant that the industry has developed the world's most modern offshore fleet, which today counts over 500 vessels. The Norwegian oil and gas industry, together with the Norwegian Maritime industry, is characterised by two out of three national clusters.

The Norwegian ICT industry is a large, profitable, highly innovative and knowledge-based sector, but is small as knowledge cluster (Andersen, 2012). It is highly centralised – mostly around Norway's capital, with the cities Trondheim and Horten as smaller centres. Few Norwegian ICT companies compete globally. Those who do are often sold out of the country when they reach a certain size and maturity, but expertise is often left in Norway. This industry's most important contribution to society is to provide a competitive arena and strategic resources to increase Norwegian innovative power, productivity and competitiveness. The low profile of the industry, due to value creation being made visible in other industries, is assumed to be a challenge, especially related to recruitment (Andersen, 2012).

Case description

We collected data from six cases, two within the oil and gas industry, two cases within the ICT industry and two cases from the maritime industry. All cases are located in one region in the south-west of Norway. The table below describes the cases in relation to industry, main operations, year of establishment and number of employees.

AQ2

Table 5.1 Case Description

Case	Parent company products & services	Year	Sector	Turn-over	Employees	No of spin-off	Spin-off company services	Year	Sector spin-off company
A	Supplies project personnel and project information management systems to the oil and energy industry, worldwide. The system is tailor-made to large oil & gas exploration projects	1987	ICT, Oil & gas	1,3 Billion NOK in 2013	1100 (2013) 200 (2004)	10 3 Domestic and 7 Foreign	Domestically Architect service, consulting engineering construction, land- and regulation plans	2004	Public, Oil & gas (B to B)
B	ICT-service company ICT operations, web & mobile and system development	2010	ICT	26 Mill NOK (2013)	24 (2013)	0	Own developed Business Management software	Probably 2016	Multiple industries (B to B)
C	Technical engineering & service company Construction, drawings, shop drawings Calculations related to strength & stability. technically services	1977	Maritime (shipping)	11,3 Mill NOK (2013)	10 (2015)	4	ICT software and service company Fully integrated solution for HSE, QA and operation support. Deliver IT&C and helpdesk services to a large number of vessels worldwide	1997	Maritime industry. Oil & gas (B to B)

(continued)

Table 5.1 Case Description (continued)

Case	Parent company products & services	Year	Sector	Turn-over	Employees	No of spin-off (case) products/services	Year	Sector spin-off company
D	Repair company for repair and classification of vessels, rigs and barges. Deliver service, repair, survey & modification of ships, rigs and barges	1973	Maritime Oil & gas	713 Mill (2013) Consolidated 656 Mill (2011)	5	Rig service company A repair base for rigs to offer total services at harbor.	2011	Maritime, Oil and gas (B to B)
E	Originally a machining business. Today business areas are feeding & monitoring system (aquaculture) offshore valves (subsea), bridge solutions (maritime) and machining	2004	Maritime/ Oil & gas and Marine (Aquaculture)	173 Mill. NOK (consolidated)	90 (2013)	Bridge solutions for ship	2008	Maritime, Oil & gas, Marine (Aquaculture) (B to B)
F	Offshore services Related to oil & gas exploration	2005	Oil & gas	Merged with Siemens in 2010. 198 Mill NOK in 2010	NA	Develops and provides state of the art technology for Subsea Water Intake and Treatment (SWIT). Forms the basis for Increased Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) technology	2004	Oil & gas sector

Oil and Gas

Cases A and F can be classified as operating within the oil and gas industry. Case A is a bigger company providing services like project management for the industry. It has about 10 daughter companies, of which three are domestic and seven are based abroad. The spin-off we observed was providing consulting, engineering and architect services to public organisations and to the oil and gas companies, based on the side product. Case F includes the parent company, which sells off-shore services related to oil and gas exploration. It has established two spin-off companies. The daughter company we approached was established to commercialise new technology for the oil and gas sector, i.e. state of the art technology for Subsea Water Intake and Treatment (SWIT) which forms the basis for Increased Oil Recovery (IOR) and Enhanced Oil Recovery (EOR) technology.

Maritime

Case D consists of a parent company that provides a repair service for vessels and has spun off four companies. The daughter company in our study is a rig-service company. Case E consists of a mother company; its main activity today is related to services and products suitable for aquaculture, subsea and maritime industries. The company developed a strategic approach towards spin-off development and has six spin-offs mostly within the maritime industry. The daughter company we contacted provides a new product for the maritime industry.

ICT

Case B includes a parent company that provides ICT-web and mobile system development. It has not yet established a spin-off but will probably do so by 2016. The spin-off company will be within ICT also. Case C consists of a parent company delivering engineering services to the maritime sector and has four spin-offs. The daughter company we approached provides ICT services for vessels worldwide (spin-off is within the ICT industry).

