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Developing Capabilities for Innovation in Large Firms
The Case of Volvo Cars

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DEVELOPING CAPABILITIES

FOR INNOVATION IN LARGE FIRMS: THE CASE OF VOLVO CARS

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ABSTRACT

The automotive industry is experiencing a major change in context where competition suddenly revolves around green aspects in addition to the traditional performance dimensions, accentuating the need for innovation. Previous research has underlined the importance of organizational capabilities to innovate, but has not provided much insight on how to develop capabilities to become more innovative. Based on a longitudinal study of an innovation initiative at Volvo Cars, this paper aims at investigating how organizational capabilities for innovation are developed in large firms. It contributes to the literature on the building organizational capabilities through complementing the framework of resources, processes and values with a fourth dimension of strategy.

Keywords: innovative capabilities, organizational capabilities, strategy, automotive industry

INTRODUCTION

It has recently become indisputably clear that the automotive industry is in deep trouble. Sales are dropping, production facilities have been halted and lay-offs are becoming routine. Although the whole world is currently in recession, the problems in the automotive sector had begun to emerge earlier. Now, the situation in that sector has reached the point where it is obvious that something should have been done long ago, to redirect production in this sector towards more environmentally-friendly and sustainable offers. The automotive sector is a conservative and mature industry where major change is a rare phenomenon. Although the environment has been a major issue in this industry since the 1970s, few radical, path breaking initiatives have been introduced. Instead, improvements have focused on such areas as performance, fuel consumption, safety, comfort and driver information, all areas that have improved exponentially (Sommerlatte and Karsten, 2001). With the growing concern in society about climate change, the pressure on the manufacturers to innovate has increased; they are being forced to think about the 'green' dimension and come up with solutions to enable a more sustainable mobility than fossil fuelled combustion engines can offer. At the same time, competition is fiercer than ever before, due to structural changes in the marketplace, intense brand competition, stricter regulation, growing fragmentation and shorter product life cycles. Customer preference is changing in favour of more environmentally friendly cars, although the willingness to pay much more is rather small. To survive, car manufacturers must strive continuously towards product development processes using new technologies, designs and features (Magnusson and Berggren, 2001).

All these changes are subjecting car manufacturers to extreme pressure to develop their organizational capabilities, to become able to change rapidly and to innovate. The literature on organizational capabilities describes how firms deploy their available resources to develop

competitive advantage (Prahalad and Hamel, 1990; Nonaka and Kenney, 1991). According to Christensen (1997), an organization's capabilities fall into three types – resources, processes and values. Resources include people, equipment, technology, product designs, brands, information, cash and relations with external partners. Processes can be described as patterns of interaction, coordination, communication and decision making among the resources, while values are 'the criteria by which decisions about priorities are made' (Christensen, 1997, p 164).

The capability literature is based on the Resource Based View (RBV) of the firm (Barney, 1991; Penrose, 1959; Wernerfelt, 1984; Grant, 1996), which argues that each firm has a specific set of assets that it can use to build competitive advantage. As the environment changes, the firm needs strategically to adapt, integrate and reconfigure its resource base, as described by the concept of dynamic capabilities (Teece et al., 1997; Zollo and Winter, 1999; Eisenhardt and Martin, 2000; Zollo and Winter 2002; Helfat and Peteraf, 2003; Teece, 2007). Although development of organizational capabilities is crucial, there is not much research into how organizational capabilities are actually built and developed (Haynes and Stewart, 1992), or on the organizational implications of their dynamic nature. The organizational capability to innovate (innovative capabilities), has been addressed, but often in very general terms (e.g. Burgelman et al., 1998; Assink, 2006) although with some exceptions such as Colarelli O'Connor and her colleagues' recent work on 'major/radical innovation capabilities' (Colarelli O'Connor, 2008; Colarelli O'Conner et al. 2008).

The purpose of this article is to obtain some insights into how organizational capabilities for innovation develop in large firms. More specifically, the paper aims to investigate how firms work towards developing organizational capabilities for innovation in practice, and identify the major obstacles to development. This study is based on a long-term collaborative research

project (e.g. Shani et al., 2007) with Volvo Cars, in which the authors followed an innovation initiative – the Vision 2020 project – over a period of two and a half years. Building on the dimensions proposed by Christensen (1997), we highlight the need for strategic direction when developing organizational capabilities for innovation in practice. This paper also responds to an explicit call for more empirical work on how organizational capabilities are developed (e.g. Zollo and Winter, 2002; Helfat and Peteraf, 2003; Helfat, et al., 2007).

The paper is structured as follows: Section 2 presents some central notions from the capability literature; Section 3 describes the methodology used to collect and interpret the data. Section 4 describes the Volvo Cars company and the Vision 2020 project, Section 5 provides an analytical discussion highlighting some key learning on the practice of developing organizational capabilities. Section 6 presents some implications for theory.

