

# Spin-in and spin-out for growth – On the acquisition and divestiture of high-tech firms

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Received 8 August 2020  
Revised 21 December 2020  
Accepted 4 January 2021

## Abstract

**Purpose** – This paper describes and discusses company spin-ins and spin-outs as a means to understand company growth in a dynamic context. The following question is asked: How can growth be understood in spin-ins and spin-outs of innovative firms? The paper suggests return on capabilities as a measure to understand growth in an open innovation context.

**Design/methodology/approach** – The empirical part of the paper consists of a single case study. Data was captured through interviews and secondary data sources.

**Findings** – The paper points to that resources alone do not explain strategic decisions by a company and how spin-ins and spin-outs result from the need for capabilities, changes in business foci and temporary solutions to deal with overcapacities or lack of alternatives.

**Originality/value** – The paper contributes to research by discussing contemporary issues in strategy and innovation and relating them to the resource-based view and the growth of the firm. Spin-outs, and acquisitions and divestitures as interlinked events have rarely been focused on in the literature, while they remain frequent phenomena in practice.

**Keywords** Acquisition, Case study, Growth, Open innovation, Spin-in, Spin-out

**Paper type** Research paper

## Introduction

The literature on corporate growth tends to focus on it as a means to reach competitive advantage on global levels (Furlan and Grandinetti, 2011) and primarily concerns the company's own resources to achieve such growth (Collis and Montgomery, 1995). In a business practice increasingly marked by collaborations and open strategies of different sorts (Oerlemans *et al.*, 2000; Chesbrough, 2004; Whittington *et al.*, 2011), such a focus may not capture circumstances central for the strategic management of firms in the best of ways. Growth is frequently described as an increase in company size but could also be defined as the adding of relationships or capabilities (Furlan and Grandinetti, 2011).

This paper suggests that growth should be understood as the increase in return on those (shifting) capabilities central to the firm, as this would indicate an efficient use of competences on the societal level, and as the accumulation of resources *per se* does not guarantee a sound economic growth. Through talking about the *return on capabilities*, growth will not only concern the adding of resources but also their divestiture so as to comply with a dynamic context, the reliance on collaboration partners for complementary capabilities and open innovation as an important motor for development. In the literature on open innovation, the innovation funnel (Chesbrough, 2006) is often referenced to depict how innovations are spun



in and out of a company (inbound and outbound innovations). Such processes may take different forms (Dahlander and Gann, 2010), but undoubtedly include acquisitions and divestitures of companies. Rather than seeing acquisitions and divestitures as separate events (Shi and Prescott, 2011), they could be captured as continuous inflows and outflows from the company in its attempts to reach growth return and adjust capabilities to circumstances at hand.

This paper describes and discusses company spin-ins and spin-outs as a means to understand company growth in a dynamic context. The paper thereby takes a step to understand growth in relation to open innovation and theorise on such innovations. The paper specifically focuses on the spin-in and spin-out of innovative firms and relates them to the innovation funnel (Chesbrough, 2006) while also acknowledging the context of the firm (Maillat *et al.*, 1993). The following question is asked: *How can growth be understood in spin-ins and spin-outs of innovative firms?* Theoretically, the paper departs from Penrose's (1959) seminal work on growth and its similarities and differences to the resource-based view of the firm (Wernerfelt, 1984; Barney, 1991).

The paper contributes to research on contemporary issues in strategy and innovation (Whittington *et al.*, 2011). West and Bogers (2013), and others, point at how the spin-in of ideas tend to be the focus in the open innovation literature, leaving spin-out seemingly unexplored. Theories in the area of open innovation remain limited (Vanhaverbeke and Cloodt, 2014; Randhawa *et al.*, 2016; Bogers *et al.*, 2017; Gao *et al.*, 2020), and there is a defined research gap in how open innovation and acquisitions are rarely considered simultaneously in research (Öberg, 2016; Dezi *et al.*, 2018). Acquisitions (and possibly divestitures) are, for the most part, studied as isolated events and not seen as series of activities in the strategy literature (see Capron *et al.*, 2001; Shi and Prescott, 2011 as exceptions). The idea that acquisitions and divestitures, in terms of spin-ins and spin-outs are interlinked and dependent on a changing context provides new insights to strategic management and growth.

The rest of the paper is structured as follows: After this introduction, the theoretical background and framework are presented. This consists of descriptions of the spinning in and out of firms for the sake of innovations and a brief description of the resource-based view of the firm. These parts are then integrated so as to create a preliminary idea for how spin-ins and spin-outs can be related to growth and what research gaps are present. The method is presented thereafter. The empirical part of the paper consists of a single case study described to illustrate the spin-in and spin-out of companies. The case is described and analysed. The paper ends with conclusions and a discussion on findings and their practical and theoretical implications.

## Theoretical background and framing

### *The innovation funnel*

Innovation has been considered important for growth on both a company and a societal level (Grossman and Helpman, 1994; Audretsch, 2004). With a focus on intra-organisational innovation, the growth would be organic. The open innovation paradigm (Chesbrough, 2003, 2012; Shi and Zhang, 2018) describes how innovations are developed between parties. The general idea is that the company would advance its technology by including other parties (Chesbrough *et al.*, 2006) on external and internal levels. Such thoughts are not new to innovation research or practice (e.g. von Hippel, 1977), but open innovation has undoubtedly brought attention to the phenomenon.

