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In Pursuit of Radical Innovation

A case study about innovation at the edge of a large established firm's core business

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Executive Summary

The purpose of this master's thesis is to examine how large established firms can radically innovate at the edge of their core business and how edge initiatives can develop over time. Since there is limited research on the topic, we explore this phenomenon through an exploratory case study of a large established firm and its edge initiative in the context of the mobility industry in Norway. Through in-depth interviews, we find and present key features of an edge solution and show how it can develop over time.

The first key feature of the case company's edge solution is providing the edge autonomy by keeping it at arm's length from the established business. We show and argue how to achieve arm's length and how it can facilitate the development of external relations, increased competitiveness, and stand-alone value. The study further points to management sponsors' importance in reducing core resistance and shielding the edge from its negative consequences. It also illustrates the need for upwards managing in the edge's early phases. However, our findings highlight how the role turns towards time relief as the edge gains a more solid standing in the established firm. The last feature of the solution presented in this thesis relates to how gradual funding reduces the risk for the core and how giving the edge entrepreneurs co-ownership can create a passionate team. We argue that these features collectively allow the edge to innovate and grow.

Finally, a vital contribution of this thesis is the insight into the development of the edge initiative. Our findings suggest that the intent with an edge might change as it evolves and grows. We discuss when and whether to integrate, spin-off, or continue to innovate at the edge and suggest that future research explore potential trajectories further.

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The study is one of several case studies within the RaCE research program, a collaboration between NHH and SNF focusing on research about how large established firms can react to and manage radical technology-driven change.

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1. Introduction

Slow incremental change in an otherwise constantly changing world is a one-way ticket to the boneyard (Tushman & O'Reilly, 1996). Historically, managing continuous step-by-step innovation has been essential for the success of established firms. However, as the pace of change in society accelerates, driven by an ocean of technological opportunities and the sustainability problem, exploiting current assets and competencies is no longer enough (Christensen & Overdorf, 2000; Jørgensen & Pedersen, 2018). To ensure a long-term competitive advantage, incumbents must simultaneously pursue radical innovation.

Still, large established firms find radical changes more difficult and take them on less frequently than routine incremental change (Chang et al., 2012; March, 1991; Tushman & Nelson, 1990). Incumbents tend to fall behind start-ups when dealing with radical innovation primarily due to rigid organizational routines and culture (Birkinshaw et al., 2007; McLaughlin et al., 2008), incorrect staffing and incentive systems (Stringer, 2000), unsuitable systems and structures (Watts, 2001; Junarsin, 2009), and a reluctance towards uncertainty and unexplored territory (Lynn et al., 1996; Eisenberg, 2011). Be that as it may, society cannot solely rely on startups to find the solutions for tomorrow; we also need *established* firms to give rise to radical innovations (Domínguez-Escrig et al., 2019).

As a result of this, different approaches to radical innovation in established firms, such as ambidextrous organizations (O'Reilly & Tushman, 2004), agile (Rigby et al., 2016), innovation portfolios (Nagji & Tuff, 2012), open innovation (Chesbrough, 2003), and ecosystems (Jacobides et al., 2018) have to a varying extent been researched by management scholars. Yet a related but different approach to radical innovation, innovation at the edge, has not received commensurate research attention despite its increasing prevalence in some established firms. Thus, limited research exists about how large established firms can innovate at the edge of their core and how an edge can develop as the initiative evolves.

In 2012, Deloitte Center for the Edge launched a report about how established firms can unleash their potential by "scaling edges" (Hagel et al., 2012). In an updated version of the report, Hagel et al. (2019) suggest a pragmatic pathway to major change, claiming that the key to managing innovations is to avoid messing with core operations. Instead, the authors argue that established firms should find an edge initiative in the outskirts of the firm that can scale using disruptive technology and, eventually, transform the core. The authors' insights, interesting as they may be, have not yet been supported by empirical research. Consequently, a systematic understanding of how innovation at the edge can be organized, managed, and developed is lacking in the academic literature. The purpose of this thesis is thus to contribute to the field by exploring innovation at the edge and examining how it can be adopted, managed, and developed by established firms. The thesis will therefore address the following research question:

How can large established firms radically innovate at the edge, and how can edge initiatives develop over time?

We seek to answer this research question through an exploratory case study of a large established automotive firm and its car sharing initiative at the edge of the established business. It is especially interesting to explore an edge solution in the automotive and mobility industry due to significant transformational shifts predicted to change how people live and travel (Simpson et al., 2019). The forces specifically affecting mobility are increased environmental consciousness and regulations connected to reducing carbon emissions combined with the omnipresence and rapid advancement of new digital technology. Mobility is also explicitly mentioned by Hagel et al. (2019) as an example of a disruptive force where edge opportunities previously have emerged. This specific case is also fascinating as the edge initiative has experienced tremendous growth and has been in several news articles the latest years due to its success. These factors combined make the industry and selected case company highly relevant and interesting for studying innovation at the edge.

To briefly summarize our findings, we suggest that keeping the edge at arm’s length from the established business can provide autonomy. We also find that management sponsorship can reduce resistance from the core and that the sponsor role evolves as the initiative develops. Additionally, our findings suggest starving the edge to minimize the risk for the core and give co-ownership to create a passionate edge team. Finally, the study indicates that as the edge develops and grows, the established firm’s intent with the initiative might change, making it essential to adapt the ownership strategy accordingly.

1.1 Thesis Structure

The remainder of this thesis is structured as follows: Chapter two provides an overview of the relevant literature on radical innovation in established firms and discusses how such firms can avoid triggering their immune systems against change by innovating at the edge. Chapter three provides the study's context and case selection before outlining the methodological approach in chapter four. Further on, chapter five presents our empirical analysis and findings. The first part of the analysis highlights key features that describe how the case company organizes and manages innovation at the edge, while the second part addresses the development of the edge, giving a brief overview of the trajectories considered along the way. Chapter six discusses our findings by drawing on the literature before presenting contributions to theory and implications for practitioners. Lastly, chapter seven contains a summary, the study's limitations, and suggestions for future research.

2. Theoretical Framework

This chapter reviews the literature relevant to the research question, thus containing existing research on radical innovation in established firms, innovation at the edge, ambidextrous organizations, and potential trajectories of innovation initiatives. This literature creates the foundation for our study.

2.1 Radical Innovation in the Established Firm

Research on innovation has a long history, and various researchers have defined the term (Damanpour & Schneider, 2006). While a variety of definitions have been suggested, this thesis will use the definition first proposed by Baregheh et al. (2009, p. 1334), who saw it as "the multi-stage process whereby organizations transform ideas into new/improved products, services or processes, to advance, compete and differentiate themselves successfully in their marketplace."

The field of innovation further distinguishes between continuous step-by-step innovation, usually labeled incremental, and innovations that break with traditions in a field, traditionally labeled radical, breakthrough, revolutionary, or discontinuous (e.g., Anderson & Tushman, 1990; Christensen & Rosenbloom, 1995; Cooper et al., 1973; O'Reilly & Tushman, 2004). The distinction is often made according to evaluations of impact and novelty (Kasmire et al., 2012). However, O'Reilly and Tushman (2004) present innovation as a continuum and claim that it is often difficult to draw a clear line between incremental and radical innovation. According to the authors, the area of innovation that lies between incremental and radical innovation is called architectural innovation and is included in the term radical innovation in this thesis. Incremental innovation is minor improvements in existing products and operations to increase efficiency and customer value and is a crucial part of short-term success (O'Reilly & Tushman, 2004). However, the authors argue that to flourish over the long run, established firms must pursue radical innovation conjointly.

Damanpour (1991, p. 561) defines radical innovation as innovations "that produce fundamental changes in the activities of an organization and represent clear departures from existing practices." Put differently, radical innovation breaks with previous activities, structures, procedures (Damanpour, 1996), and products in a firm (MartÍnez-Ros & Orfila-Sintes, 2009) and is often linked to long-term changes (Hopp et al., 2018).