REVIEW OF THE CAPABILITY LITERATURE

Capability-based theories are useful for understanding how organizations change and develop. In general terms, organizational capabilities signify what an organization is (or is not) able to do. Organizational capabilities are seen as the ability of a firm to deploy the available resources as its main assets (Prahalad and Hamel, 1990). They are defined by Helfat and Peteraf (2003: 999) as ‘the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources for the purpose of achieving a particular end result’. Christensen (1997) categorizes an organization’s capabilities as having three building blocks: i) resources, which include people, equipment, technology, product designs, brands, information, cash and relations with external partners; (ii) processes, which are the methods/activities used for transforming inputs into higher value output and include the

patterns of interaction, coordination, communication and decision making in an organization; and (iii) values which are the criteria used for decision-making, or the mindsets of the decision makers. Leonard-Barton (1992) describes the firm's core capabilities as the set of knowledge that provides competitive advantage. According to her, these capabilities have four dimensions: 1) employee knowledge and skills; 2) technical systems; 3) the managerial systems that guide knowledge creation and control processes; and 4) the values and norms associated with these processes.

Dougherty and Heller (1994) argue that to be able to develop really new products, it is necessary for the organization to change as much as the technology, something that can be difficult in previously successful organizations. Leonard-Barton (1992) also argues that the firm's core capabilities can become its 'core rigidities' and hinder progress. She argues especially that technical and managerial systems are easier to change than knowledge and skills since 'the value embodied in a core capability is the dimension least susceptible to change' (Leonard-Barton, 1992: 121). Along these lines, Christensen (1997) points to the risk inbuilt in capabilities, emphasizing that organizational processes are designed for reliability and for repetition over time and therefore by nature are a potential hindrance to organizational change. He argues also that as organizations mature, capabilities become more tied to the processes and values, the capabilities that are the hardest to change. Henderson (2008), for example, talks about the inertia of organizational competence in trying to understand why established firms often fail in situations of disruptive innovation.

To avoid core capabilities becoming core rigidities, and to take account of the changing environment, Teece, Pisano and Shuen (1997) introduced a dynamic perspective with their notion of 'dynamic capabilities'. This growing stream of research underlines the need systematically to revise and develop organizational capabilities (Nonaka and Kenney, 1991;

Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Zollo and Winter, 1999; Zollo and Winter 2002; Helfat et al., 2007). Dynamic capabilities are considered key to the firm's competitive strength, or, as Nonaka and Kenney (1991: 69) put it, 'to remain competitive, any firm must constantly be creating new strategies, new products and new ways of manufacturing, distributing and selling'.

In terms of innovation, previous research shows that organizational learning is a critical capability for firms aiming to be innovative (Madhavan and Grover, 1998; Lynn et al., 1998). Thus, firms need to share and transfer knowledge effectively, within and between organizations, which involves 'combinative capabilities', defined as: 'the intersection of the capability of the firm to exploit its knowledge and the unexplored potential of technology' (Kogut and Zander, 1992: 391). Reid and de Brentani (2004) discuss this skill as the different interfaces that the organization must be able to handle. Collaboration with external firms has also been proposed as one way of learning (Kogut, 1988; Powell et al., 1996; Bosch-Sitsjema and Postma, 2009). Since competences and capabilities are normally rather difficult to replicate, and because firms often lack the ability to develop new competences quickly (Teece, Pisano and Shuen, 1997), learning is the process that is fundamental to how new capabilities are regenerated or created. The capability to innovate, or 'innovative capability', is defined by Assink (2006: 219) as: 'the internal driving energy to generate and explore radical, new ideas and concepts, to experiment with solutions for potential opportunity patterns detected in the market's white space and to develop them into marketable and effective innovations'. Assink further argues that one way to develop this capability is to enhance absorptive capacity, i.e. the capacity to recognize and understand external knowledge, and to assimilate and apply it internally (Cohen and Levinthal, 1990; Lane et al., 2006). Other authors point to the generative aspects of innovative capabilities – the

organization's ability to generate and create new knowledge - in which values are collectively recreated (Hatchuel et al., 2003; Le Masson et al., 2006), or of complementing 'generative capacity' (Elmqvist, 2007b).