Results/findings

In this article, we consider the role of institutions on the establishment and early market entry success of spin-offs from KIBS in the Oil and Gas, Maritime and ICT industries. Following the logic in our theoretical model, in section 5.1 we first discuss the role of sectoral institutions, in section 5.2 regional institutions and- finally in section 5.3 we discuss managerial institutions in relation to the *establishment and early market entry* of the spin-off firms.

Sectoral institutions

In our analysis, we focus first on the effect of a strong technology regime in the form of high technological opportunity conditions and variety of technological approaches on establishment and early market entry of spin-offs. Second, we discuss the effect of patent regime on spin-off establishment and early market entry of spin-offs.

Sectoral technology regime

The interviews indicated that our cases operated in sectors or industries characterised by high technological opportunity conditions and variety of technological approaches, which promoted the establishment of spin-offs. The interviews indicated that the technology development in the sectors was fast, meaning new business opportunities for the actors:

“To solve these future problems in aqua farming, it is a long race. A lot of weird things (related to innovations) happen in the sector and many actors will try much. We (the parent company) intend to try some ideas/concepts which we believe in.” **CEO, parent company, Spin-off E, Maritime/ Oil and gas Marine (Aquaculture) sectors**

The new ideas were based on customer demands and openings in the markets, which meant opportunities for the parent companies to grow their businesses and to earn money. The interviews indicated that technological challenges could be met by a variety of technological approaches, here represented by Company E with six daughter companies (ref 3 of 6 below):

“Yes, the spin-off companies are the bridge solutions (spin-off 1), the ship-cam solution (spin-off 2), which is a spinoff of from the underwater camera solutions which we further develop. We needed a generation 2, but had little capacity problem. In addition spin-off 3 is developing a new generation fully digital camera that will be basis for the next generation Ship cam. So you can say it's the bridge solutions, it is the Ship cam, and— then there are valves, which are the main products in the spin-off companies. The Spin-off products are partly tailored made for the individual customer”. **Parent company, Spin-off E, Maritime/ Oil and gas Marine (Aquaculture) sector**

The reasons for establishing spin-off companies for their innovative ideas, instead of creating a new department, were many. The companies listed the following reasons for spinning off companies: to focus the technological development and the resources needed, to brand the new technology which was not associated with the parent firm and— to isolate the risk of the new activity from the core activity of the parent firm. In general, the parent companies were SMEs with scarce resources and specialised capabilities.

To summarise, the innovation oriented parent companies operating in sectors with high technological opportunity conditions and a variety of technological approaches were spinning off companies for ideas lying beyond the core competence of parent company, both to focus and accelerate the technological development process and to secure the economy of core activity in the parent company. It can be suggested that:

Proposition 1: Sectoral institutions as high technological opportunity conditions and variety of technological approaches have a positive effect on spin-off establishment.

Patent regime

Our results also indicated that a strong sectoral IP–regime affected the creation of a corporate spin-off in the oil and gas and maritime sector. With a patented idea, the immature technology was protected against infringement, i.e. protected from imitations to prevent competitors developing the same technology. The following extracts illustrate how companies implement this process:

“The background of the spin-off; I was director in a technology and development company within the oil and gas industry. It was an idea that David (employee) brought to me, after we had been in a customer meeting. He tells me that he has an idea how to treat water, sea water into the oil reservoir, so he told the idea there, and– I said yes, I think we have to apply for a patent. We did, it was around Christmas 2002 and I think the patent application was in early 2003. We were then company A, a topside engineering company and this was the one idea that went on subsea technology, or it was a little of both.” **Spin-off company, Case F, Oil and gas sector**

With a patent, the risk of imitation was reduced and the subsequent chances for getting investors to develop the idea further and for economic rent was strengthened in contrast to working with unpatented ideas/technologies:

“Regarding patent application, it takes time. And it was first after the idea was patented, then it was much easier to invest in it, than when it is just was an idea.” **Spin-off company, Case F, Oil and gas sector**

We found that in ICT sectors, patenting was not as important:

“No, patents we do not have, because we are moving so fast. It is something about long-term versus short-term focus.” **Spin-off company, Case C, ICT sector**

According to the theory, a strong patent regime should stimulate the potential for spin-off creation because patented ideas are defended effectively against infringement and are more attractive for potential investors. This, however, was not as evident in our cases, as illustrated in Table 5.2 below. It seems that in the ICT industry patenting is not as important, nor is it in service-related spin-offs. Another explanation might be that patents are important if a start-up wants to attract external investors. In the case of a corporate spin-off this might not be the first priority, as the parent company might provide enough capital to give it a presence in the marketplace. Thus, we suggest that:

Proposition 2: The effect of ‘a strong sectoral patent regime’ on spin-off establishment is dependent on industry, type of innovation (product or service) and on available investments from the parent company.