Research on open innovation (Chesbrough, 2003) addresses the innovation process as a funnel with an inflow of external ideas (inbound, spin-in) and an outflow of ideas (outbound, spin-out) (Chesbrough, 2006). In a literature review on open innovation, West and Bogers (2013) summarise research as consisting of these two alternatives, while Enkel *et al.* (2009)

add coupled innovation processes. This last alternative means shared innovation processes between organisations and would include alliance-like formations or innovation nets (Walsh *et al.*, 1995; Oerlemans *et al.*, 2000; Swan and Scarbrough, 2005). If such formations remain intact over time, innovation processes could be seen as internalised although occurring on an inter-organisational level (Dahlander and Gann, 2010). The spin-in and spin-out of ideas could equally occur from more or less stable connections (i.e., from/to the same party or changing for each idea) (cf. Gadde and Mattsson, 1987). Thus, there would be a difference in the openness based on relational or transactional exchanges of ideas, affected by but also impacting the definition of the firm's context (e.g. Lüthi *et al.*, 2011).

When looking at the two main processes according to the innovation funnel, *inbound innovation* refers to external sources of innovation that become internalised into the company. The innovations could be reached from suppliers, customers, competitors, collaboration partners, universities (Gassmann *et al.*, 2006; Fabrizio, 2009; Lim *et al.*, 2010; Schiele, 2010) or on a transactional basis with a party that the company has not previously interacted with. Ways to reach such innovations include contracting, licensing, or buying innovations, knowledge or companies (Ceccagnoli *et al.*, 2010; Graebner *et al.*, 2010). Spin-ins include any type of acquisition (knowledge acquisition, resource acquisition, company acquisition), and in this paper focus on acquisitions of *firms* (cf. Desyllas and Hughes, 2008). More specifically, this paper concerns acquisitions conducted to reach high-tech innovations or knowledge, while also addressing the integration of the firm, from non-integration to complete absorption (Haspeslagh and Jemison, 1991; Christensen *et al.*, 2005; Oh and Johnston, 2020; Wei and Clegg, 2020). The literature on acquisitions of innovative firms is frequent to address the difficulties of taking over such firms and maintaining their innovativeness (Lengnick-Hall, 1992; Puranam and Srikanth, 2007; Lamont *et al.*, 2019; Cefis *et al.*, 2020). Indeed, it is even pointed to the difficulties of reaping benefits from innovations already developed at the time of the acquisition (Chaudhuri and Tabrizi, 1999). Less often, such acquisitions have been elaborated on as part of continuous growth processes, including both the spin-in and spin-out of innovative firms.

*Outbound innovation* describes different forms of licensing or the selling of ideas to external parties. This includes out-licensing, patent or intellectual property sales, outsourcing alliances, and spinning out technology, ideas or companies (Öberg and Alexander, 2019). It further includes providing knowledge without turning it into a (financial) transaction (Dahlander and Gann, 2010; Bessant *et al.*, 2012). Spin-out as defined and focused on in this paper refers to separate companies being created, either by the divesting party or by those individuals taking over the idea from a company, which might include staff previously working on the idea (management buy-out or similar) (Rubera and Tellis, 2014; Amiri *et al.*, 2020). The literature is somewhat scant on spin-outs from the divesting party's point of view (West and Bogers, 2013), and at the most focuses on the financial returns (Chemmanur and Yan, 2004), while less so on the implementation of divestitures as a strategy (Moschieri, 2011; Moschieri and Mair, 2012). Festel (2014) refers to how spin-outs create flexibility and improve internal R&D performance, and Moschieri and Mair (2011) point to how a firm may interact with divested firms and thereby continue to obtain advantages from the divested parts. In this paper, spin-outs refer to the transaction, its implementation and possible continuous interaction with the spun-off company.

For a firm acting in "the open", spin-ins and spin-outs would be part of ongoing ways to adjust portfolios of ideas, reach and change resources and create and recreate the company's resource boundaries. Rather than seeing spin-ins and spin-outs as isolated events, they would be part of an open innovation orientation of the firm. The dynamic context may require a company to refocus its capabilities, and spin-ins and spin-outs could be depicted as means to do so. In research focusing specifically on the context, expressed as the *milieu innovateur* (Aydalot, 1986; Maillat *et al.*, 1993), the context has been defined as a time-framed and

geographical space, including resources, interaction partners and infrastructures but also norms and institutions setting enabling and constraining boundaries (Oerlemans *et al.*, 2000; Bevilacqua and Malone, 2018). Interdependence plays a central role in such milieus, meaning that the firm is affected by the context while being part of it. Such interdependence can create a sense of homogeneity as resources converge, are developed together or based on how a focal firm may attract parties similar to it to a region. For development, a firm may, therefore, need to reach beyond geographical boundaries and networks (Lüthi *et al.*, 2011). Relating this to the inbound, outbound and coupled open innovation, the search beyond present networks would be connected with the inbound (and outbound) open innovation, and hence spin-ins (and spin-outs), while coupled open innovation would be more locally connected (Gassmann and Enkel, 2004; Crevoisier, 2014). This would have to do with how the spin-ins and spin-outs – which are the focus of this paper – would be about acquiring something new to add to the portfolio or divesting something not fitting with it and suggests how spin-ins and spin-outs could be transactional, while coupled open innovations would per definition be more relational (Gadde and Mattsson, 1987). The change of ownership would be less important if firms are part of relational, often local networks, while the resource homogeneity or constraints of such a network would be reasons to exactly look beyond it (Capello, 1999). With that said, the firm's impact on the milieu would differ, meaning that its position in a network would form its abilities within it but also its potential to reach beyond it (Ratti *et al.*, 2015), while the dynamics of the context would put different requirements on the firm's needs to reach beyond it.