Existing literature reveals that as firms grow older, larger, and more successful, they often start struggling with radical innovation. According to Tushman and O'Reilly (1996), the struggle arises because successful firms develop structural and cultural inertia over time. Because of the firm's increasing size, age, and complexity, structural factors like established and interlinked systems and processes make changes more costly and challenging to implement. Likewise, due to the firm's age and success, institutionalized cultural factors like values, networks, and informal norms lead to arrogance and contentment. When faced with shifting markets, the culture that endorsed success in the first place can swiftly become a barrier to radically innovating (Tushman & O'Reilly, 1996). The more successful a firm becomes, the greater the cost and risk of change are perceived by the organization (O'Reilly & Tushman, 2016), subsequently leading to the development of a robust immune system against change (Kegan & Lahey, 2009). Consequently, the same practices that lead established firms to success often simultaneously push them to collapse (Elsass, 1993).

Another reason large established firms struggle with radical innovation is internal competition for resources, as incremental and radical innovation often requires substantial assets from the firm (Ford et al., 2008). For established firms, it can be comfortable to focus on continuous improvement of products, services, and processes that the firm knows work and has been proven profitable. Radical innovation, on the other hand, is associated with inefficiency and a troublesome number of ideas of poor quality, in addition to offering more uncertain and prolonged effects. Yet, firms that do not prompt radical innovation activities are likely to fail in the face of discontinuous change (O'Reilly & Tushman, 2013). To benefit from the opportunities offered by the technological revolution (Schwab, 2016) and the need for sustainable solutions (Nidumolu et al., 2009), facilitating innovation within the boundaries of organizations has become a key strategic issue for managers of established firms. One way of doing so is to radically innovate at the edge of existing business (Hagel et al., 2019). The reader should note that we are addressing radical innovation when further referring to innovation in this thesis.

2.2 Innovation at the Edge

A small body of literature is concerned with innovation at the edge of large established firms' core business. To describe what is already known about organizing, managing, and developing innovations at the edge, this section will primarily draw on descriptions from Deloitte's insight reports (Hagel, 2019; Hagel et al., 2019) and combine it with research literature on similar phenomena. In short, innovating at the edge is about working from the outside in, allowing innovation to arise and grow in the outskirts of the existing business without disturbing or being disturbed by the day-to-day business (Hagel, 2019).

To fully understand innovation at the edge, one must start by distinguishing between a firm's core and edge. Nagji and Tuff's (2012) innovation ambition matrix (Figure 1) illustrates how established firms pursue innovation at three different levels of ambition: (1) improvements to core offerings, (2) quest for adjacent opportunities, and (3) transformational initiatives far away from the core. The edge solution, as presented by Deloitte Center for the Edge, will seemingly be located in the transformational area of the matrix. However, when referring to edges in this thesis, we also include initiatives located in the adjacent area of the matrix, as research on innovation beyond the established firm's core tends to have a somewhat broader perspective on what an edge is (e.g., Edwards, 2012; Zook, 2004). Hagel et al. (2019) note that a firm's edge can be a new product, customer segment, or geographic market. Zook (2004) elaborates by suggesting that efforts beyond the core can be based on products, geography, value chain, channels, customer, and new business adjacencies. Another critical point is that the edge should not pose a threat to the existing core by cannibalizing traditional revenue streams. Instead, the focus should be on making the pie bigger altogether.

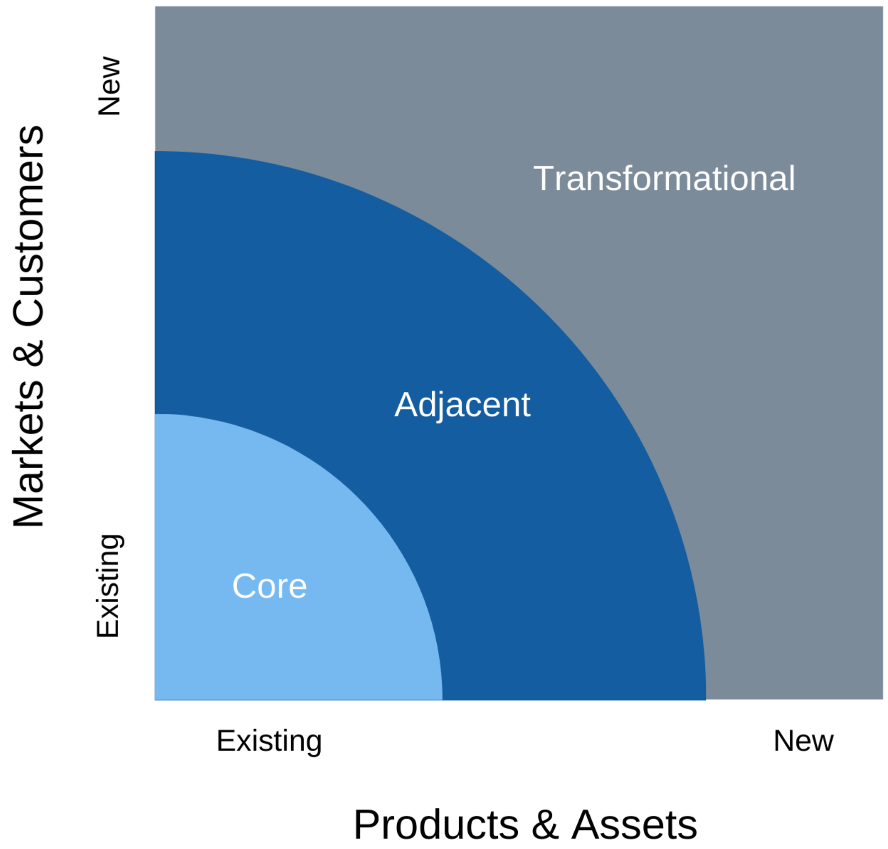

Figure 1 - The Innovation Ambition Matrix (Nagji & Tuff, 2012)

Hagel et al. (2019) argue that the chosen edge should align with the underlying disruptive forces within the specific industry. The forces highlighted by the authors are changing customer needs, rapid advancements in technological innovation, and changes in government policy. An edge solution can be said to be a proactive approach to innovation since it involves established firms recognizing the need for pre-emptive change in business and business models following the above-mentioned shifts.

Why Innovate at the Edge?

Different views exist on which benefits firms can achieve by innovating beyond their core. After studying six outside-the-core projects, Bertels et al. (2015) claim that incumbent firms must innovate outside their core, targeting new customers in new markets to maintain growth and protect them from disruption. This agrees with Zook (2004), who states that firms hungry for growth must look beyond their cores for success. Edwards' (2012) article about innovation adventures beyond the core refers to data about 181 adjacency attempts by over 150 firms in the US, showing that continuing to solely focus on the core business is not sufficient if established firms are to survive long term. “Delivering innovation beyond the core, and with it, new sources of growth is an absolute necessity for any company” (Edwards, 2012, p. 35).

Hagel (2019) highlights three factors that can help explain why radical innovation should happen at the edge rather than at the core. First, changing the core has an uncertain outcome and may be perceived as risky. Since a firm’s core has proven its viability, making significant changes to it that may fail could lead to major unfavorable consequences. Second, changing the core requires a considerable number of resources. Reallocating resources from day-to-day operations to change initiatives can be perceived as a threat, which might contribute to triggering the firm’s immune system and create resistance. Third, changing the core is time-consuming. Firms cannot expect results overnight, especially if tension occurs, and it may take a lot of time before the firm notices the positive effects of the innovation. Hagel et al. (2019) state that the superiority of innovating at the edge is that firms can minimize these well-known challenges, resulting in the innovation going under the radar. Further, this thesis will elaborate on characteristics from literature about innovation initiatives beyond the core of large established firms.