Table 5.2 Sectoral institutions in relation to establishment and early market entry of spin-offs

<i>Sectoral institutions</i>			
<i>Case</i>	<i>Tech. opportunity condition</i>	<i>Variety of technological approach</i>	<i>Patent regime</i>
A	Medium technological opportunities when architectural drawing (of buildings) went from manual to data drawing. Parent company had data ICT system-competence, but architectural drawing was their core competence	Medium variety of technological approaches related to architectural drawing in different data systems	Not relevant
B	Medium, - development of business management systems/online service programs can be based on new architectures/ technologies	Medium, because development of business management systems can be developed on different platforms/-technologies	NA Patent not relevant in the initial stadium of technology development
C	ISO 900 (ISM), a regulation based demand of quality systems for vessel, created a high technological opportunity condition to develop QA systems and implementation of it (which technology to be used to get it online onboard on vessels).	A variety of technological approaches for development (different ICT-platforms) & implementation (different online solutions onboard on ships) of quality-system for fishing vessels	Not Relevant. Patenting of HMSQ software not relevant because software-programs are characterized of continuously developments
D	High opportunities for technological development related to projecting and delivery of large multi-discipline rigg maintenance projects.	Offering multiple	NA
E	Large possibilities for techno-logical development ship-bridge solutions,	Variation of technological approaches within ship-bridge solutions because dependent of multiple technology to function	Not relevant
F	Large possibilities for technology development within subsea water intake and treatment within oil & gas	A variety of technological approaches within Subsea Water Intake and Treatment (SWIT).	The first patent application was the first seed to what later became firm F

Regional institutions

In developing our understanding of the regional layer of our institutional model, we discuss findings related to how proximity to a strong regional cluster affects establishment and early market entry success of spin-offs from KIBS.

The results show that spin-off companies located in strong regional clusters, such as enterprises producing goods and services for the maritime and oil and gas sectors, benefitted largely from geographical closeness within the cluster in the form of (1) tacit knowledge exchange with customers, suppliers and former colleagues and (2) other proximity related benefits, including possibilities to use laboratory equipment, options to attract new talents and access to regional investors.

Knowledge about products, services, production processes, the sector and other aspects is a kind of sector specific knowledge that employees accumulate. Strong regional clusters are characterised by employer mobility and exchange of tacit knowledge.

The interviews indicated that for the spin-off companies, proximity to a strong regional cluster meant access to a specialised knowledge of mainly tacit character from specialised suppliers, customers and collaboration partners. This was of great importance in the early phase of the spin-off process, i.e. in development and testing of the technology:

“In the development of the ship bridge solution (spin-off) we collaborated much with company A (local company) and with B, i.e. the ship consultant (local company) who is upgrading ship bridge solutions.” **Parent company, Case E, Maritime/ Oil and gas Marine (Aquaculture) sector**

The interviews also indicated that geographical proximity to a cluster meant that the spin-off companies received access to a skilled and specialised workforce. For the spin-off company this meant both access to specialised manpower and reduced costs related to hiring people and training of personnel:

“Culturally I think it is important (for the daughter companies) to be located in the region. We [would] have not succeeded if we hadn't had the work culture, [or a] lot of skilled practitioners who also have a certain theoretical competence.” **Parent company, Case E, Maritime/ Oil and gas Marine (Aquaculture) sector**

Another benefit from the regional cluster was availability of start-up capital through regional cluster actors investing in the spin-off company. The regional investors operated often as demanding customers interested in the kind of technology services the spin-off company should develop:

“A local company A invited us to the Technology days. They invited the industry to come up with good ideas for new technology that could help extending the life of X (oil and gas field), or improve business to company A. We presented

the idea, and– after some back and forth company A allocated 1.7 million NOK to develop our idea. On the basis that Company A (one of the largest foreign operators on the Norwegian continental shelf) allocated 1.7 million, we took the decision. It was a discussion between me and him (employee in regional collaborating company), because it would make it much easier to work with the local company, we established a joint company for the idea”.

Parent company, Case D, Maritime and Oil and gas sector

“He (collaborating company) had to go to Oslo (Norwegian capital) to get money, We’re impatient, and– when he came to us and said: listen to one thing, I cannot work with you (on the spin-off idea) anymore because I do not have budget for it. I disagree with my boss, so either I have to start my own business, or so this goes no further. We told him: “no, we have analyzed a bit, we have to get it (the funding) locally”. And then we agreed on one setting– then started the spin-off company”. **Parent company, Case F, Oil and gas sector**

The findings are summarised in Table 5.3 below.

Table 5.3 Regional institutions in relation to establishment and early market entry success of spin-offs

<i>Regional Institutions</i>				
	<i>Access to tacit knowledge through specialized suppliers, employees</i>	<i>Access to demanding customers – pilot customer</i>	<i>Access to a pool of specialized employees Options to attract new talents –</i>	<i>Access to industrial inventors – availability of startup capital (pre-funding)</i>
A	Spin-off company access to specialized competence through specialized employees	Spin-off company located in a strong regional cluster achieved clients from day one because central cluster actors needed the SO-company services	Spin-off company located in a strong regional cluster recruited specialize employees from regional cluster	Spin-off company located in a strong regional cluster got industrial investors from regional cluster
B	Spin-off company not located in a strong ICT cluster, thereby not access to specialized suppliers	Potential spin-off company have already customers through access to parent company customers	A strong regional ICT milieu, but not good options to attract talents. Dependent of persons moving back to the city. Recruiting by stealing employees from each other and offering best people shares	Challenges with getting funding or access to industrial investors.