Product development in organizations has become efficient in terms of shorter lead times and a stronger focus on planning and predictability. But, research highlights that these regular product development processes are inadequate for developing innovative products (Leifer, Colarelli O'Connor and Rice, 2001; McDermott and Colarelli O'Connor, 2002; Rice et al., 1998; Veryzer, 1998). To support the development of more innovative products, separate organizations with dedicated teams are often required to shield projects and to provide the freedom required for experimentation (Galbraith 1982; Govindarajan and Trimble, 2005; Quinn, 1985; Sharma, 1999; O'Reilly and Tushman, 2004). However, separating explorative activities from the core business often results in isolation, and engenders resistance towards the resulting ideas (Birkinshaw and Gibson, 2004; Moss Kanter, 2006). It has been argued that organizations, instead, should profit from their own organizational structures to develop new or regenerate existing innovative capabilities (Colarelli O'Connor and de Martino, 2006). Some researchers underline the need to develop a management system that encourages learning and experimentation (e.g. Eisenhart and Tabrizi, 1995; Hatchuel, Le Masson and Weil, 2003).

It has been argued also that for firms to be able build on radical new opportunities, it is necessary to develop new capabilities around their implementation (Phillips, Noke, Bessant and Lamming, 2008). Colarelli O'Connor (2008) adopts a systems perspective to explain the notion of innovative capabilities, arguing that it consists of seven elements: an organizational structure; mechanisms for interfacing with the mainstream organization; exploratory processes; development of skills and talent; governance and decision making mechanisms (at

all levels); and the appropriate culture and leadership. She argues further that these elements are interdependent, meaning that to develop these overall capabilities, all the system elements need to be changed and that there needs to be a strong coupling to the firm's strategic intent (Colarelli O'Connor, 2008). Further studies have put forward managerial practices such as the use of innovation networks, dedicated funding and reward systems as important in the development of innovative capabilities (Colarelli O'Connor et al., 2008).

Other authors stress that capabilities can be managed within a long-term perspective, through repeated innovation (see Penrose, 1960; Hatchuel et al., 2003), and through learning from previous endeavours (e.g. Maidique and Zirger, 1985; Rothwell and Gardinger, 1989; Colarelli O'Connor and de Martino, 2006). Thus, developing innovative capabilities is a process that needs to be managed, designed and guided through the selection of appropriate mechanisms that maximize the opportunities for learning and increase the resource base (see Tidd et al., 2005). It has been argued also that companies need to be proactive about learning how to handle major contextual change (Phillips et al., 2008).

So, despite an increasing academic interest in organizational capabilities, very few studies examine how organizational capabilities develop and change to support innovation – how firms can build their innovative capabilities (Zollo and Winter, 2002; Helfat and Peteraf, 2003; Helfat et al., 2007; Colarelli O'Connor et al., 2008). There is also a lack of empirical (and theoretical) studies on what are the enablers of and hindrances to the development of organizational capabilities in practice.

METHOD

Collaborative Research Context and Research Design

The research underlying this paper is part of a broader collaborative research approach (Adler et al., 2004) that investigates various perspectives on innovation and new product development processes, comprising several different projects at Volvo Cars. The present paper for the most part draws on a longitudinal participative research project, complemented by contextual knowledge gained from a number of studies of managerial practice at Volvo Cars, over the course of a nine year research partnership. The previous studies have mainly investigated the early phases of product development, such as business environmental scanning (Börjesson et al., 2006), conceptual work (Backman et al., 2007), concept car development (Elmquist, 2007a) and advanced engineering projects (Pohl and Elmquist, 2008), thus focusing on both the strategic and operational aspects of innovation.

The longitudinal study of the Vision 2020 project took place over 30 months, from the project's early emerging phases (during 2006) to the beginning of 2009, and combines intervention research and participant observation of Volvo Cars' strategic Vision 2020 project, an initiative aimed at developing the company's capabilities in relation to its core values of Safety and Environment. Our explicit and formal role in the project was to support the Vision 2020 core team members in their reflections on their innovative activities, to discuss different approaches, based on knowledge and experience from other settings, and to push them to leave the comfort zone of familiar areas. This set-up enabled the research team to interact with the project in a variety of ways, with the full support of top management. We took part in seminars, discussions, knowledge linking activities and reflection meetings, and also acted as moderators and facilitators in brainstorming workshop sessions and in processing methods for ideas generation.

Data Collection and Analysis

We collected data in a variety of ways throughout the research project. In the participatory activities, data were collected through the systematic written field notes (van Maanen, 1988), which included observations and reflections. We conducted a number of interviews at Volvo Cars around specific activities or projects (14 interviews related to a hybrid concept car project and 8 interviews on a design theory methodology experiment), and around eco-initiatives in general (1 interview on eco-labels, 11 interviews on an advanced engineering project). The interviews lasted for around 90-120 minutes, and careful notes were taken, which were validated with interviewees. In some cases the interviews were recorded and transcribed.