Organizational Structure

A suitable organizational structure may substantially facilitate change (Morgan, 1988). Edwards (2012) further states that a critical challenge with innovating beyond the core is how firms organize their innovation initiatives. According to Hagel (2019), traditional innovation initiatives are often significant top-down investments, sometimes even aiming to transform the whole business. Change theory that claims traditional organizations have immune systems working against significant changes problematizes this. Management scholars argue that resistance to organizational change is hard to avoid (e.g., Bovey & Hede, 2001; Worral et al., 2004), but the goal of this approach is to innovate without triggering these immune systems by establishing an innovation initiative at the edge of the core (Hagel et al., 2019). The edge initiative may be in the shape of a separate unit, but it does not have to be as formalized (Meyer et al., 2022).

The literature does not comprehensively describe an optimal organizational structure for edge initiatives. However, Hagel et al. (2019) suggest starting with a small team of people with complete autonomy in organizational practices and resource use. Creating innovative ways to leverage technology is underlined by the authors as an essential aspect of innovating at the edge. Edwards (2012) also finds that a clear organizational separation of core and non-core activities is essential. Separation is vital to avoid the core poaching resources and becoming a constant distraction for the edge. In his presented edge solution, the separate entities have different managers, metrics, incentives, and systems to facilitate radical innovation. Additionally, Hagel et al. (2019) highlight the importance of measuring performance to justify the existence of the edge initiative, including measures of the growth of external networks and technology usage.

Staffing

Hagel et al. (2019) claim that having the right team working at the edge is essential. When recruiting the edge team, the authors argue that the most important thing to consider is passion rather than skills and qualifications. They also underline that employees should have a questioning and connecting disposition and be comfortable with failure and restart. Lastly, the authors suggest hiring people with a history of taking risks and that are comfortable in fast-changing environments.

Management Sponsorship

Radical change in organizations requires a radical change in the role of managers (Kotter & Cohen, 2002). The edge approach to innovation suggests having a change agent functioning as a sponsor from the executive level of the established firm that protects and empowers the initiative (Hagel et al., 2019). According to the authors, the sponsor should have the determination and conviction to question status quos, as well as hold the ambition of profoundly transforming the firm’s future. Similarly, Gilbert and Bower (2002) find that one of the characteristics of firms successfully facing radical change is that they have an integrator to manage the tension between innovations and the core business.

Use of Technology

Hagel (2019) writes that when choosing an edge initiative, established firms must consider which forces in society can help when scaling it, with technology being an example of such a force. The author recommends keeping the edge technology separate from core IT to secure independence. It should also depend on rising external technologies such as cloud computing, social platforms, and big data, which are easily adopted and relatively cheap.

Starving the Edge

Hagel et al. (2019) propose to starve the edge, meaning that the innovation initiative gets as little funding as necessary to reach milestones. The reasoning is that innovation processes depending on large investments over a long time can draw funding away from existing core activities, thus triggering resistance in the core. Starving the edge by providing the least amount of financing possible to reach progress is suggested as a way to reduce the risk of causing resistance. Hagel et al. (2019) state that the firm should invest when the edge reaches performance milestones. The concept of starving the edge is similar to the strategy that venture capital (VC) uses when investing in startups and forces the initiative to concentrate on the tasks that give maximal value for the money. This sets a precedent that the initiative must prove itself before asking for more capital (Hagel et al., 2019).

Agile Ways of Working

Another relevant topic to review is agile, as Hagel et al. (2019) argue that edge initiatives should adopt agile methodologies. Instead of throwing more money at problems that occur and diverting resources from the core, the authors argue that edges should be able to change course rapidly. Rigby et al. (2016) write that agile teams are well suited for innovation as the value of agile processes lies in dealing with change instead of a specific predefined plan. Hagel et al. (2019) argue that agile development methodology can help the edge team learn faster and compresses the lead time between investment and return.

External Relations

Hagel et al. (2019) point out that edges need to rely on external relations to avoid triggering resistance from the core. Nonetheless, the authors emphasize the importance of utilizing some capabilities from the core business, as it otherwise would make little sense to be part of an established firm. They further suggest seeking funding and knowledge from external sources by joining a network. Business networks consist of directly and indirectly connected firms that can provide benefits such as knowledge exchange (Öberg, 2019) and regular feedback (Hagel et al., 2019). Both Hagel et al. (2019) and Edwards (2012) point to collaborating with external partners as a measure to grow edge initiatives while keeping a distance from the core.

As Hagel et al. (2019) emphasize the importance of working with external partners and utilizing external resources, it may be helpful to introduce the topic of open innovation. Chesbrough (2003) launched the concept of open innovation and later defined it as "a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology" (Chesbrough et al., 2006, p. 1). Open innovation suggests that the outcome can be higher from collaborations than it would have been if firms worked individually (Meyer et al., 2022). The most prominent contrast to closed innovation is the principle that firms can profit from others using their intellectual property. Hence, they do not need to keep intellectual property within the firm (Chesbrough, 2003).

There is no concrete recipe for facilitating open innovation processes as there is a range of potential collaborators and ways of collaborating. According to West & Bogers (2013), it can be done by involving customers, start-ups, universities, or being a part of an ecosystem. Working with other firms, universities, or networks outside the firm can result in the firm gaining knowledge and ideas they would never have thought of if they only worked with R&D internally. However, Felin and Zenger (2020) criticize the concept for being too vague, as there are no concrete guidelines describing how to work with open innovation. The process can be hard to control, and one must be aware that collaboration does not necessarily lead to knowledge sharing. Organizations need to be mindful of risks associated with initiating open innovation processes, as knowledge sharing can be hard to reverse (Bercovitz & Chesbrough, 2020).

Scaling the Edge

Hagel (2019) acknowledges that the idea of launching an innovation initiative at the outskirts of the core is not new. According to the author, what separates the presented edge solution from how many firms are operating today, is the fact that the intent of the edge is not necessarily to quickly integrate it into the core, even though it may contribute to innovation in the core. As pointed out, "[t]he problem is that as soon as you try to integrate back into the core, the same powerful immune system and antibodies mobilize to crush these perceived threats to the established business" (Hagel, 2019, p. 4). It is also not sure that integrating has any obvious synergies, as the initiative is placed at the edge product- or marketwise and should not compete with the core. The author suggests to rather focus on scaling the edge. As the edge gains momentum, it might attract more and more people and resources from the core, which in the long term could contribute to transforming the core by pulling it towards the edge (Hagel, 2019; Hagel et al., 2019). Although Hagel focuses on scaling, this thesis will take a broader perspective on the evolvement of an edge to revise other trajectories that might supplement existing literature.

As the edge continues to prove itself by reaching short-term milestones, the long-term possibilities can become more visible to the rest of the organization, thus having the potential to reduce the core's resistance towards the edge. Nevertheless, Hagel (2019) points out that the skepticism of the new initiative amongst employees in the core might remain. However, it can decrease as they start believing in the initiative. The time range of gradually pulling resources from the core to the edge is not specified, but we read this to be a long-term process (Hagel et al., 2019). It is also worth noting that the edge does not have to transform the core business entirely; nonetheless, Hagel (2019) argues that the new market or product at the edge should have the potential to transform the core. Ultimately, the potential trajectories of edge initiatives are less explored than in other approaches to innovation due to the limited literature on the topic.

Wrapping up the Edge

To conclude, the literature suggests that large established firms can innovate by finding an edge and placing a small autonomous team of passionate individuals at the edge. It is argued that the edge team should work agile and utilize new technology and external relations while being starved by the core business and receiving management sponsorship. However, there is no empirical research supporting most of the presented literature. According to Meyer et al. (2022), the edge approach might, to a certain extent, resemble a variant of the ambidextrous organization. Nevertheless, the authors state that there seem to be some crucial differences. The following section will introduce the theory of ambidextrous organizations and highlight some of the most prominent similarities and differences to innovation at the edge.