Regional Institutions

	<i>Access to tacit knowledge through specialized suppliers, employees</i>	<i>Access to demanding customers – pilot customer</i>	<i>Access to a pool of specialized employees Options to attract new talents –</i>	<i>Access to industrial inventors – availability of startup capital (pre-funding)</i>
C	Not strong regional ICT cluster, therefore no access to tacit knowledge through regional suppliers. But access to tacit knowledge through regional demanding customers. SO-company supplier to a strong regional maritime cluster.	Located in a strong maritime cluster means access to demanding customer. A world leading offshore shipping company located in cluster has been an important pilot customer	Not strong ICT cluster, no options to attract new talents from the cluster	A world leading offshore shipping firm located in the region has been an important investor
D	Location in a strong cluster, with parent-company as one of the dominant cluster actors gave SO-company access tacit knowledge through parent-company relation to suppliers and customer (through transfer of personnel from parent to spin-off).	Located in a strong regional cluster, with parent as one of the dominant cluster-actors, means access to pilot-customer through parent-company network	NA	Parent-company didn't need /wish external investor
E	Located in a strong regional cluster. It has given access to tacit knowledge through specialized suppliers for development of the technological SO-concept	Location in a strong cluster has given access to demanding customer, shipping companies, important as demanding customers	Located in a strong cluster means access to an employee pool of skilled	N/A – Parent company not interested in other investors

(continued)

Table 5.3 Regional institutions in relation to establishment and early market entry success of spin-offs (continued)

<i>Regional Institutions</i>			
<i>Access to tacit knowledge through specialized suppliers, employees</i>	<i>Access to demanding customers – pilot customer</i>	<i>Access to a pool of specialized employees Options to attract new talents –</i>	<i>Access to industrial inventors – availability of startup capital (pre-funding)</i>
F Local suppliers from the regional oil & gas cluster was important in the initial technological development, in minor degree later in development	Spin-off has during all the techno-logical developments had a close relationship with regional Oil Companies, and a major part of the financial funding for the technology development has also been from Oil Companies.		Regional cluster actors were the initial investors. Later national and international actors

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The result of this study implies that proximity to a regional cluster affects early market entry success of spin-offs. However, the empirical finding did not indicate that geographical proximity to a regional cluster conditioned the establishment. Localisation in a regional cluster meant access to specialised and tacit knowledge from suppliers and the collaboration partner. For the spin-off companies, this means more efficient technology development processes because they do not have to spend time seeking out and getting to know technological suppliers or collaboration partners. Strong regional clusters are characterised by having a pool of specialised employees, which means access to specialised employees. This means reduced start-up costs in the form of reduced costs in hiring and training of employees. Proximity to regional investors also affects the early market entry success of spin-off companies in the form of reduced costs searching for potential investors.

For spin-off companies location in strong regional clusters means access to tacit knowledge and reduced start-up costs, which affect early market entry success of the spin-off. Therefore:

Proposition 3: Proximity to a strong regional cluster is assumed to have a positive effect on the early market entry success of the spin-off.

Managerial institutions

In this paper we consider corporate spin-offs, i.e. spin-offs from KIBS-firms initiated by parent firms. For these kind of spin-offs, managerial institutions were conceptualised as *parent company strategy towards spin-off and implementation of this strategy*, were assumed to impact both establishment and early market entry of the spin-offs.

The results from the interviews implied that the *parent company's strategy towards spin-offs* can be divided into three different, but related, dimensions: (1) strategy for sharing of IPR/royalties, (2) strategy for ownership and investments and (3) strategy for offering co-location and sharing of overhead costs. Related to *implementation of parent company strategy towards the spin-off*, i.e. how the strategy reaches the employees in the parent companies, the empirical findings indicate that the strategy's (1) organisational set up and (2) the level and type of support, affect subsequent chances of success of the spin-off. These factors affected both the establishment and early market entry success for most spin-offs. The exception was spin-off companies developing goods or services demanding minor financial investments.

Parent company strategy for spin-off

Strategy for sharing of IPR/Royalties

Clear rules related to IPR are important for the establishment of a new company to avoid conflict of interest. Among our cases, the possibility of getting shares in the company seems to have had a positive effect on the establishment of spin-offs. We found that when idea-owners and leaders of spin-offs were offered shares in the spin-off company, their motivation and dedication to work was much higher than if they were just regular employees. Parent companies apply this as part of their strategy, thus:

"We have done that in the other spin-off companies also. We have always some of the managers as co-owners, owing about 20% of the shares. Then I see that they work in a completely different way. When they own it (the company) compared to only be employed, they spend more energy on it if they own it than not." **Parent company, Case E, Maritime sector**

Some parent companies have a strategy of 100 per cent ownership of daughter companies, to be able to fully capitalise on spin-offs later:

"We own all spin-off companies 100%. It is our business model. Should not say it will last forever, but until now we have done it like that. Again, keep it simple." **Parent company, Case A, Oil and gas sector**

Spin-offs typically lack cash, which limits their ability to cover patent costs, up-front licenses fees, costs of research and marketing activities. From research on academic spin-off, Di Gregorio and Shane (2003) confirm that equity

investment from universities in their own spin-offs is more important in the early stages of spin-off creation than the availability of formal venture capital.