#### *Growth and the resource-based view of the firm*

Ideas on growth, and then specifically the work of Penrose (1959), has been closely connected to the resource-based view of the firm (Rugman and Verbeke, 2002). The resource-based view portrays how companies hold resources that are combined to achieve a competitive forefront for the company (Wernerfelt, 1984; Barney, 1991; Collis and Montgomery, 1995). Penrose (1959) describes this as how the firm is a collection of fungible resources. Resources could be divided into physical capital resources, human capital resources and organisational capital resources (Barney, 1991). They are described as valuable, rare, inimitable and non-substitutable. The company is understood through its resources and success vis-à-vis others, meaning that its resources or resource combinations are unique and its return on assets is above average compared to competing (and potentially competing) firms. Explained simply, it is not the resources *per se*, but how they are used that decides the success of the company (something which is even more emphasised when capabilities are referenced, see below). To reach sustainable competitive advantages (cf. Grant, 1991; Porter, 1998), Barney (1991) refers to their immobility and heterogeneity. Eisenhardt and Martin (2000) partly criticise these latter aspects by pointing to the need for resource dynamics.

Dynamic capabilities (cf. Teece *et al.*, 1997) indicate the need for product development (Brown and Eisenhardt, 1995), alliance creations and decisions on strategic levels to change resources, based on how the company operates in a dynamic context. Innovation plays an important role in achieving an above-average return, and the firm, and competences and capabilities, construct the means to reach such returns. This would be the case regardless of if the context is described as stable or changing, but the dynamic context would emphasise continuous innovations and also stress the survival of the firm rather than its competitive advantage (Teece *et al.*, 1997). Literature that talks about capabilities rather than resources (e.g. Amit and Schoemaker, 1993; Makadok, 2003) points to how resources are the assets of the firm, while capabilities describe the company's ability to use these assets. The ability to adapt to and take on new ideas is described as absorptive capacities (Cohen and Levinthal, 1990) and emphasises the company's skills to recognise opportunities in their context, assimilate and apply them. Unlike the resource-based view of the firm, this stresses the firm's

need to find resources in its context to build on (cf. Penrose, 1959, on external and internal resources) but also how those resources to be added would be linked to present ones, meaning that there is a link between the present and the future in terms of resources and their application. Zhou and Wu (2010) problematise this by talking about how companies may be stuck in present thought patterns and exploit rather than explore new opportunities. Strategic flexibility denotes continuous rethinking and a firm's ability to change and/or diversify its strategy.

In applying the resource-based view, Prahalad and Hamel (1990) refer to the core competences of an organisation. Petts (1997) defines core competences as "a unique combination of technologies, knowledge and skills that are possessed by one company in a market", and that is used to create value for customers. As attributes, core competences carry many resemblances with the resources as described in the resource-based view (Barney, 1991): they are complex, invisible, inimitable, durable, appropriate, non-substitutable and superior (Petts, 1997). However, the emphasis is even more on the use of resources (or competences) (cf. Öberg, 2012). Additionally, competences underline the human capital type of resources (cf. Penrose, 1959, on managerial resources).

How does this all relate to growth? The growth of firms has often been described in a competitive environment, where growth can be seen as increasing the assets, revenues, number of employees, or, for that matter, the market share vis-à-vis the competitors. Furlan and Grandinetti (2011) point to size as the central measure for growth. The competitive context is similar to the description in the resource-based view of the firm. It implies that companies compete and measure their performance towards one another. Penrose (1959) posits a different meaning and relates growth to an optimum of the firm, thus not making it as competitively oriented as the resource-based view prescribes. Moving into dynamic capabilities, few clues are given about how dynamic capabilities relate to growth. But, it is perhaps best expressed in the focus on survival rather than competitive advantage (cf. Teece *et al.*, 1997). Growth would here be second to abilities to adapt to new circumstances and develop based on new ideas. Implicitly, such adjustments (see also strategic flexibility) would mean divesting parts not profitable or in line with new developments. As for absorptive capacities, and while these capacities in line with dynamic capabilities and strategic flexibility relate the company strongly to its context (e.g. Capello, 1999; Oerlemans *et al.*, 2000), the absorptive capacities put more focus on growing the firm than reversibly adjusting it by including divestitures.

Growth as an increase in the size of the firm to ideally reach a global competitive advantage (Furlan and Grandinetti, 2011) misses out on several items. Furlan and Grandinetti (2011) discuss growth as including capabilities and relationships of the firm, and thereby "open up" the company to also include growth through interaction with others (cf. Aydalot, 1986). However, the sheer growth in assets, capabilities or relationships is misleading in the sense that it is not the company's ability to accumulate such items that is important; it is how well the firm does in creating value through them. Differently expressed, it is a matter of creating return and doing so through using competences (or assets, capabilities and relationships) in a wise way (Öberg, 2012). Efficiency trends would exclude assets and the number of employees as primary measures and rather refer to return on assets or related. This thought is not new, and the resource-based view of the firm targets growth as returns above competitors' returns (Barney, 1991), while Penrose (1959) thus points to the optimal return based on a best combination of resources.

We could thus establish that growth may be expressed as a return in relation to the resources of the firm (Penrose, 1959). Resources could then be expanded to include not only assets but also capabilities and relationships (Furlan and Grandinetti, 2011). It is also noted in the literature how firms need to (continuously) adapt to their context, and that the context could be seen as competitive, but also as enabling those further developments through

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external sourcing and its integration to the firm (Aydalot, 1986; Ratti *et al.*, 2015). How can this help us to understand the spin-ins and spin-outs of innovative firms?