2.3 The Ambidextrous Organization

To overcome the structural and cultural inertia that hinders innovation and can lead large established firms to the boneyard, Tushman and O'Reilly (1996) developed the concept of ambidextrous organizations. However, they did not invent the term themselves; Duncan first introduced the ambidextrous solution in 1976, but it did not receive commensurate research attention before March (1991) published his article about exploration and exploitation. March argued that firms should combine exploration of new business opportunities and the exploitation of old certainties rather than underuse or overuse them. Later that decade, Tushman and O'Reilly (1996) developed the ambidexterity theory as we know it today: a firm's ability to simultaneously pursue exploration and exploitation activities through organizationally distinct units tightly integrated at the senior executive level (Benner & Tushman, 2003; O'Reilly & Tushman, 2004; Raisch & Birkenshaw, 2008).

Although the literature proposes three different ways established firms can become ambidextrous, when using the term in this thesis, we refer to the structural separation of exploration and exploitation activities into different organizational units (Birkinshaw et al., 2016; O'Reilly & Tushman, 2016). The new unit often gets tight deadlines for delivering value, as the ambidextrous approach to innovation is often used when changing to address emerging threats or opportunities (O'Reilly & Tushman, 2008).

Empirical Evidence

In the past 20 years, there has been a growing interest in ambidexterity and the effect of this prominent approach to innovation. Since Tushman and O'Reilly's (1996) first article on the topic, hundreds of empirical studies, theory papers, and review articles have explored ambidexterity and its effects. The pattern in the existing literature is quite clear: despite different measures of ambidexterity, level of analysis, samples from various industries, and an assortment of outcome variables, the results connecting ambidexterity to performance are robust (O'Reilly & Tushman, 2013). Even though some early studies of ambidexterity relied on case studies and anecdotal evidence, more recent studies use larger samples and longitudinal data (e.g., Goosen et al., 2012; Geerts et al., 2010) confirming that ambidexterity is positively associated with business performance. This is in stark contrast to the topic of innovation at the edge, where empirical research is almost non-existent.

Organizational Structure

This structural approach to ambidexterity involves establishing a separate unit within the established firm and giving it the mandate to innovate radically (O'Reilly & Tushman, 2004). By allowing the new unit to focus on innovations solely, firms may avoid the cultural and structural inertia that tends to develop in the established parts of the business. In addition, the solution does not require established units to readjust or radically change. Both Tushman and O'Reilly (1996) and Hagel (2019) argue that firms can prevent unnecessary negative tension between the traditional and the new by separating these activities.

Placing the new unit as far away from the established business as possible, either organizationally or geographically, can ensure autonomy (O'Reilly & Tushman, 2004, 2016). Although structural separation is essential to avoid the established firm's immune system, a link to the established business constitutes a competitive advantage when facing other entrepreneurs. While startups must fight to attract the right resources and competence, the new innovative unit can draw on the established firm's resources and expertise. Yet, the organizational structure is usually looser and more adaptive in the new units than in the established ones, and work processes are often more agile. Similarly, autonomy and agile ways of working are suggested when innovating at the edge. Unlike O'Reilly and Tushman, Hagel et al. (2019) do not mention whether to organize the edge as a separate unit or just an independent team working in the same office space.

Culture & Staffing

The structural separation of the ambidextrous solution allows the new innovative unit to create and develop its very own culture from scratch. According to O'Reilly and Tushman (2004), the new unit's cultural characteristics include speed, flexibility, experimentation, and risk-taking. The unit will typically attract entrepreneurial employees that are willing to change, take risks, and can see opportunities in radically new ways of working, which can foster a highly collaborative entrepreneurial culture (O'Reilly & Tushman, 2004). The authors further suggest hiring specialists and tech competence. In contrast to O'Reilly and Tushman, Hagel (2019) argues that the edge should hire for passion rather than a specific skill set, as passionate employees are more likely to successfully deal with the uncertainty that come with working at the edge. However, both approaches suggest hiring employees comfortable with risk and change.

Ambidextrous Managers

Even though the structural efforts of the ambidextrous solution may be the most visible and apparent, the managerial efforts are often more vital and troublesome (Stensaker, 2018). Tensions might occur when a new and distinctly different unit is established alongside the traditional business, especially when simultaneously seizing human and financial capital. Some firms have even experienced the advance of an A-team and a B-team, where the new unit gets lots of attention and prestige, while the established finances all the pastime (Meyer et al., 2022). To avoid this, top managers of ambidextrous organizations need dual focus (O'Reilly et al., 2009; Tushman & O'Reilly, 1996). Succeeding with radical innovation as an ambidextrous organization thus requires firms to maintain close links across units at the senior executive level (O'Reilly & Tushman, 2004). This is similar to innovation at the edge, where new initiatives depend on having management sponsorship to protect the edge while simultaneously demonstrating conviction for change (Hagel et al., 2019).

2.4 Trajectories of Innovations in Established Firms

Few studies have looked at what transpires as the new unit in the ambidextrous organization matures and develops (Meyer et al., 2022). Similarly, to our knowledge, the time perspective has not been researched in the context of an edge solution. Siggelkow & Levinthal (2003) proposes that innovation units eventually could be reintegrated into the established business to renew the core. Another trajectory large established firms might pursue with innovations involves spinning it off. Spin-off typically refers to creating a new firm based on a business idea developed within the established firm (Parhankangas & Arenius, 2003). Although the research presented below is not in the context of edge innovation, it may still be helpful and will be used later in this thesis when discussing potential trajectories of an edge initiative.

Integration

As the ambidextrous organization holds several similarities to the edge approach to innovation, it can be beneficial to look at cases of ambidexterity when exploring integration. Current literature on ambidextrous organizations emphasizes that integration may be advantageous after the new unit has gained legitimacy and financial success (Schmidt, 2020; O'Reilly & Tushman, 2016). Meyer et al. (2022) argue that integration can be beneficial if the competence, culture, and work processes developed in the new unit will contribute to renewing the established units. After being integrated, competencies developed in the new unit can be transferred to the established firm, thus providing innovation benefits. However, the established business must not stifle innovations with existing practices when integrating (Markides & Charitou, 2004). However, if the innovations are not strategically important or can benefit from the established firm's existing assets, another possibility is spinning the new unit off.

Spin-off

Spinning off can be to form a new organization based on business ideas developed within the established firm (Parhankangas & Arenius, 2003), often with the established firm as an owner or with representatives on the board of directors (Block & MacMillan, 1993). According to Garvin (1983), spin-offs are often created to target niches in the industry that the established firm does not currently serve. A benefit of spinning off is allowing for a faster exchange of resources due to a higher autonomy and less complicated structures (Agarwal et al., 2004). Other reasons might be to create value for the new firm (Garvin, 1983) or securing growth and innovation capabilities for the core business (Block & MacMillan, 1993). However, for a spin-off to be beneficial, Christensen and Overdorf (2000) argue that firms should meet one of the following criteria. The innovation needs to have a different cost structure than the established business, or the present size of the innovation needs to be minimal compared to the existing business' desire for growth. If the second criterion is present, the innovation might be down-prioritized and not be allocated enough resources. Thus, it might be advantageous to rather spin it off (Christensen & Overdorf, 2000).

3. Research Setting

This chapter will provide the reader with the context of the study by presenting information about the established firm and its edge initiative. The chapter is written based on information obtained through meetings with the contact person from the case company, interviews, and other secondary data sources disclosed in the methodology chapter. All collected data are anonymized, and the pseudonyms "Automotive" and "CareShare" are used to refer to the large established firm and the edge initiative, respectively.