We met regularly with the project core team for reflection meetings (4 meetings in 2006 and 13 meetings in 2007, 3 meetings in 2008 and 2 meetings in 2009); we also came together in jointly organized project activities such as seminars and workshops on creative work (8 activities in 2006, 4 activities in 2007 and 1 activity in 2008). Project team meetings generally lasted around two hours, while the workshops and seminars were usually half or one day activities. In 2008 and 2009, our data collection took the form of systematic interviews (11 in all) with one of the team members (one of the original two team members was replaced at the beginning of 2008). Both researchers took part in the project team meetings and interviews. Detailed notes were taken, and exchanged and complemented as soon as possible after the meeting/interview. We conducted a total of 47 interviews and attended 22 formal Vision 2020 project meetings. In addition, we participated in numerous informal discussions and were given access to a great deal of internal documentation and rich data. The empirical sources are summarized in Table 1.

Place Table 1 about here

Data analysis consisted of comparing data with an emerging model for their interpretation, through an iterative process (Dubois and Gadde, 2002; Van de Ven, 2007). We combined in-depth and contextual knowledge gained from previous collaborations with the current project and with theoretical reflections, in an abductive interpretative (Alvesson and Sköldbberg, 2007). In other words, the empirical data were viewed against intermediate conceptual models enabling increased understanding to be developed (Dubois and Gadde, 2002).

VOLVO CARS AND THE VISION 2020 PROJECT

Background

Volvo Cars is renowned as a pioneer in automobile safety, and has been the leader in the field since the 1950s. Since the end of the 1990s, Volvo Cars has been working to develop its brand by complementing its strong existing associations to family values, with more adventurous associations, by investing in events such as the Volvo Ocean Race (previously known as the Whitbread Race). The company is building on its core values of safety, environmental awareness, and quality, towards more premium-related values such as luxury and adventure. Volvo Cars has been actively seeking to address new and younger customer groups with its recently launched C30 model, which is a small yet sporty sedan. Since 1999 Volvo has been owned by the Ford Motor Company.

The core value of Environment has been important throughout the history of Volvo Cars and the company has pioneered several technology developments aimed at the environment, although few have reached the market. It developed its first electric prototype in 1975, followed by a series of different electrical vehicle prototypes. In the 1980s they worked on a 'low-weight' project that resembled the stripped down car models that are appearing on the market 25 years later (e.g. the Volvo DrivE-models, launched in 2009). In 1992, Volvo Cars presented the Environmental Concept Car (ECC) at the Paris automotive show, a series hybrid with a nickel-cadmium battery and a hybrid engine, propelled by a diesel-driven gas turbine; however, this technology concept never made it to production. In 1999, Volvo Cars showed off its Desiree concept car in Geneva, a power split hybrid vehicle quite close to the technology in the Toyota Prius. This technology was picked up by Ford when it acquired the company in 1999, and resulted in the Ford Escape hybrid which is currently being marketed in the US, but was never used in a Volvo car model. Since the end of the 1990s, several more innovative initiatives have emerged, such as a plug-in electrical vehicle presented as a concept car in Shanghai 2003, a flexi-fuel plug-in hybrid shown in Frankfurt 2007, and the gas driven bi-fuel cars introduced in 2001 whose production was stopped in 2007 because it was found impossible to make any profit on sales.

Current Challenges

It is not just the global financial crisis and general recession caused by the financial market collapse in the United States that explains the negative and gloomy development trend in automotive sales figures. The industry is facing a paradigm shift, driven by the debate on climate change and substantially changed customer preferences. Similar to all car manufacturers, Volvo has been hit by the difficulties embedded in the global environmental challenge, which has transformed the automotive industry into a crisis industry where the

urgency to change to avoid being irreversibly out of the game has become unavoidable. Governments are co-operating globally to save existing car manufacturers at the same time as new actors, for instance the Indian car manufacturer Tata, are seeing opportunities to enter the European market.

During the two last decades, Volvo Cars, like most car manufacturers, has worked continuously to develop its research and development (R&D) organization, transforming it from line to project to modularization to the current platform-based new product development (NPD) organization (Mikaelsson, 2004). It has at the same time been struggling to balance current and future offers. Common platforms and common thinking (the common denominators of models) have been developed to shorten lead times and minimize complexity, while work continues on new technologies and transmissions to be applied in the future.

In retrospect, it is obvious that this shift to a new paradigm should have started several years ago. Despite well developed alternative technology concepts being in existence 15-20 years ago, the organizational actions required to undertake this shift did not emerge.