*Growth and the spinning-in and spinning-out of firms*

In light of open innovation, Vanhaverbeke and Cloodt (2014) discuss whether and how a resource-based view could be applied. Two items appear that contrast the open innovation idea from the resource-based view of the firm. First, external parties may function as collaboration partners, sources of ideas or as a combination of collaboration partners and competitors (Bengtsson and Kock, 2000). They are thus not merely competitors (cf. Oerlemans *et al.*, 2000). Second, growth could be reached through the adding of resources (or competences) from such external parties. Vanhaverbeke and Cloodt (2014) criticise the resource-based view for only focusing on assets owned by the firm and suggest its extension to incorporate also external resources and internal resources developed through links to others. Unlike the resource-based view, Penrose (1959) puts less focus on return compared to competitors and means that a firm should benchmark vs optimum rather than other firms. Furthermore, Penrose (1959) emphasises the inflow of resources more explicitly. She points to how firms need to balance internal and external resources in a particular sequence, thus pointing to how resources may well be external to the firm yet impact its development. In all, this points to how Penrose's (1959) description may fit better with the open innovation idea than the resource-based view.

But, looking at this from the innovation funnel idea, this suggests including the spinning-in of ideas and ideas developed through collaborative efforts (cf. Enkel *et al.*, 2009). The spinning out of ideas could not as easily be traced in this description, while it might be as important to divest items not contributing to the company's development as investing in such items that do. Dynamic capabilities and strategic flexibility (Teece *et al.*, 1997; Zhou and Wu, 2010) might provide partial help here, but also in such work, the focus tends to be more on reaching ideas and integrating them than on making and implementing divestiture decisions. Furthermore, and as discussed above, the relation to growth is not as explicit in that literature.

As soon as growth is understood as a return on assets, it becomes implicit that those assets that do not contribute positively to the return should be divested (cf. Amiri *et al.*, 2020). Here, the return would rise not only because revenues increase (or costs decrease) but also based on how the assets decrease. This should not be misunderstood as the positive of assets' market prices falling, nor should it be understood as massively outsourcing activities (as has often been the trend to increase return on assets or the equity of firms). Rather, it refers to how a firm makes its strategic decisions in the interplay between competences held by the firm and changes to the context. It also refers to how the company makes use of ideas developed within the firm that are not in line with its (current) business focus and divests them. It includes making spin-outs part of the business and spin-ins a means to add to business directions decided upon.

Spinning-in firms means acquiring companies and integrating them. Spinning out companies includes disconnecting them, selling them and deciding how to (possibly) continue interacting with them. In relation to resources, Barney (1991) refers to their immobility, which means that they cannot easily be transferred through, for instance, an acquisition. Karim and Mitchell (2004) describe how acquisitions lead to the configuration of resources. And in all, most literature on acquisitions of innovative firms seems to suggest that it is difficult to profit from such resources acquired. This refers both to innovations already developed and, with an increased amount of difficulty, to the capabilities to innovate: the innovativeness (cf. Lengnick-Hall, 1992; Chaudhuri and Tabrizi, 1999; Puranam and Srikanth, 2007). However, Ceccagnoli *et al.* (2010) point to how external sourcing can improve internal capabilities and



also the opposite could be advocated: divestiture may make remaining resources more effective.

The innovation funnel, whose original purpose was to describe open innovation (Chesbrough *et al.*, 2006), could, as suggested here, hence be used to elaborate on company growth when such growth is defined as increasing return on capabilities. In the dynamic context, the spin-in and spin-out of firms allow for adjustments to change. Figure 1 depicts items central to the discussion in this paper.

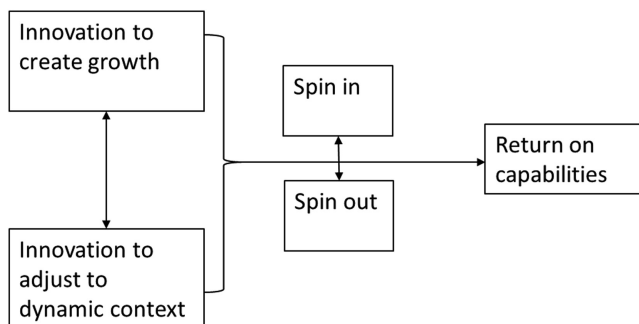
Before turning to discuss company spin-ins and spin-outs as means to understand company growth in a dynamic context and relate it to Penrose (1959) and the resource-based view, the spin-in and spin-out of innovative firms are explored using a case study.

### Research design

The empirical part of this paper is based on case study research (Dul and Hak, 2008). The case-study methodology allows for the capturing of activities in their context and means that an explorative approach can be taken to build links between various activities (Miles and Huberman, 1984). The choice of the particular case for this paper, High-Tech Venture, was based on how it demonstrates a company spinning in and out ideas and how the company holds a high-tech profile, working with front-edge technological solutions. The firm has some 10,000 employees worldwide and a turnover of a few milliard euros, where the case study follows the firm since its foundation. In the paper, the company's real name has been replaced, and innovations are partly changed or only described in a more general manner due to the case's sensitivity.

The data collection was based on semi-structured interviews, complemented with secondary data analyses. Interviewees held such positions as managing director and R&D and sales managers, as well as consisted of representatives of High-Tech Venture and companies spun-in or out of the company. The interviews covered, without being limited to, the following areas: contextual changes, strategies for choosing ideas to spin-in/spin-out, the organising of work, consequences of chosen strategies for the companies spun in or out and the focal firm and what happened before and since decisions were taken. The secondary data consisted of annual reports and newspaper items and aimed to validate interview data, detail on financial performances and minimise effects of interviews being made in retrospective through describing activities at their time of occurrence (Huber and Power, 1985).

The analysis procedure departed from interview transcripts or notes from interviews. These were manually coded looking for descriptions of strategies, their reasons and consequences and how resources were affected in each decision. This was first done for the



**Figure 1.**  
Outline of central items  
in the paper

individual interviews and secondary sources, to thereafter be compared to ensure a coherent story. A case draft was produced at that point and checked with interviewees for accuracy.