3.1 About the Case Company

Automotive is headquartered in Norway and is one of the largest automotive and mobility groups in Northern Europe. Their core business is import, sales, service, and financing of various car brands, which is also reflected in the company structure (Figure 2). In 2017, *Automotive* established the car sharing service *CarShare* wanting to explore the new mobility landscape. *CarShare*'s vision is to redefine individual mobility by offering cars on demand enabled by an advanced technology platform and convenient cars. The strategy includes combining car competence from *Automotive* with skilled tech-savvy entrepreneurs hired externally. *Automotive* has defined this new initiative as a strategic focus area.

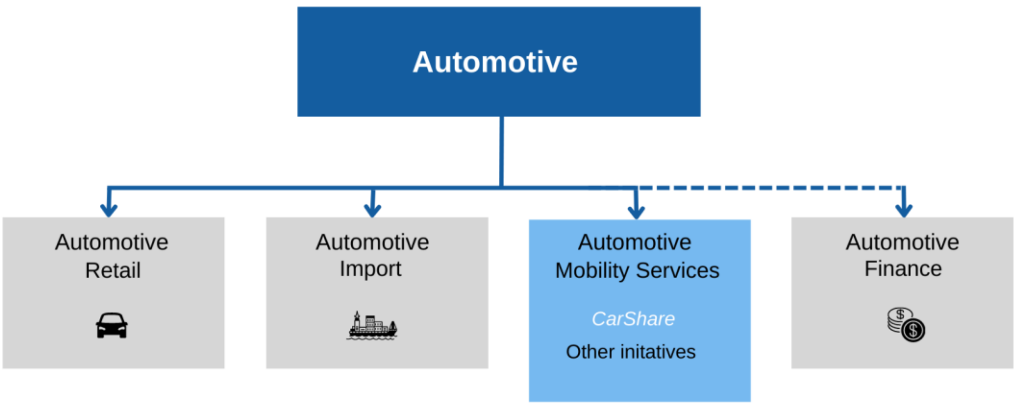

Figure 2 - Organizational Chart

As *Automotive* is over a hundred years old and has several thousand employees, we characterize the firm as a large established firm. *CarShare*, on the other hand, was established as a small joint venture between *Automotive* and eight entrepreneurs. *CarShare*'s product can be seen as a radical innovation as it presents a clear departure from existing practices in the automotive and mobility industry, in addition to differentiating from traditional car sharing services by utilizing disruptive technologies. Additionally, we perceive *CarShare* as an edge initiative as it is a new product and a new customer segment for *Automotive*. Ultimately, it seems like *CarShare* has several similarities to the edge solution presented by Hagel et al. (2019), which we will elaborate on in the Discussion chapter.

Automotive is an interesting case to explore how large established firms can radically innovate at the edge and how such an edge can develop. Although *CarShare* was initiated and co-owned by *Automotive*, the initiative operates separately from the established business. The formal connection to *Automotive* happens through *CarShare*'s board of directors, which, apart from the management of *CarShare*, includes executives from *Automotive* acting as owner representatives. Other than this, there are no formal control mechanisms between the two, just casual talks due to personal relations.

Both *Automotive* and *CarShare* operate in the automotive and mobility industry. The industry is centuries old but remains dynamic as it is significantly affected by the megatrends of urbanization, climate change, and technological innovations. By 2030, almost 70% of the world's population will be living in big cities, which will call for smoother mobility. Additionally, the climate is changing, and the production and consumption that arises from most people owning cars are hard to justify if the world is to reach its climate goals. Accordingly, urbanization and climate change increase the need to find new, sustainable mobility solutions. Thus, within 2030, *Automotive* is prepared to replace more than 30 percent of its current revenue with revenues from new mobility services. Fortunately, the rapid advancement of new technology and the rise of the sharing economy facilitate sustainable development in the industry and for *Automotive*. By establishing *CarShare* five years ago, *Automotive* wanted to contribute to facing these challenges and embracing new possibilities.

After the establishment of *CarShare*, *Automotive* has, through *Automotive Mobility Services*, acquired ownership shares in several other firms to expand their service offering. We will not further examine these in this thesis.

3.2 Case Selection

It is essential to find a suitable case to study to answer the research question. The thesis supervisor, professor Stensaker, got a tip about this particular case from an executive from another organization active in the research center DIG at NHH, of which RaCE is a part. Before deciding on the selected case company, we read annual reports and news articles about *Automotive* and their innovation initiative, ensuring that *CarShare* was indeed an edge initiative initiated by the established firm. Hence, the case company was chosen through opportunistic sampling (Saunders et al., 2019) as it occurred unexpectedly, and we viewed it as an exciting opportunity to explore how companies can innovate at the edge of their core business. According to Yin (2018), choosing a unit of analysis is crucial as one carefully has to distinguish between the group that is the aim of the study and the group that is not. In this case, it is easy to separate *Automotive* and *CarShare* from each other and other firms, as they are independent legal entities. As such, this is an embedded case study where we will analyze *CarShare* as a distinct unit within *Automotive*.

4. Methodology

This chapter gives the reader insight into the methodological choices made to allow us to answer the research question at hand. It also brings attention to the implications the methodology has on the research. First, we will present the research design, followed by data collection and analysis sections. Finally, we evaluate the study by discussing the research quality and ethical considerations.

4.1 Research Design

The research design is a plan for data collection and analysis (Ghauri & Grønhaug, 2010). In other words, a plan for how we will answer the research question. As mentioned, the topic of innovation at the edge is touched upon by a few practitioners, yet the academic knowledge of the approach is almost nonexistent. Additionally, the current literature does not provide extensive answers to how established firms can innovate at the edge in practice, nor how an edge initiative can develop over time. As the research topic is not thoroughly understood, we use an explorative research design in this thesis (Ghauri & Grønhaug, 2010).

When using an exploratory research approach, the researchers must be able to observe, collect information, and construct explanations (Saunders et al., 2019). Additionally, researchers must be flexible and prepared to change direction, if necessary, based on new information (Ghauri & Grønhaug, 2010). When adopting an explorative approach, it is beneficial to use qualitative data, as qualitative research gives rich and flexible non-numeric data and has the potential to provide an in-depth understanding of the problem statement (Saunders et al., 2019).

4.1.1 Purpose and Strategy

This thesis aims to extend the insight on how large established firms can radically innovate at the edge and how edge initiatives can develop over time. The purpose of this study is twofold. First, the research aims to create a foundation for future research. Second, the study seeks to increase practitioners' understanding of how to successfully establish, manage, and develop innovation activities at the edge of the established.

We answer the research question of this thesis by conducting a case study relying primarily on qualitative data. Case studies are a common approach in exploratory research, as they can be suitable to achieve an in-depth understanding of a group's behaviors, opinions, motivations, emotions, and perceptions (Jemna, 2016). One of the critical arguments for using a qualitative approach is that it allowed us to ask for descriptive responses, which ultimately helped us gain new insight. Yin (2018) also proposes that case studies are fitted to "how" problem statements, such as the one in this thesis, and are suitable to study topics in a real-life setting. Since we have chosen to gain an in-depth understanding from a single case study in one specific context, rather than superficial knowledge from a variety of cases, the findings of this thesis cannot be considered representative outside of the particular context (Eisenhardt & Graebner, 2007). As discussed later in the Transferability section, this is neither the purpose of the study.

4.2 Data Collection

This section will describe how data was collected and analyzed in the research. The thesis is part of the RaCE research project at NHH Norwegian School of Economics, which focuses on understanding radical technology-driven change in established firms. As the literature on edge initiatives is narrow, this thesis aims to broaden the knowledge about edge initiatives as a lever for radical technological-driven change in established firms. This thesis is one of two case studies looking to increase knowledge about this approach to innovation.