Strategy for ownership and investments in spin-off companies

All the spin-off companies were owned totally or partly by their parent companies in the initial phase of development.

“In the beginning, we (the spin-off company) were owned by parent company. They contributed a lot initially.” Spin-off company, Case A, Public and Oil and gas sector

“In our spin-off companies I am the owner and at the board of all companies. If you bring in other owners you need to operate in a so-called professional manner. Then the processes would have taken much more time and some things you would not have been allowed to do if it costs money and stuff like that.” Parent company, Case E, Maritime/ Oil and gas and Marine (Aquaculture) sector

This kind of support affected the spin-off's early market entry success in the form of an efficient way of getting funding and investors. A spin-off company within the oil and gas sector underlined the importance of having a parent company at its back, because the funding needed to develop the technology was huge:

“It is essential for the oil companies that you go through a qualification, a test phase, demonstrating that it works. You should qualify the technical things. It costs a sea. So, ordinary people or entrepreneurs have no chance in the ocean. We (spin-off company) have passed about 60 Million NOK, who individual can afford that? To pull off such a business like this, it's not easy to do on your own. And, it's clear that the risk for us if we'd jumped off is dramatically large related to being able to take it further To answer the question, it had not been possible, I would say without having a bigger milieu at you back.” Spin-off company, Case F, Oil and gas sector

Strategy for offering co-location, sharing of overhead costs and networking to spin-offs

The parent companies also supported their spin-off companies in the initial period by offering housing and subsidies, such as covering administration and accounting costs, and subsidised prices for renting employees. These kinds of support affect the early market entry success of the spin-offs, because it means reduced start-up costs for the spin-off company.

“We support them (the daughters) with competence and capital. We are there with all the required for them to succeed. And it's a strategic decision that

the Board takes.” **Parent company, Case E, Maritime/ Oil and gas and Marine (Aquaculture)**

“We got free housing, co-location with the mother.” **Spin-off company, Case C, Maritime and Oil and gas sector**

“We were located in the conference room beside the parent company in the initial period. And we got larger offices when they enlarged the parent-company offices.” **Spin-off company, Case C, Maritime and Oil and gas sector**

“It has cost me millions, the project there (one of the spin-off companies), so I hope that it finally takes off. We have spent a lot of money on it, which we have earned elsewhere. It’s how we’re doing with the spin-offs. To count on the project I couldn’t bear, it has cost me a million.” **Parent company, Case E, Oil and gas, Maritime and aquaculture sector**

For a spin-off company, getting access to the parent company’s network was equally important as getting co-location and administrative help:

“Related to advantages of having a parent company in the back, it was not like we went to the parent to get refills economically. I do not think that has happened once. The financial risk of starting the spin-off company for parent company was related to risking their reputation— that they gave us initial “capital” in form of contacts and networks and stuff.” **Spin-off company, Case C, Maritime and Oil and gas sector**

We further found that all parent companies offered their spin-off companies co-location and housing:

“We are offering the spin-off companies co-location and use of parent company knowledge.” **Parent Company, Case E, Oil and gas, Maritime and aquaculture sector**

“And the spin-off company gets all the benefits of belonging to something (i.e. parent company) a little bigger, because they can use it (the resources) when they want. And those who own us – they back us up.” **Parent Company, Case F, Oil and gas sector**

The availability of co-location with the parent company allows the spin-off to develop innovation based spin-off technology or services in close proximity with the parent in which the spin-off idea originated, using parent company equipment and personal expertise. The parent company may also reduce the costs of development through offering subsidies and the possibility of sharing overhead costs. Our findings are summarised in Table 5.4 below.