In a final step of coding (Pratt, 2009), individual decisions were grouped into whether they dealt with the spinning-in or spinning-out of ideas, and resource and competence consequences of each such decision were compared to look for intragroup (spin-in or spin-out, respectively) similarities, intergroup (spin-in vs spin-out) differences and explanations to variances on the intra- and intergroup levels. This part of the analysis also included matching results with previous research to ensure contribution and deepen theoretical development (Dubois and Gadde, 2002). Specifically, case findings were compared with Penrose's (1959) description of the growth of the firm and the resource-based view.

### **The case of High-Tech Venture**

High-Tech Venture was originally founded in the 1930s. It started off based on an industrial and governmental initiative to secure the supply of military equipment on a national level. Focus came early to be military aircraft, which brought innovation and new technology to the firm's forefront. Only being two years of age, High-Tech Venture made its first acquisition and moved to the city of the acquired party. Innovations during the early years included radical ideas on the construction of aircraft (propellers and similar).

Ten years passed its foundation, High-Tech Venture started to create solutions for civil businesses based on its technology. At that point in time, they were kept as part of the company, although handled in separate divisions and located elsewhere in the country. The development of military aircraft continued in parallel with new solutions and new aircraft models were launched during the 1940s to the 1960s. During this time, the company increasingly became a motor for advanced technological development in the town of its main location, enabling the growth of the city and it being increasingly populated by engineers. Meanwhile, sourcing of ideas was not restricted to the local area, and units for developments were placed at different locations throughout the country, partly based on acquisitions being made there.

Entirely new solutions were sought to integrate electronics into aircraft and add military equipment (weapon systems, missiles, radar) to the company's product portfolio through technological advancements. The time it took to develop new aircraft models made the forecasting of technological advancement important. Solutions that were not present from the start were built into early sketches hoping that they would have been invented when the aircraft were ready for production. This also put pressure on developing new ideas and stressed the technological skills of staff.

In the late 1960s, High-Tech Venture acquired another aircraft company, which brought a new aircraft model to the company. The acquired party continued as a separate unit and manufactured that aircraft model. The missile and radar business continued to develop, with additional new technological solutions, including 3D. The company also developed its own IT business, based on how such ideas could not be received from external parties at the time. These solutions were to be part of the aircraft. While continuing to operate at various locations, the town where High-Tech Venture was headquartered increasingly turned into a technological hub, and an institute of engineers was placed there, later becoming a university. This helped to develop the city as such and meant that High-Tech Venture could increasingly recruit staff locally, while it was no longer the only motor for development in the area.

The development of aircraft models became less and less frequent as technology increased in advancements, and based on governmental outlooks for the need for defence material. The last military aircraft project was started in the late 1970s and was soon followed by a civil aircraft project. Its reason was that the new military aircraft would take several years to develop and hence, the production capacity needed to find a use. Furthermore, with the



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knowledge from developing advanced technological military aircraft, such knowledge could easily be used in the less-advanced civil aircraft. A second civil aircraft followed while the military aircraft project started in the late 1970s had still to be launched. The IT business started earlier was divested as external parties were considered more skilled to develop such solutions.

Entering into the 1990s, High-Tech Venture partly spun-out the civil business it had created in the 1940s. This business was later referred to as a major diversification and spin-out of business. Weapon simulators were developed as were surveillance systems, which meant that High-Tech Venture continued to work to advance and create entirely new technology, while less advanced businesses were seen as non-central, potential spin-out candidates. Some new acquisitions were made to reach into computerised solutions. These were nationally and sometimes internationally sourced, but the development of the city and its headquarters with the institute of engineers and university start-ups developed from there, also allowed local sourcing of new firms. One such example was the acquisition of Control. Control was an IT company that had developed a system for secure transactions between parties. Its application related to the bank sector, but High-Tech Venture saw the potential to use similar concepts in defence solutions. The company was treated as a separate unit within High-Tech Venture, while staffed by people from High-Tech Venture. Resources were given to the company to develop its solution. Control, but also other IT companies acquired at the time, was largely kept separate while provided with financial resources to develop their solutions into completion. High-Tech Venture was less successful in developing their businesses, and these firms were divested a few years later. Often, the managers from High-Tech Venture followed these companies as they were spun-off. The civil aircraft business was also divested due to keen competition in the targeted sector, and as the business of High-Tech Venture was increasingly streamlined.

In 2000s, High-Tech Venture acquired a major defence company with complementary solutions to High-Tech Venture. This was a move into new concepts for defence, previously having focused on weapons and military aircraft only. As 9/11 happened in 2001, understandings were that defence needed to be redefined, both in terms of who was the threat and in terms of what was the target and how it could be defended. Safety solutions became a priority while the company continued to develop weapon and surveillance systems.

A number of acquisitions were performed, often related to high-technology diversification or new technology for present ideas. These acquisitions included new capabilities for radar and surveillance systems, but also different forms of safety solutions with less of a high-technological profile. These acquisitions were more rarely local than those of the 1990s. To handle these acquisitions, a business unit was created whose task was to deal with spin-ins and spin-outs. The spin-outs increasingly included how ideas developed by employees, but not with a solution fit to present products, would be divested. The business unit also handled the incubation of internally developed ideas that were in phases too early to be part of the regular business of High-Tech Venture.