4.2.1 Data sources

After deciding on the case and contacting the case company, we had an initial meeting with the contact person from *Automotive* over Teams. Here, he outlined the story of the innovation initiative, and we discussed potential informants. The primary data source in this thesis is in-depth interviews with key personnel from *Automotive* and *CarShare*. A decisive criterion when selecting informants consisted of having been strongly involved in the establishment or operation of *CarShare*. As we were interested in both the edge initiative and its relationship with the large established firm, representatives from both sides were interviewed (see Table 1). As one can see, all informants from *Automotive* (#1, #2, and #4) have been or are still involved in *CarShare* as board members. We supplemented the primary data with secondary data, as this allows for data triangulation (Saunders et al., 2019) which can reinforce the grounding of the research's findings and increase confidence in the research data (Jick, 1979).

Informant	Role in case company	Duration
#1	• EVP Mobility Services, *Automotive* • Chair of the Board, *CarShare*	90 min
#2	• Head of New Mobility Services, *Automotive* • Board Observer / Board Member, *CarShare*	45 min
#3	• Co-founder & CEO, *CarShare* • Board Member, *CarShare*	60 min
#4	• Former group CEO, *Automotive* • Initiator and former Chair of the Board, *CarShare*	75 min
#5	• Co-founder & CMO, *CarShare*	45 min
#6	• Co-founder & CTO, *CarShare* • Board Member, *CarShare*	30 min

Table 1 – Informants

4.2.2 Semi-structured interviews

As mentioned, the primary data in this thesis is semi-structured interviews. We chose this because it fits well with the study's exploratory nature, allowing us to go in-depth into the informants' opinions (Saunders et al., 2019). Semi-structured interviews are not standardized, but we determined specific topics involving key questions we wanted to cover beforehand. We asked new and follow-up questions during the interviews depending on the context of the situation. Being able to adapt questions to fully understand the context, makes this interview approach relevant to answering the research question.

As *Automotive* and *CarShare* are located in another city, we conducted interviews online to be flexible on time. The interviews were six in total, and we recorded them with the consent of the informants. The duration of the interviews was between 30 and 90 minutes, depending on the informants' availability. When preparing for the interviews, we created an interview guide with a list of questions, which the thesis supervisor later reviewed and approved. The interviews varied slightly based on the role and belonging of the informant. A large part of the questions was, however, similar to ensure consistency, as the goal of the interviews was to understand the informants' perspective and compare answers. After the first interview, the interview guide was adapted based on new insights. We also emphasized asking open-ended questions to avoid leading the informants in any direction and letting them talk freely.

4.2.3 Interview process

Saunders et al. (2019) state that an interview's success depends on the preparation level. As a result, we read up on the established firm and its edge initiative before the interviews and looked up informants' LinkedIn profiles to understand their background. To ensure we covered relevant themes in the interviews, we spent several weeks reviewing the topic of innovation at the edge beforehand. We also had an initial meeting with the senior manager who connects *Automotive* and *CarShare* to understand how the entities work and interact. This person later became our first informant. After the initial online talk, we scheduled interviews with other informants using email. We did this with the support of the mentioned manager and the CEO of *CarShare*. Being referred by a colleague from *Automotive* or *CarShare* could have strengthened the informants' trust in us as researchers. Later, we connected with the informants individually to decrease the level of work for the contact person and build a relation.

Preparing for the interviews, we created an interview guide to ensure specific topics were covered. The interview guide was developed in Norwegian to allow us to talk more freely, since both the informants and the researchers have Norwegian as our mother tongue. We were both aware of the possibility of asking follow-up questions based on the informant's answers. The day before the interview, we sent a consent form to the informants to ensure confidentiality (see Appendix A), and all informants signed it before attending the interview.

As *Automotive* and *CarShare* both have a lot happening, the interviews were conducted based on the availability of the employees in the period mid-February to mid-March 2022. We conducted the interviews using Microsoft Teams' video meeting feature, and all were audio-recorded using iPhone's standard audio recording application. Audio recording was beneficial for as it allowed us to devote all our concentration to the informants and later use direct quotes from the interviews (Saunders et al., 2019). We were, however, aware of the influence audio recording can have on the informant, affecting their responses. We therefore spent the first few minutes of the interviews explaining the RaCE program and the purpose of our research, informing about the interview and the consent form, and asking if it was acceptable to record the interview. This aligns with Saunders et al.'s (2019) recommendation to gain credibility as an interviewer. Increasing the level of trustworthiness by using a few minutes to describe the research frames reduced the risk of response bias.

Both authors of this thesis were present during the interviews, allowing one to focus solely on the informant. At the same time, the other could take notes and oversee the recording and deal with potential technical issues. The interviews began with basic questions about the informant's background and motivation to be involved in the edge initiative. After that, the topic moved on to *Automotive*, wanting to understand the core business and its strategy. Further on, we asked similar questions about *CarShare*, including some elaborating questions, as the edge initiative is the main focus area of this thesis. Then, we moved on to questions about the relationship and interaction between *Automotive* and *CarShare*. Before closing the interview, we asked about tips for others establishing similar initiatives and if they wanted to add anything. This was to ensure not to miss something relevant. The complete interview guide can be found in Appendix B.

4.2.4 Secondary Data

To enrich the study, we supplemented the semi-structured interviews with secondary data. We collected secondary data through the contact person in *Automotive* and found publicly available information about the case company. The secondary data sources applied in this thesis include two PowerPoint presentations obtained from the contact person at *Automotive* containing relevant information about the strategy, history, and organizational structure of *Automotive* and *CarShare*. We also utilized public information, such as informants' LinkedIn profiles, company websites, annual and sustainability reports, media news articles, and proff.no, a database tracking company ownership and profitability. Yin (2018) argues that one must be careful using secondary data, as it is written for a different purpose. As a result, we used it as a supplement to the analysis rather than to conclude (Saunders et al., 2019). Using primary and secondary data facilitates data triangulation, which may result in a more comprehensive understanding of a phenomenon (Patton, 1999).

4.3 Data analysis

Exploratory, qualitative interviews are often accompanied by an inductive research approach (Saunders et al., 2019). This thesis uses an inductive approach to analysis as it allows meanings to materialize from the collected data to recognize patterns and connections, ultimately allowing us to build theory. The approach involves exploring the topic of innovation at the edge and developing theoretical explanations as the interview data are gathered and analyzed. Although the approach is data-driven, it did not prevent us from using the existing literature on the field to formulate the research question nor identifying ideas we wished to explore during the research process (Saunders et al., 2019).

The data collected for this thesis is rich, which creates a need to analyze the data in a way that is both systematic and flexible. Although there exists a range of different approaches to qualitative data analysis, there are some fundamentals that cut across most of them. According to Silverman (2016), this includes an initial focus on reading thoroughly and describing the collected data, followed by systematically coding and searching for connections and patterns underlying the data.

4.3.1 Data preparation

After completing the interviews and gathering data, we transcribed the audio recordings using the digital transcription tool InqScribe. In addition to the words spoken, we included laughter, pauses for thought, silence, and prolonged vowel sounds. We did this to interpret better what the informant meant (Saunders et al., 2019). Transcribing also increased the knowledge of the collected data, as we listened carefully to each part of the interviews. After completing the transcribing, we read through the transcribed interviews closely, looking for interesting, important, unusual, and noteworthy information (Silverman, 2016). We were especially attentive to the repetition of things informants said or did and took notes separately while reading. Later, we compared the notes and markings and merged them into a single document describing the collected data. After the detailed reading and description of the transcribed interviews, it was time to code the data systematically.

4.3.2 Coding

Before coding the data, we read through the literature chapter of the thesis to keep it fresh in mind, making it easier to identify connections and valuable information from the transcribed interviews. Based on this thesis' problem statement, we then tried to find relevant content from the data and put specific codes on it. According to Saldaña (2015), a code in qualitative studies is a short phrase that assigns a part of the text to a representative and descriptive attribute. We based the coding process on Charmaz' (2006) guidelines for coding, which simplifies the process into two key stages: initial coding and focused coding.