The Vision 2020 Project

In December 2006, Volvo Cars launched a formal initiative, known internally as the Vision 2020 project. Its objective was to build the organizational capability to break away from the prevailing incremental approach to innovation - specifically on safety- and eco-environmental product attributes. This 2006 initiative was a first attempt to strategically align the firm's current efforts and develop the organizational capabilities to innovate in the context of an uncertain and rapidly changing environment. The project was motivated by the fact that the productivity of the automotive industry for almost a century had been organized around a dominant design based on three components: the combustion engine; the steel body; and the

mechanical power-train. This dominant design had been reinforced by refinements to engineering skills and the network of actors and infrastructures supporting the development of a series of incremental innovations within the logic of the internal combustion engine. This dominant design is reaching its limits in terms of its environmental impacts, especially with respect to CO₂ emissions. Nevertheless, it is hard for established organizations to acknowledge and respond to such conditions. The world automotive sector is a significant contributor to global CO₂ emissions (12% of the total). Reducing the industry's environmental impact, while simultaneously discovering new potential offerings, is a huge challenge requiring both new knowledge and new forms of innovative thinking in terms of product identity (architecture, materials, engines, images). Although Volvo Cars has recognized what is required, it has not been easy to implement change (Williander, 2006; Williander, 2007). The need for innovation and change constitutes the immediate background to the Vision 2020 project. One of the Vice-Presidents (VP) of Volvo Cars in late 2006 took the decision to champion the Vision 2020 project within the Product Planning Department (PPL). The Vision 2020 project thus reported to PPL that was responsible for product and product attribute strategies as well as for the front-end of new product development processes. The Vision 2020 project was grounded in several activities undertaken in 2006, to improve the company's capabilities to capitalize on its core values of Safety and Environment. Initially, the primary objective was the development of organizational capability to innovate differently Volvo Cars wanted to be able to create and launch offers that encompassed safety improvements and eco-environmental improvements, and in ways that increased the attractiveness to consumers and their willingness to pay for a 'common good', without the reliance on any external incentives related to greening. The over-arching aim was to learn

how to innovate so that private and common goods could be improved simultaneously and could be profitable based on their own merits.

Characteristics of the Initiative.

The Vision 2020 project was strongly anchored in Volvo Cars' top management team and product development organization. Initially, the core team was only three people and was reduced to two in 2007, one of whom was replaced during the second part of 2008. However, this core team had the support of a large number of people from different parts of the organization, in various activities, throughout the 2.5 years of its life. Although not explicitly stated, the intent was undoubtedly to achieve strategic change in the organization.

The Vision 2020 project's stated scope was to be experimental and explore different methods of and approaches to innovation and to systematically develop a different mindset in the decision-makers – at all levels. The former aim involved four steps:

- 1) *defining targets*. Defining what needed to be achieved to overcome the societal and ecological constraints; thus defining the problem and also part of the solution;
- 2) *defining technology pathways* Participating in studies on alternative energy consumption and provision for the future, in order to choose among technologies that fitted with future paths;
- 3) *innovating differently* Experimenting with combinations of different expertise, in the process of ideas generation and in the process of product development, in the former case related especially to the bundling of private and common goods and combining different perspectives;
- 4) *conducting small scale market tests* as a way of learning (business model development).

The second aim - to systematically develop different mindsets in the people involved in decision making - the project identified the need for continuous development of competences, but without specifying how this could be achieved. The project team made presentations on the change and capability developments required, underlining the paradigm shift and the subsequent de-learning and refocusing to achieve alternative ways of innovating at Volvo Cars. The overall project design is depicted in Figure 1; however, the activities did not occur in the sequential manner indicated in the figure, The process was iterative and complex, involving numerous both parallel and intertwined activities.

Place Figure 1 about here

The Vision 2020 project involved a hands-on, or ‘learning-by-doing’ approach from the outset. The idea first was to experiment on fairly small innovations (such as the car subsystems), and to capitalize on that experience in order to persuade management to fund a larger experiment (potentially a car), and disseminate the insights developed in order for them to contribute to the development of organizational capabilities. This was enabled by contributions from an extended team linked to the project, comprising a number of key people from all parts of the organization.

The Vision 2020 project was brought to an end in early 2009 in the context of a major re-organization of Volvo Cars under a new CEO. Instead of continuing this initiative as a project, it was decided to launch a new organizational unit to deal with long range strategy and innovation issues. The more detailed agenda for the unit is still being worked on but will

contribute to a more structured process to deal with the development of capabilities to innovate and to generate input to early phases of a product development process.

In the next section the project will be analyzed from the perspective of how the organizational capability to innovate was developed.

EMPIRICAL FINDINGS: DEVELOPING INNOVATIVE CAPABILITIES IN PRACTICE

In line with suggestions from literature (Christensen, 1997), the Vision 2020 project was designed to address the three dimensions of organizational capabilities – the available resources in the organization, the processes and organizational structures and the mindset of the people taking the decisions. However, in the course of the process, it became apparent that this was not sufficient to effectively develop the capabilities needed. The empirical findings are presented using the Innovative Capabilities framework – resources, processes and values – as a thematic structure.