Spin-ins increasingly including safety solutions meant that acquisitions targeted new ways of defining defence. Acquired firms were normally kept as part of the spin-in/spin-out business unit during a transition time. The transition time included further developments of ideas, adjustments to encompass ideas into the present business of High-Tech Venture and the disbanding of previous owners. Original owners of spun-in companies usually remained as minority owners for a few years since they were considered important linkages to the knowledge of the acquired firm. During this transition time, the firms would be relocated to the city of the headquarters if they were to be integrated with the main operations later on. Original owners were eventually bought out as the spin-in company became part of High-Tech Venture's ordinary business. To exemplify the spin-ins, High-Tech Venture acquired the majority shares of Safety. This company was acquired in line with High-Tech Venture's

refocus on safety solutions. The company had been developed in close collaboration with potential users in the safety sector in another part of the country. It was spotted as an interesting idea by High-Tech Venture scouts that looked for safety solutions. Safety had developed software to control various safety organisations (the coordination of police, ambulances, etc.), and High-Tech Venture wanted to integrate it into a portfolio of different safety solutions. As the company was acquired, its founders remained minority owners during a transition time. The major ownership was taken over by the spin-in/spin-out business unit of High-Tech Venture, and the spin-in remained a separate company during this time. In the transition, with the eventual intention to make Safety part of High-Tech Venture's main business, some routine was implemented to Safety. In collaborations among the original owners, the business unit and the part of High-Tech Venture where Safety was to be integrated, works were performed to transfer knowledge on solutions and contacts with the users. After three years of sequential transition, the original owners were finally bought out, and Safety was also increasingly transferred away from the spin-in/spin-out business unit.

Spin-outs were based on technologies or their applications that employees of High-Tech Venture had figured out while working on solutions with a fit to High-Tech Venture's product portfolio. They were often based on advanced technology as a consequence, but with an application that did not fit with High-Tech Venture's main business. Recent spin-outs include solutions for energy production, nautical solutions of different sorts and advanced software. As long as they are not defence solutions, they are sold nationally or internationally. Prior to the spin-out, the spin-in/spin-out business unit conducts a market analysis to find out what demand exists for the idea. The business unit remains a partial owner during a transition time and thereby strengthens the spun-off firm with resources or knowledge. Also, staff who developed the idea tend to follow it into the unit for a transition time or to become future owners. External managers are usually allocated quite promptly to the spin-out company, and the original business of High-Tech Venture merely supports it through consultancy services related to the technology. At times, ideas that the business unit spins out are ideas to which High-Tech Venture later could become a customer. Ideas could also be bundled into spin-outs to thereby give them a temporary life in the wait for further spin-outs from the bundled-idea company. One example of a recent spin-out is Energy. This company resulted from a specific technology related to defence solutions (radar-related technology) but was to be used to develop energy in a new way. In addition to being classified as a sustainable energy source, it enabled energy production under conditions where it was usually not possible to produce energy. As the idea was seen to have an interesting application, the business unit dealing with spin-outs connected with those individuals having developed the idea. A consortium was created to continue its development. The business unit remained a partial owner and was complemented with managers of the new business as owners and a third party: a university-connected incubator. The incubator has partly pushed the spin-out into contacting venture firms and related for support.

### **Analysis**

Table 1 summarises the case study in terms of its spin-ins and spin-outs.

Looking at the spin-ins and spin-outs in terms of their reasons, these are both related to needs for capabilities and changes in business foci, partly or fully as the consequence of changes in the context. They also relate to temporary ideas to keep staff occupied (hence, the spin-out is anticipated already as the spin-in occurs) and how internal investment decisions could not be sourced elsewhere but later were exchanged for external solutions. Spin-ins were conducted to reach capabilities or solutions in line with current businesses or to refocus the business. The former is exemplified with the early acquisitions of aircraft companies and defence, radar and surveillance companies, the latter with the acquisitions of safety companies.

**Table 1.**  
Spin-ins and spin-outs in the case study

Decade	Event	Spin-in/ spin-out	Reason
1930s	Acquisition of aircraft company	Spin-in	Reach capabilities on aircraft construction
1960s	Acquisition of aircraft company	Spin-in	Separate aircraft model
1980s	Divestiture of IT-business	Spin-out	External parties better at developing requested solutions (IT never the core of High-Tech Venture)
1990s	Divestiture of civil vehicle division started in the 1940s	Spin-out	Technological application that was later not in the core of the company's development
1990s	Acquisitions of IT-companies	Spin-in	To introduce new technology to main business
2000s	Divestiture of IT-companies	Spin-out	To reshape the company to focus on its core business
2000s	Divestiture of civil aircraft business	Spin-out	Streamlining of business and readiness of military project
2010s	Acquisition of defence company	Spin-in	Broaden/refocus defence offering
2010s	Acquisitions for radar and surveillance technology	Spin-in	Reach new technological capabilities
2010s	Acquisitions of safety companies	Spin-in	Reach solutions (less high-tech) in new area of defence
2010s	High-tech solutions developed by staff (e.g. energy and nautical solutions)	Spin-out	Ideas that did not create a fit with the present business focus

Spin-outs were conducted to divest ideas developed by staff that were not in line with the company's core business, but also to refocus the overall company. Ideas that initially were developed to support or be part of the core business could be spun-out as the company focus shifted. Additionally, ideas were developed internally based on the lack of companies able to provide High-Tech Venture with such solutions, but without being part of its core business, as was the case with the early IT solutions. As the computer development accelerated, High-Tech Venture could eventually source such solutions from external parties, and these also increased in their advancements compared to High-Tech Venture's own developments in the area. The computer business was spun-off as a consequence.