Initial Coding

Initial coding is an exploratory process that involves arranging and rearranging the used codes until one has constructed themes that seem to present the main ideas and relationships in the data (Saunders et al., 2019). In this first stage of the analysis, we checked the data for differences and similarities and created codes where this seemed appropriate. Through coding, we defined what happened in the data and started to grapple with what it meant (Charmaz, 2006). Initial codes were created individually by labeling the text, sentence-by-sentence, with names or short sentences that outlined and summarized the data. The goal was to stay open to every potential theoretical direction implied by our data readings (Charmaz, 2006). Aligned with Charmaz (2006), we kept the initial codes short and close to the data. Figure 3 contains an example of the initial coding. The blurred parts of the picture contains the transcript, whereas the right column assigned a short representative sentence to each data segment.

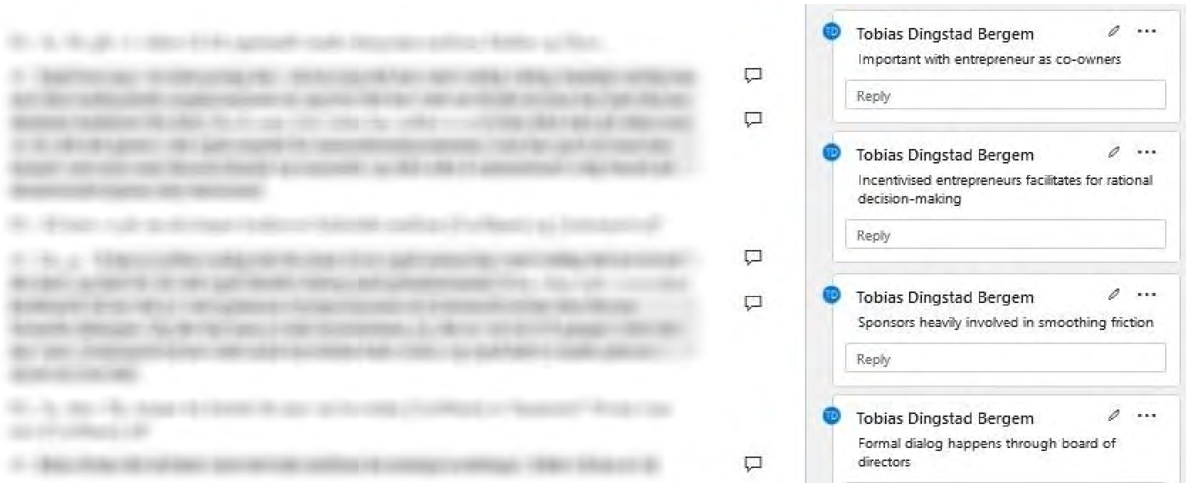

Figure 3 - Snapshot of the initial coding process

As new interviews were analyzed, we reanalyzed existing codes. While doing so, we kept in mind what we already knew (and did not know) from existing literature. By highlighting some phrases as belonging to a particular code, we started to inductively construct a local coding schema, a distinct way to understand a phenomenon (Silverman, 2016). Initial coding was vital for sorting a large amount of collected data, enabling us to identify the most prevalent themes (Silverman, 2016). The process also helped us recall essential elements in the data that we might have forgotten without it. Later, we applied the same approach to the secondary data.

Focused Coding

Focused coding is about deciding which initial codes the researchers should use to develop the coded data's explanatory and analytical focus (Saunders et al., 2019). We started by comparing our analyses as we did the initial coding individually. Together we further pinpointed and developed the most noticeable categories in the substantial collection of data (Charmaz, 2006). The process of focused coding was in no way straightforward, and we used a considerable amount of time trying to work out which of the initial codes were best to use as focused codes, resulting in the codes being re-coded several times. As Charmaz (2006) predicted, the active coding process took us into unforeseen areas. It made us add a sub-question to our original research question as we made new interactions with the data. Figure 4 displays an example of the focused coding process, where the right column contains two of the parent codes we ended up using: arm's length and management sponsors.

Figure 4 - Snapshot of the focused coding process

We did the coding process digitally by using the comment feature in Microsoft Word and eventually highlighting different parent codes in different colors. Key quotes from each category were placed in a document and later used in the Findings chapter of the thesis to substantiate the findings. Since we conducted the interviews in Norwegian but wrote the thesis in English, we translated all used quotes from Norwegian to English. We did this together to ensure the most accurate translation possible. When doubtful of the correct translation, we used a Norwegian-English dictionary available at NHH's library. Still, translating quotes was somewhat challenging, as several Norwegian phrases lost their meaning when translated. To avoid this, we did not translate word-by-word but instead tried to convey the informant's statement in the most comprehensible way possible. To ensure that the quotes did not lose their intended meaning, we translated them back to Norwegian after some time. This allowed us to double-check that we had translated the quotes correctly.

The analysis process was iterative in that we constantly went back and forth between theory, coding, and conclusions. As the interview guide introduced a lot of different potentially interesting themes, the direction of the analysis was not clear from the beginning, which aligns well with the explorative approach of the thesis (Saunders et al., 2019). When assessing our findings, we found many similarities between the data and the literature. We also found similarities in the data itself, as informants' answers were somewhat aligned. However, we discovered that not *all* the findings align with nor are covered in the existing literature. Therefore, we tried to look for new patterns and identify connections that could contribute to the field of innovation at the edge.

4.4 Research Quality

The following section evaluates the quality of the research with the intent to provide trustworthy results. We have written this thesis following the standards of qualitative research. Often, research is evaluated by assessing the criteria of reliability and validity. However, as these criteria are not adapted to qualitative research (Saunders et al., 2019), similar criteria for research have been created. The criteria for evaluating qualitative research are credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985; Schwandt et al., 2007). These will be assessed in this thesis as they, according to Saunders et al. (2019), are a better fit to assess research quality in qualitative studies. The goal of this thesis is not to be able to be replicated, as it is a unique case, but rather to support others when conducting similar research. The aim is to provide initial research on innovation at the edge and build a foundation for further research on the topic.

4.4.1 Credibility

Credibility in qualitative research parallels internal validity in quantitative research (Saunders et al., 2019). It refers to the truth of the data and if the researcher interprets and represents the informants' views correctly (Cope, 2014). In this thesis, we enhance credibility by using several data sources to achieve data triangulation. The collected data consists of interviews, PowerPoint presentations, annual reports, news articles, and social media profiles. Combining these when analyzing the data has reduced the chance of misinterpretation. If something was unclear during the interviews, we asked the informant to elaborate or explain using different words to ensure we understood correctly. We also frequently asked follow-up questions to verify and elaborate on the informants' opinions. Finally, we strengthened credibility by validating the findings with the contact person in *Automotive* before publishing, in a process called member validation (Saunders et al., 2019).

An audit trail can enhance credibility (Cope, 2014). This is a collection of notes and documents used in the research process. During the work on this thesis, we have collected and saved several documents and notes. These are notes from the interviews, full interview transcripts, and drafts of the final thesis. When transcribing the interviews, we were conscious of including anything from laugher to irony to have an accurate interpretation. Having the audit trail considered by the thesis supervisor in addition to both researchers, has enhanced the credibility of the study (Cope, 2014).

Furthermore, investigator triangulation helps enhance credibility. This means involving more than one researcher in the same study. Having a thesis partner and reflecting together reduced the risk of the thesis just presenting one side (Carter et al., 2014). It is also a strength that this thesis includes quotes from the informants, as it supplies evidence for the reader (Cope, 2014). Additionally, we only considered themes mentioned by more than one informant to ensure the data's relevance.