Table 5.4 Managerial institutions in relation to establishment and early market entry success of spin-offs

<i>Managerial institutions</i>			
<i>Case</i>	<i>Strategy for sharing of IPR/Royalties</i>	<i>Strategy for ownership and investments</i>	<i>Strategy for offering co-location and sharing of overhead costs</i>
A	Parent company offered CEO's at the spin-off company shares in the spin-off company	The parent company invested in the Spin-off. 100 % ownership at start. initial period of start-up	Parent company offered Spin-off company co-location and subsidized related to administration and account.
B	Parent company is going to offer CEO at spin-off companies IPR-right	Parent-company had a strategy for NOT investing in or owing the spin-off companies until parent had grown larger	Parent company strategy for offering spin-off company-co-location and sharing of overhead costs like administration is planned, also customers through own network
C	Parent company offered all managers of spin-off companies shares in their companies	Parent company invested as much as possible in each SO-company without risking the operation of the parent company	Parent company leader group represented with leaders from parent company and other daughter with complementary expertise is following up SO-company by meetings once a month

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<i>Managerial institutions</i>			
<i>Case</i>	<i>Strategy for sharing of IPR/Royalties</i>	<i>Strategy for ownership and investments</i>	<i>Strategy for offering co-location and sharing of overhead costs</i>
D	<p>Parent company offering CEO at spin-off companies IPR-rights</p> <p>Parent company had a strategy for sharing IPR rights with founders of the SO-companies. CEO of the spin-off companies are offered ownership in their companies, some have declined because they wish to be employees with safe income.</p>	<p>Parent company had a strategy for investing in and partly owning the spin-off companies.</p> <p>Parent company strategy for owning spin-off companies nearly 100%</p>	<p>Parent company had a strategy for offering spin-off companies co-location</p> <p>The spin-off company can use personnel resources from other daughter s and parent companies</p> <p>Parent company offered spin-off companies co-location and sharing of administrative and knowledgeable resources</p>
E	<p>Parent company following up SO companies by weekly leader meeting, where members of parent company leader group and CEO of the spin-offs are meeting (economic, technical, branding and business development competence)</p>	<p>Parent company following up SO companies by weekly leader meeting, where members of parent company leader group and CEO of the spin-offs are meeting (economic, technical, branding and business development competence)</p>	<p>The decision about spinning off the company was a strategic choice, decided by and followed up by corporate management</p>
F	<p>Parent company initially established a spin-off company to secure IPR right of the founders. founders offered shares as payment for their IPR.</p>	<p>Parent company invested together with one other partner 48 % each</p>	<p>Spin-off company was offered co-location with parents the first five years</p> <p>Spin-off was followed up by the board which in the initial phase was represented by leaders in the two main-owner companies. It was a close follow-up</p>

Strategy for follow-up SO on early stages of development

Strategy for offering co-location and sharing of overhead costs

Strategy for ownership and investments

Strategy for sharing of IPR/Royalties

The decision about spinning off the company was a strategic choice, decided by and followed up by corporate management

Parent company had a strategy for offering spin-off companies co-location

The spin-off company can use personnel resources from other daughter s and parent companies

Parent company had a strategy for investing in and partly owning the spin-off companies.

Parent company offering CEO at spin-off companies IPR-rights

Parent company following up SO companies by weekly leader meeting, where members of parent company leader group and CEO of the spin-offs are meeting (economic, technical, branding and business development competence)

Parent company offered spin-off companies co-location and sharing of administrative and knowledgeable resources

Parent company strategy for owning spin-off companies nearly 100%

Parent company had a strategy for sharing IPR rights with founders of the SO-companies. CEO of the spin-off companies are offered ownership in their companies, some have declined because they wish to be employees with safe income.

Spin-off was followed up by the board which in the initial phase was represented by leaders in the two main-owner companies. It was a close follow-up

Spin-off company was offered co-location with parents the first five years

Parent company invested together with one other partner 48 % each

Parent company initially established a spin-off company to secure IPR right of the founders. founders offered shares as payment for their IPR.

Parent company implementation of strategy towards spin-off*Parent company organisational set-ups*

Most parent companies had created internal departments or groups with dedicated managers responsible for the firm's innovation processes, spin-offs establishment and follow up. Some parent companies encouraged and followed up spin-off establishment through their leader groups. Some had even established 'innovation programmes' for all the employees, while other parent companies had created innovation groups with dedicated people working with processes encouraging innovations. These internal departments or groups were actively pursuing innovations and potential spin-off ideas. Another internal factor highlighted in the interviews with regard to encouraging innovation and spin-off processes was the existence of consistent policy on innovations and spin-off decisions that existed in the SME parent companies.

Case C had established an internal group promoting and following up parent company spin-off processes:

"We have monthly management meetings to monitor the developments in spin-off companies. In these meetings we are welcoming spin-off opportunities, if there are some good ideas." **Parent company, Case C, Maritime sector**

...whereas in Case A, the management team was responsible for both encouraging and follow up of parent company spin-off processes:

"Each month there is full reporting of all spin-off companies. Last night for example, we had management meeting. Then we have all the spin-off leaders at Skype. We have joint management meeting might say." **Parent company, Case A, ICT and Oil and gas sector**

We can conclude that parent company strategy has an important impact on the establishment of spin-offs regardless of industry and innovation type:

Proposition 4: Parent company strategy towards spin-offs, i.e. strategy for sharing of IPR rights, strategy for equity and investments, and- strategy for co-location and subsidies, affect both spin-off establishment and early market entry success.

Proposition 5: Parent company implementation of strategy toward spin-off in the form of organisational set-up, affects both spin-off establishment and early market entry success.