Thus, while focusing on spin-ins and spin-outs, these might well include the same business, where timing, abilities to reach resources from external parties, and changes to the definition of the core business decided what was spun-in, what was spun-out and what became a temporal investment where the spin-in was later followed by the spin-out of a similar unit. In the early years of the company, spin-ins and spin-outs were less frequent, and the time lapse between a possible spin-in and its later spin-out was quite long. As the company developed, it created a specific business unit to handle spin-ins and spin-outs, increased their frequency and also paid more consideration to how to integrate spin-ins (through a bounding and dis-bounding process) and spin-outs (through the separation, staffing of the spin-out and possible continuous partial ownership). As for the geographical context (e.g. [Aydalot, 1986](#); [Capello, 1999](#); [Oerlemans et al., 2000](#); [Ratti et al., 2015](#)), this shifted over the years, both in terms of the spin-ins and spin-outs. The early years entailed a lack of local alternatives, while after the foundation of the institute of engineers and university in the town of its main location, the spin-in of high-tech solutions was the most intensive. This thereafter declined, as the less technologically advanced solutions to meet the redefinition of defence of the 2000s were not the primary focus of the home town that had developed in tandem with the firm. Meanwhile, the spin-outs did not have a similar local foundation at any point in time, partly since they happened as a consequence of not fitting with the core business of High-Tech Venture and therefore had no reason to remain local. As for the

company's context as such – its suppliers, customers, collaboration partners – this did not shift in the same way as the context for spin-ins and spin-outs. This suggests how the firm tried to find ideas beyond present collaborations and operated in transactional manners with its spin-ins and spin-outs. Meanwhile, both contexts were affected by the military focus of operations, constraining collaboration and sourcing alternatives while being heavily embedded in the structure of world-wide events such as 9/11.

How can the spin-ins and spin-outs be understood in terms of the resources and growth of the firm? Certainly, the spin-in of companies would contribute additional resources to the firm, and thus grow it size-wise (Furlan and Grandinetti, 2011). In how innovative firms were acquired, they could also be seen as important motors for the growth of the existing business. Furthermore, and based on how the spin-ins were performed to reach different types of capabilities, they would increase the capabilities of the firm (Furlan and Grandinetti, 2011). But in how they might shift the firm's capabilities, they did not really describe the business as developing from the firm's resources (cf. Barney, 1991). Rather, they describe how the company changed resources (cf. Brown and Eisenhardt, 1995; Teece *et al.*, 1997). The changes of resources were, in turn, the result of changes in the context (defined as the market), ideas on how to use present resources in the wait for their "optimal" use (e.g. when civil aircraft were developed to keep staff occupied during the long development process for military aircraft), and based on internal decisions. What was specific for when the company shifted its focus was how this did not connect deeply with the capabilities of the firm (the staff's technological skills), but rather with how the company saw its market changing. This could best be described in terms of the strategic flexibility of the company (cf. Zhou and Wu, 2010) and indicates how the company, through its combination of spin-ins and spin-outs, was able to disconnect from present thought patterns.

In terms of capabilities, the spin-outs connected much more to these than the spin-ins. Here, it was the technological skills of the staff that resulted in the spin-outs. The spin-outs were then conducted as the solutions developed did not fit the business of the company (at the time). So, these spin-outs could be understood from a resource-based view on the firm, but the view would not explain why the ideas were not kept by the company, not least since they were new and hence would create a competitive advantage (based on their uniqueness, etc.) compared to competitors and were sourced through what could be seen as the core competence of the company: its technological capabilities. The other spin-outs, those conducted as they had been seen as temporal to the company, could be easier understood that way. They were kept by the company for a limited time to either use resources that could not be used elsewhere at the time or to develop ideas that could not be sourced from outside (without being at the heart of the business). Hence, they could be seen as non-core businesses (cf. Prahalad and Hamel, 1990; Petts, 1997).

Taken together, though, the development of High-Tech Venture cannot be explained by resources alone but also needs to be understood in how it acts based on internal decisions to refocus the business and based on contextual changes. And this is not related to other companies competing with the company but based on how changes occurred that affected customers and/or changed their business direction (or where High-Tech Venture presumed such a change). Thus, the development could best be explained as a balance between capabilities and contextual changes, where the latter should not be mistaken for copying strategies, but as the company grasping or creating new opportunities. And, as the need of the company changed, so did its definition of the context as the *milieu innovateur* (Aydalot, 1986) as a geographical space. The firm was most in tandem with its local context as the context had adopted to the firm, while been able to build new firms based on such capabilities and before the firm's needs changed as the result of the redefinition of defence.

As discussed in the theory section, growth connected to spin-ins and spin-outs would relate to increased return, rather than growth in size, capabilities or relationships alone

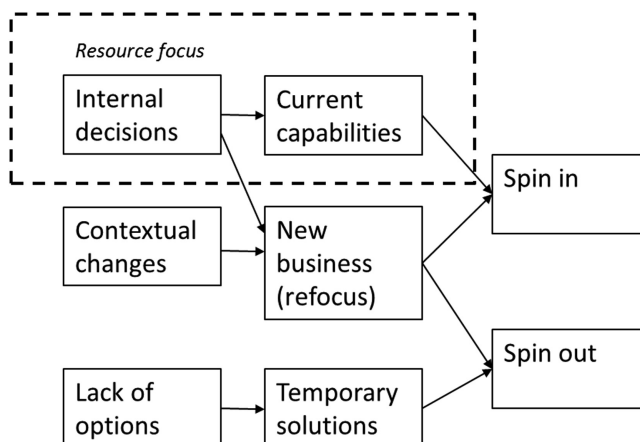
(Furlan and Grandinetti, 2011). Return is accomplished as continuous revenue streams but also as revenues as companies are divested. The main focus, though, would be on the continuous revenue streams based on selling products, not on selling companies. By focusing on the return on capabilities, it becomes prominent not only to grow the company in size of revenues (or decrease its cost through efficiency gains) but also to continuously adjust its capabilities so that they create an efficient output. This, in turn, results from how the firm makes its strategic decisions in the interplay between competences held by the firm and changes to the context. What the company does not do better than others would be spun-out and thereby, if better developed by other companies, contribute to growth on a societal level. This is in line with Penrose's (1959) argument on growth as an optimum but adds the perspective of the context as absorbing and developing ideas spun-out from the company. The argumentation here refers back to the innovation funnel but points to how a societal (or systems) level is needed to fully grasp growth in an open innovation paradigm.