The resource dimension

Volvo Cars has a strong resource base, being renowned for innovation and attractive to skilled engineers. It also has a long history of creative skunk works, which have resulted in new technologies, new concepts and innovative concept cars. They also have a strong brand and a popular design language. Therefore it has been rather difficult for outside spectators to understand why the innovative concepts have not reached the market, for instance why Volvo Cars still has not been able to put a hybrid vehicle on the market. However, being creative and having good ideas and high quality resources does not necessarily equate with being innovative – that requires that the product applications reach the market. And that has been

the real challenge for Volvo Cars in recent years since the short term financial situation has dominated decisions.

As recently as 2006, Volvo Cars was able to produce positive economic results. However, since then, availability of cash has been a constraint, and innovation activity requires upfront investments. As one member of Volvo Cars' management team put it:

Even though we had the knowledge and the will to do it, there was no long-term money; there was just no money. So we had to go for what the market asked for now, not later.

The Process Dimension

In terms of working with activities and processes, the Vision 2020 project had a strong focus on experimentation. The project started with some experimental activities related to how to innovate, based on multi-disciplinary workshops organized for ideas generation and concept development, drawing on design-based theory and external knowledge sources (for further detail see Elmquist and Segrestin, 2009). A central tenet of the project was that Volvo Cars needed to develop alternative activities to enable it to innovate differently, or as a member of the project core team expressed it in:

We need to create an organizational ability to earn profit on our core values safety and environment. That is [we need] to learn how to innovate differently.

Further, the project initiated co-operation with external partners, such as universities, in various subject areas including consumer behaviour and energy studies, i.e. in knowledge domains beyond in Volvo Cars' then current expertise. The objective was to expand the knowledge in certain areas where there was a lack of internal expertise, especially knowledge

related to green offers. In interview, one of the core members described this as a key challenge:

In the case of green innovation, the challenge is not only to change the processes and the mindset, but also to find knowledge in new places, to build new networks and connect new people.

The project also began a study on ‘society’s technology pathways’, which was a one-man investigation, which exploited external knowledge, and was active in promoting discussions internally, and defining and making alternatives more concrete.

These activities were welcomed in the organization and viewed as interesting new ways of working; they were not perceived as either threatening or controversial. However, it was difficult to influence the company’s core processes based on the insights gained from these activities. Either there was no one that could be made responsible for integrating the new ideas into the company’s product development process, or it was difficult to convince people about the changes that were required. For instance, one project for a green car offer uncovered the need for a completely different business model logic. One of the Vision 2020 core members described the situation in an interview:

We have agreed to do this, but there is no explicit strategy and no plan for what to do once the car hits the market. Many are worried about how to sell it – some people do not understand why the business model needs to change. We have not written ‘performance’ anywhere and they do not know how to calculate the price.

Thus, the efforts made to develop alternative ways of working with innovation were quite successful and the experiments produced outcomes that have been incorporated into some products, but generally it was difficult to change established routines and ways of working.

The cognitive dimension

The third building block of organizational capabilities (Christensen, 1997) - the organization's values and norms - was also tackled by the Vision 2020 initiative. The project had a clear objective of developing the cognition and mindsets in the organization. The core team put a great deal of effort into the political dimensions of leadership, anchoring its ambitions in the organization. The team was keen to ensure that it had 'friends' in strategic parts of the organization, who spoke the same language and shared the same values. They worked to achieve this by giving numerous presentations in different forums in the organization in parallel with consistent use of strategically chosen phrases and notions, designed to create and diffuse a shared language, primarily around the environmental dimension. Phrases such as 'common good', 'private good', 'willingness to pay', 'innovate differently', 'path dependency' and 'lock-in effects' were used whenever possible in a bid to create an awareness and change mindsets, and to make these terms part of daily parlance. People quickly caught on to this terminology and the accompanying notions slowly spread throughout the organization. One of the core members expressed an ambition in interview:

We want to develop an 'aha!' effect, to trigger recognition and subsequent learning in the organization.

The project team was also very active in trying to create a sense of urgency, at least among top management, an effort that proved very demanding.

Lack of strategic direction

In attempting to develop activities and change mind-sets it became evident that there was a lack of strategic direction and strategic legitimacy within the organization. The Vision 2020 project was set up as a separate project within PPL in order that it would be protected from

erasure in the interests of ‘efficiency’ and to create the space needed for manoeuvring. However, this positioning also created problems for the project since its interface with the rest of the organization was neither defined nor addressed by top management. One of the core members described the situation in an interview in April 2007:

PPL does not want to acknowledge our work [within Vision 2020]. There is a crack between the line organization [PPL] and Vision 2020. We have questioned their strategy too much: we feel that there are a lot of strategic initiatives that are not aligned. A management team needs to show the way, not to support opposing opinions.