Discussion and Conclusions

The aim of this paper was to identify which institutional factors conditioned *establishment and early market entry* of innovation-based corporate spin-off from KIBS firms. To answer these questions we looked at sectoral, regional and managerial institutional layers in relation to the spin-off process. The empirical

results indicate that all three institutional layers need to be taken into consideration. We further found that layers differ in their role and level of impact depending on industry and type of spin-off firm.

We observed that sectoral characteristics are especially relevant for a parent company's decision to spin-off a daughter company. Technological opportunity conditions and variety of technological approaches seem to stimulate spin-off processes. However, this was more obvious for firms operating in the oil and gas and maritime industries than the ICT industry. Furthermore, patenting was important if the daughter companies were based on an innovative product rather than service. In addition, in the ICT sector patenting does not seem as relevant as in more financially intensive sectors like the oil and gas sector. Thus, it seems that a patenting regime is less important for service based KIBS firms than KIBS firms offering services based on their own developed equipment.

We also found that regional institutions, in the form of proximity to strong regional clusters, condition KIBS spin-offs' early market entry success. Clusters provide spin-offs with access to tacit and specialised knowledge through specialised suppliers, employees and demanding customers. This is valuable for the KIBS spin-off, especially during the initial technological development, characterised by cumulative learning arising from in-depth interaction between supplier and user. Proximity to strong regional clusters also offers start-up capital through access to regional investors interested in technology development and access to specialised employees.

Parent company strategy towards spin-off and implementation of this strategy, become important in enhancing both establishment and early market entry success of corporate innovation based spin-offs from KIBS. Parent companies with a policy towards spin-offs in the form of organisational set-ups responsible for promoting and following up the parent firms' innovation and spin-off processes, condition both establishment and early market entry success. The spin-off firm's financial hardships associated with the first years of operation seem to be overcome with the help of the parent company. The only parent firm that postponed the spin-off establishment was one that could not provide financial support to its daughter company in the form of investments or equity in the spin-off. Once established, parent company implementation of strategy towards spin-off is important for further early market entry success. Innovation based spin-offs from KIBS firms in the oil and gas and maritime sectors requiring large financial investments related to technological development are strongly dependent on a parent company's equity investments, professional interdisciplinary teams providing advice in the process and secretarial support. This kind of parent-company support seem to be of minor importance when financial investment related to technological development of products and services is small, as in software development. Furthermore, co-location and administrative help from parent company are appreciated assets. Moreover, network sharing and connections to important customers and suppliers help daughter companies enter the market with greater ease. In relation to industry, we have summarised our findings in the table below.

The figure below illustrates the suggested theoretical model explaining the influence of institutional layers on spin-off establishment and early market success.

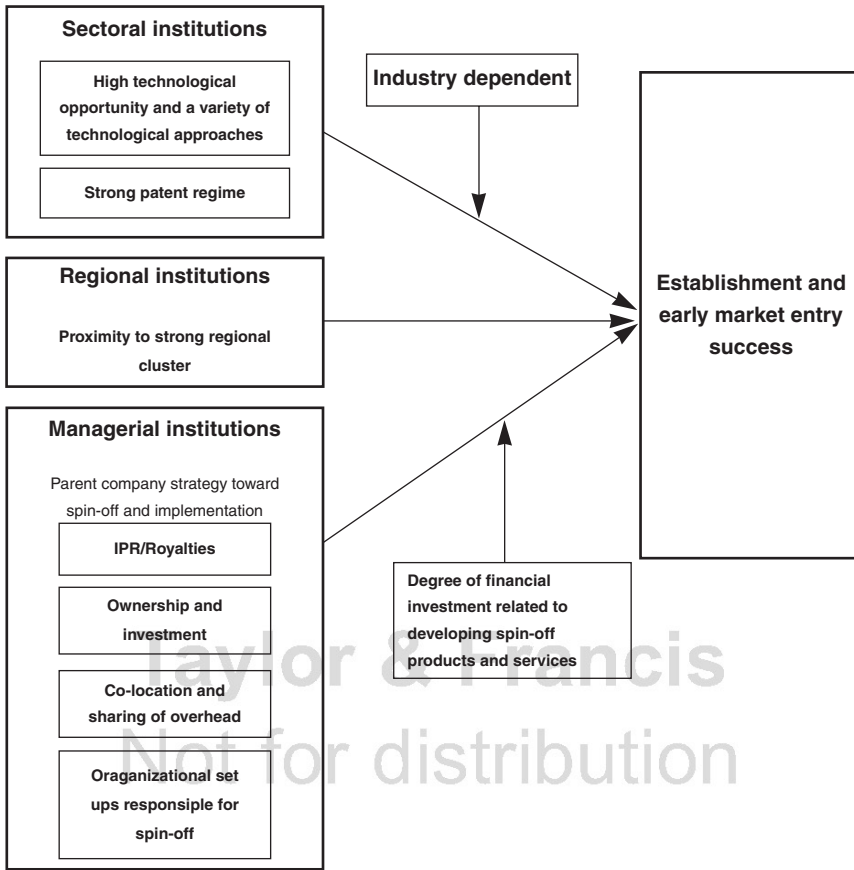


Figure 5.2 Theoretical model explaining influence of institutional layers on spin-off establishment and early market success