### Conclusions

With a focus on innovative high-tech ideas, this paper described and discussed company spin-ins and spin-outs as a means to understand company growth in a dynamic context. The introduction raised the question of how growth can be understood in the spin-ins and spin-outs of innovative firms. As argued in the paper, growth would need to be understood as an increased return, where the basis for calculating such returns is the (shifting) capabilities of the firm. Additionally, when open innovation is in place, growth needs to be grasped on the societal, rather than only the company level, so as to understand how capabilities are distributed among companies, spun in and out between them, and result in an optimum rather than a return above competitors' return. Such an optimum also means that value creation (and co-creation) is optimised by firms and on the societal level.

In its description of spin-ins and spin-outs of innovative firms, the paper highlights some reasons for these. The reasons are summarised in Figure 2.

As indicated by Figure 2 and the discussion above, the resource-based view of the firm would not adequately capture the spin-in and spin-out of innovative firms as examples of open innovation. However, and as an interesting contrast, Penrose's (1959) work on the growth of the firm fits better with these ideas, both in terms of how external capabilities may be needed and in how she refers to growth as an optimum, not as connected to competitors'



**Figure 2.** Reasons for spin-ins and spin-outs for growth. Dotted area refers to what could be explained by a resource focus on growth

growth. This emphasises the context or milieu as collaborative and as containing resources and capabilities central for the firm's development. It also highlights the differences between the resource-based view and Penrose's (1959) descriptions (Rugman and Verbeke, 2002, 2004), while importantly emphasising *return of capabilities* as a measure to benefit not only firms but also society.

#### *Theoretical contributions*

This paper contributes to research on contemporary issues in strategy and innovation (Whittington *et al.*, 2011; Gao *et al.*, 2020) by describing the innovation funnel in terms of strategic decisions on spinning in and out companies, pointing to how growth can be understood related to open innovation and elaborating on spin-outs, their reasons and relation to growth. Additionally, through applying the innovation funnel on acquisitions and divestitures, the paper describes these as interlinked events and how a company balances internal decisions with contextual changes. Specifically, the paper points to:

- (1) Growth as specialisation. Specialisation, in turn, refers to doing what the company does best. This, in turn, means focusing on return on capabilities, but where these might shift over time.
- (2) How spin-ins and spin-outs result from the balance of contextual changes and company decisions, and specifically how spin-outs become a means to handle changed capabilities but also capabilities as temporary solutions based on lack of alternatives.
- (3) Societal level analysis of growth. Company boundaries are partly erased as innovations flow between companies. In the openness of innovation, the spin-in and spin-out of companies would ideally mean that they yield a better return with new owners. This, in turn, makes it important to grasp growth on a societal (or systems) level, not just for individual firms. And, in relation to the *milieu innovateur*, the shifting needs for capabilities, along with the context's development in tandem or separate from the firm, would mean a continuous redefinition of the firm's context.

#### *Managerial implications*

For managers, the open innovation paradigm highlights some interesting opportunities and inspirations. It emphasises collaborations, but also how resources or capabilities move among companies. For a company acting in such a paradigm, its managers need to make decisions on what to make oneself, what and when to source from and to external parties and how to accomplish the interaction with external parties. The literature has discussed governance related to open innovation and the consequences of making things too open or too closed. A manager needs to weigh the positives and negatives of open innovation and relate it to own capabilities, the need to refocus them as the context changes and how external parties affect the return on capabilities. Managers, to operationalise return on capabilities, need to be able to capture revenues and costs and what capabilities drive the return. Such capabilities should not only be judged on their uniqueness vis-à-vis competitors but rather on what value they contribute to customers.

Successfully working with growth as return on capabilities equips managers with skills to evaluate and reevaluate the core of operations, yet also to search for ideas outside the sphere of the immediate company, its operations or local presence. Questions to address would heavily concern the present and future market of customers the company aims to serve, required competences, the fit and misfit with present capabilities of the firm, how to abandon operations no longer needed and how to not only find but also integrate new competences



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without losing their edge. As a key ratio, return on capabilities thereby plays both with the profit and the optimising (Penrose, 1959) of capabilities.

#### *Further research*

This paper has indicated how spin-ins and spin-outs are interlinked to accomplish inbound and outbound innovations (Chesbrough, 2006). For further research, it would be interesting to (1) develop additional case studies to ensure transferability of findings and look for additional findings as part of them and (2) test results through quantitative analyses looking into probabilities as well as variances among companies. It would also be interesting to study companies in other industry sectors, including low-tech and services and their relation to the context. The case company presented in this paper is frequent to develop new technology and thereby “lead” development. For further studies, it would be interesting to research companies imitating strategies of others and taking on present technology to a larger extent.

The case presented in the paper is not the most far-reaching in practicing open innovation. Recent years have seen crowdsourcing and crowdfunding as new ways to reach innovations and their financing (Ebner *et al.*, 2009; Stieger *et al.*, 2012). Open-source software here constitutes a forerunner (von Krogh *et al.*, 2003). Research that elaborates on how such ideas can be understood in relation to growth and that relates them theoretically to strategic management would be of interest to investigate further.

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