The core team thus felt that there was a lack of integration between the company’s strategies and the initiative’s aims. When asked about strategy at an overall level, the core members described it as a scattered paper based process that did not really help them in their practical work, and which contained no clear direction. One of the core members described in an interview: ‘

The strategic work is kept together in the business plan. It is developed in a yearly loop, but nobody works with the overall picture. [---] The business plan is of no help here and decisions are taken all over. The business plan focuses on mapping where the money is, where the competence is in a five-year perspective. But there is no work on the total picture.

The team described how strategic work was delegated downwards in the organization so that its execution was no longer strategic.

The lack of strategic direction – both in general and as a guideline for the development of and change to organizational capabilities - caused severe problems for the Vision 2020 project.

One example was the project of a premium car. Despite a clear focus on developing premium offers within Volvo Cars, there was no discussion at a strategic level about how the notion of premium was developing. Instead, there was a broad set of interpretations which could be used to strengthen any perspective on what ‘premium’ might be. In interview, one of the core members described the practical problems that this entailed:

PPL management argues that we need to be premium, become premium – but the interpretation is free. Everyone felt that they could continue doing what they felt was right.

When top management did not give direction, the activities became extremely broad and the project involved found it difficult to fix its ideas in the rest of the organization and get them prioritized.

DISCUSSION

This study contributes to the literature on organizational capabilities by pointing to the need for strategic considerations when building or recreating organizational capabilities. We have shown that in the absence of a clear strategic direction, development and change efforts around capabilities tend to remain experiments with no long term impact or become diversified and ineffective.

Developing Organizational Capabilities in practice at Volvo Cars

The Vision 2020 project started out based very much on Christensen’s (1997) dimensions of organizational capabilities to find ways to address resources, processes and mindsets. To open up internal R&D activities and connect to external sources of knowledge as suggested by

Chesbrough (2003), the project began multiple collaborations with researchers in various disciplines. This was also in line with the literature on absorptive capacity (Cohen and Levinthal, 1990, Lane et al., 2006; Zahra and George, 2002 Willander, 2007). However, the project found it difficult to connect the knowledge acquired to established processes; there was no one designated in the organization to be accountable for the assimilation and application of this new knowledge.

Vision 2020 experimented with various processes for knowledge generation and several workshops on potential innovation areas and car sub systems were held. However, despite satisfaction with the outcomes of this work among many individuals, any substantial results were hard to detect in the organization. Since the project was organizationally separated from the rest of the organization (as suggested by theory, see e.g. O' Reilly and Tushman, 2004; Birkinshaw and Gibson, 2004), it was difficult to integrate the results into the established product development organization, which meant they remained scattered and unaligned with what the rest of the organization was focused on, including operational matters such as the upcoming cycle plan, current projects on alternative features and modifications. Instead these activities were seen as being additional and as competing with the core operational activities for time and resources.

The efforts to create a shared language, as recommended by the literature on organizational learning (e.g. Senge, 1990), were more successful. The core team began to notice that people at all levels and across all levels in the organization were picking up on the notions that they were spreading and that there was increasing discussion on how to become more innovative. Another result of the Vision 2020 project was that it became apparent to the core members that the main challenge was actually the lack of strategic direction in the company – and the lack of strategic development work – which made it difficult for them to have any major

impact on the organization. Despite the progress, they were unable to achieve the leverage needed without simultaneous development of the strategic dimension. The strategy existed but the need for it to be developed and implemented had been underestimated.

Despite efforts to develop the three dimensions of organizational capabilities according to the insights provided in literature, the project encountered difficulties. It seems that since the aim of the project was to renew the way that the firm worked, the need for a coupling with strategy was stronger than had been anticipated by the team members.

Strategic direction can be formulated in terms of the implementation of strategic rules (Eisenhart and Sull, 2001). In the Vision 2020 project, there were few such explicit rules, and those that were in place worked rather to reinforce the organization's behaviour, to follow the same paths, than to enable the required strategic change. Also, since top management did not provide any clear strategic direction to the organization, everyone in the organization that was affected, applied their own interpretation to what needed to be done, and acted accordingly. Colarelli O'Connor argues that developing innovative capabilities 'requires that the major innovation system objectives be tightly and reciprocally coupled to the firm's strategic intent'(2008:321). Here, the lack of strategic development clearly impeded the development of the firm's organizational capabilities.