Implications and Value

This research has several theoretical and practical implications. Prior research has, to a minor degree, focused on the effect of institutional factors on entrepreneurship in general and on the establishment and subsequent success of corporate spin-offs specifically (Gilsing, van Burg, and Romme, 2010; Kshetri, Williamson, and Schiopu, 2007). Our contribution is a better understanding of the link between the sectoral, regional and managerial institutional layers and one specific form of spin-off, i.e. corporate initiated innovation based spin-off from KIBS.

The paper provides insight to better understand the contextual conditions of the institutional aspects affecting the creation and subsequent success of KIBS-based spin-offs. In the Norwegian maritime and oil and gas sectors, characterised by high technological opportunity conditions and a variety of technological approaches, the KIBS' spin-off approach to technological innovations was a viable means of

isolating a new and exploratory initiative from the core activities of the parent firm. That might be explained by the fact that oil and gas and maritime sectors are more like 'closed loop systems' with higher requirements in terms of IP rights and compliance with regulations and environmental requirements, which restrict the open flow of knowledge. On the other hand, the ICT sector is characterised by open innovation and diffusion of knowledge, which makes the patent regime and variety of approaches less of an issue for new entrants. By spinning off the technological innovations into a new company that focuses exclusively on the new product or service, the parent company could realise the potential of that new technology and capitalise on the innovation by keeping a certain extent of ownership of the spin-off company.

The study contributes to the cluster literature by providing evidence for the effect of a regional cluster on the early market entry success of spin-offs from KIBS firms. This is in accordance with the research of Delgado, Porter and Stern (2010). We find also that the regional cluster contributes to the early market entry success of the KIBS based spin-off, in the form of contribution of employment and funding to young spin-offs in regional industries. However, proximity to clusters was shown to be an important variable for oil and gas as well as the maritime sector, but of less importance for ICT sector. This can be explained by the dynamics of the industry collaboration. The maritime sector in Norway often functions as a supplier for the oil and gas industry, and proximity to a cluster supplier in these sectors provides a qualified working force and tacit knowledge transfer. At the same time, ICT, which is also often a supportive service for oil and gas, a dominant industry in Norway, still has other specific features. In the ICT sector, knowledge is often codified and easily transferable between partners, so that geographic proximity is a less important issue. Being close to oil and gas and maritime clusters would not provide ICT firms with a better workforce or tacit knowledge. At the same time, proximity to clusters in related industries might provide capital investments.

Finally, parent company strategy is of high importance both for establishment and early market entry success of spin-offs in the maritime and oil and gas sectors. The entry barriers are high as huge financial investments are connected with market entry in these sectors. Therefore, gaining financial support from the mother company in the form of ownership, investment and other support, such as co-location and sharing of overheads, is of higher importance in these sectors. In the ICT sector, entry barriers are lower and while the mother company's strategy is of importance, it is not a predominant factor in successful market entry of spin-offs in this sector.

The results also have some political implications. The formation of new enterprises is important for the development of a healthy economy. Spin-offs have a higher survival rates as ordinary start-ups, as they gain the knowledge and support both from parent companies and other actors in the regional cluster. This study provides some evidence for policy makers to move from supporting new firms in strategic activities, to design instruments or mechanisms that favour selected firms with the potential to gestate a higher number of more successful spin-offs. These specific firms could be parent firms with a strategic approach to spin-offs, evidenced by having internal policies encouraging innovations and spin-offs and organisational set-up and support activities for innovation and spin-off processes.

These companies have both a motivation to create spin-offs and knowledge about how to access the different kinds of resources a spin-off need.

This study also provides some evidence with regard to what sectors policy makers should support to promote establishment of corporate spin-offs. Policy makers should design instruments supporting companies in sectors characterised by high technological opportunity conditions and a variety of technological approaches. This study shows that KIBS companies use spin-offs to realise the potential of new innovative products and services beyond the scope of the company's core business, but also to realise the potential of existent or incrementally revised products or services into new submarkets abroad.

Another finding provided by this study is the effect the regional cluster has on early market entry success and subsequent chances of success for KIBS-based spin-offs. Policy makers should design instruments or mechanisms that create meeting places, housing in the form of incubators or other forms of connections among KIBS parent firms, KIBS spin-off entrepreneurs, regional investors and suppliers of competence.

Note

- 1 Reference from an executive summary of an expert workshop arranged by IPTS to further understand spin-offs and with a view to the preparation of the Sixth RTD Framework Programme and the European Innovation policy.

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AQ 3

Author Queries

- AQ 1: please verify levels and numberings of headings
- AQ 2: Kindly provide Table 5.1 citation
- AQ 3: is this reference complete?