The strategic dimension of developing organizational capabilities

Literature on organizational capabilities has put forward resources, values and norms as the key components (Christensen 1997). In this article it is argued that managing the development of organizational capabilities is as much a matter of managing the generation and diffusion of new knowledge in the organization, and successively changing the organization's way of working. Therefore, the strategic dimension has to receive equal emphasis. The change aspect

requires strategic direction; if such direction is unclearly communicated or insufficiently implemented (for instance, strategic rules for to everyday decisions are inadequate), the building of new capabilities will become impossible. Strategic choices and strategic decisions are continuous, and a change of direction requires new strategic rules (Eisenhardt and Sull, 2001).

The need for strategic alignment when developing organizational capabilities for innovation may seem obvious, but it is not equally obvious that the development of a strategic direction needs to be part of the capability development process. The case of Volvo Cars illustrates that no matter how ambitious the organizational development ambition, a lack of strategic direction can impede the development of capabilities.

In the literature on organizational capabilities the need to simultaneously develop strategy tends to be overlooked. Instead literature mainly refer to organizational learning (e.g. Madhavan and Grover, 1998; Lynn et al, 1998; Teece et al., 1997) or structural separation (O' Reilly and Tushman, 2004; Birkinshaw and Gibson, 2004). An exception is the systemic perspective suggested by Colarelli O'Connor (2008) which highlights the importance of alignment with strategic intent. It is here argued that the three dimensions proposed by Christensen needs to be complemented with a strategic dimension, thereby adding a fourth lever for managers that want to develop the organizational capabilities to innovate.

CONCLUSION

This paper contributes to the literature on building organizational capabilities through complementing the framework with a fourth dimension of strategy. Using the example of an automotive firm, this paper has presented some difficulties when trying to develop organizational capabilities to innovate. Although based on a single case, the results illustrate

the importance of integrating innovation efforts with strategic work and opens up some paths for further research into managerial practices on how this can be done in practice.

Table 1. Data collection in the longitudinal study

	2006	2007	2008	2009	Total
Project activities such as creative sessions, workshops and seminars	8	4	1	-	13
Project team meetings	4	13	3	2	22
Interviews on the Vision 2020 project and related activities	-	17	24	6	47

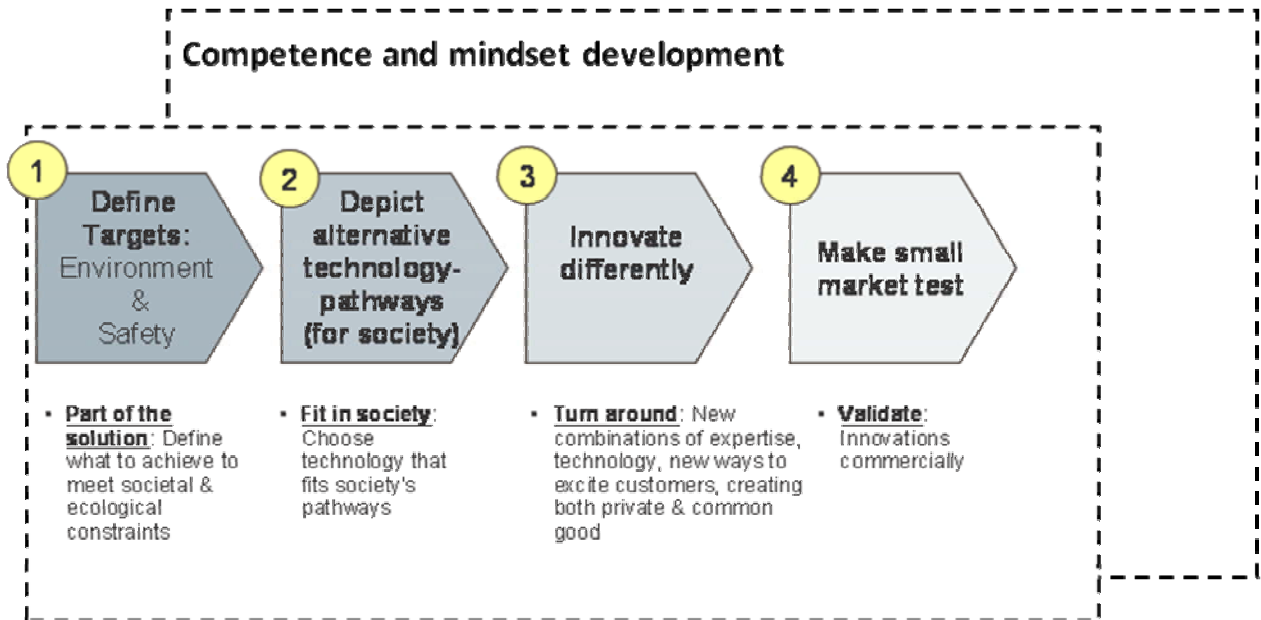


Figure 1. The Vision 2020 project design (Source: Volvo Cars internal document)

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