4.4.2 Transferability

Transferability has its similarities to external validity but does, however, have essential differences. Whereas external validity is about how to use findings to make statistical generalizations about a larger population, transferability is about how to apply findings in other settings (Polit & Beck, 2012). Since our case study mainly relies on qualitative data from a small non-probability sample, it does not have the potential to be generalizable (Saunders et al., 2019). However, as this research is not large-scale hypothesis-testing, the purpose of this study is to develop theory, not to test it (Eisenhardt & Graebner, 2007). We aim to develop theory with a sufficient level of abstraction so that it transfers to other cases or settings. Additionally, we hope our research may be helpful as a starting point for other studies and that others can learn from the research context and use the study as inspiration in other contexts (Saunders et al., 2019). For the reader to understand the findings in light of the context, we have described the context comprehensively.

4.4.3 Dependability

Dependability is all about data consistency over time and conditions (Polit & Beck, 2012) and is the qualitative parallel to reliability in quantitative research (Saunders et al., 2019). As case studies are dependent on the context, it is necessary to be transparent about how data was interpreted. Polit and Beck (2012) argue that credibility cannot be achieved if the study does not have dependability. We have provided an extensive and transparent methodology section to strengthen dependability in this thesis. Additionally, we ensured the informant's anonymity to enhance dependability (Saunders et al., 2019).

4.4.4 Confirmability

Confirmability is related to the researcher's ability to present the data objectively and not let their biases influence conclusions (Cope, 2014). To strengthen confirmability, this thesis includes extensive Methodology and Findings chapters to describe how we came to conclusions (Cope, 2014). A detailed and transparent research design helped us be less subjective during the study. Additionally, the process was carefully followed by our thesis supervisor, ensuring a high quality of the research methods.

We both created a suggestion for an interview guide separately before comparing, discussing, and merging it into one complete guide. Additionally, before conducting the first interview, a feedback session with the supervisor was held, which led us to restructure the interview guide. Changes were made to ensure a more objective and logically constructed interview guide, not asking leading questions. We also include direct quotes in the findings to ensure the correct presentation of data (Cope, 2014). However, there is a risk of researchers looking for data that confirms what one already believes; a cognitive error called confirmation bias (Nickerson, 1998). We dealt with this by being aware of its existence and being more careful when jumping to conclusions.

4.4.5 Ethical considerations

In alignment with Saunders et al. (2019), we have considered ethical principles throughout the research process. This means, among other things, that we have used good citation practice when we have built on other scholars' work. We have mainly considered the guidelines from The National Committee for Research Ethics in the Social Sciences and the Humanities (NESH, 2021). We focused primarily on the chapter concerning research participants and started already when developing the interview guide to consider how we should ask questions to avoid misrepresentation of the informants' meanings. We also ensured that participation in our study was based on information and consent and only interviewed those who voluntarily wanted to share their experiences. As voluntariness was vital to us, we made sure to document this by sending out a consent form to all informants via email in advance. The RaCE project made the consent form and the informants had to sign them before the interviews. In the consent form, we informed informants about the interview process, their anonymity, the RaCE project, and the intent of this study. We made sure to point out that they could withdraw their consent at any point during the study.

As some of the decisions the case company is considering are not yet publicly available, we agreed on pseudonymization. This means that we process and show our data in a way that cannot be attributed to the informants or the case company without additional information such as a pseudonym or an informant number (NESH, 2021). To ensure anonymity was protected, we used the pseudonyms *Automotive* and *CarShare* and *Informant 1-6* when referring to the case company or the informants. Another ethical consideration we made had to do with storage and sharing of research material (NESH, 2021). To ensure responsible data storage, informants' names were kept in a separate document, while we saved the transcripts only using the informant number. We saved other information by using different codes only we knew. When the thesis is delivered, the data will be delivered to the RaCE project and deleted from our computers.

5. Findings

The following chapter presents the thesis' findings. The first part focuses on how large established firms can radically innovate at the edge by describing how the edge solution is organized and managed. The second part focuses on how the purpose of the edge initiative has changed over time, exploring the trajectories Automotive has considered for CarShare. The findings may serve as a foundation for future research-based knowledge on the topic.

5.1 Innovation at the edge of *Automotive*'s core

CarShare was initiated by the senior executive management in *Automotive* as an edge initiative leveraging fundamental shifts in the economy to create a technology-driven car sharing service. The informants describe that these shifts mainly involve increased environmental focus and advancement of new technology, such as telematics, combined with the social trends of urbanization and the subscription economy.

To take a position in new mobility, *Automotive* invited eight external entrepreneurs to start the initiative. Several of the entrepreneurs had experience from fast-changing environments, and the culture in *CarShare* is described to differ from *Automotive*'s, characterized by limited knowledge about cars, tech-savvy employees, and agile ways of working. Another feature of the case company's edge solution is that *CarShare* collaborates with external players to facilitate growth and keeps its technology separate from the core IT.

Our findings also reveal some key features that are not aligned nor extensively covered in the edge literature. Below we describe the solution chosen by *Automotive* and show how it can contribute to both nuancing and extending current understanding of the edge solution.

5.1.1 Resistance towards the edge initiative

Interviews with representatives from *Automotive* revealed some initial skepticism and resistance towards *CarShare* from the established parts of *Automotive*.

> *We quickly discovered that [CarShare] and [Automotive Import] got off on the wrong foot. It was skepticism and ambiguity. – Informant 4, Automotive*

The resistance was especially evident during a period when the automotive and mobility industry was struggling, and *Automotive* had to downsize. Concerns were then expressed as to why *Automotive* continued to invest in *CarShare*, allowing the initiative to grow, even though the rest of the group had to downsize.

> *I think there was a lot of skepticism. Then there was a lot of talk about downsizing quite significantly [in Automotive], and it is always difficult for those at risk of being downsized to see that the company makes investments in something that does not generate positive results. [CarShare] also went into a phase where we started buying cars, and we bought a lot of cars from [Automotive]'s competitors. There are many in [Automotive] who have worked there for many years and are incredibly loyal to the brand who finds that difficult to see. – Informant 3, CarShare*

> *The worst example [of resistance] is when you are in a downsizing process, and someone screams at a town hall meeting: "Why the hell don't you just close down [CarShare]?" kind of. "Why are we putting money there? Can't we just close it down, so we don't have to lay off other employees?". – Informant 1, Automotive*

It seems that negative tension also arose because *CarShare* is perceived as a competitor to the core's business model. *CarShare*'s vision is a future where no one in the large cities needs to own a car, strictly the opposite of *Automotive*'s goal of importing, selling, and financing as many cars as possible. *Automotive* and *CarShare* cover more or less the same customer needs for transportation, resulting in *CarShare* being perceived as a competitor to the core.

> *We compete against [Automotive]'s business model. We are saying "you should not buy a car", whilst that is their livelihood. – Informant 5, CarShare*

> *You kind of feel like you contribute to outcompeting yourself a little bit. You feel like you are creating a competitor to the core, you feel like you're not investing enough in the core. Yeah, a lot of emotions there. – Informant 1, Automotive*

Fascinating enough, employees at *CarShare* barely seem to have noticed the tension, which indicates that *CarShare* has been spared from this. Even when asked directly about the tension between *Automotive* and *CarShare*, one informant commented:

> *I have not gotten any reactions [...]. There may have been rumors… but it is not something I know anything about. – Informant 6, CarShare*

5.1.2 Keeping the edge at arm's length to maximize upside potential

CarShare operates at arm's length from the core, which was an intentional and well-thought-out choice from *Automotive*. Informants underline the importance of allowing *CarShare* to run its own course, as the initiative is radically different from the core and may even become a future competitor. Operating too close to the core can ultimately cause the initiative to fail.

> *Imbalances may arise [when creating an innovation initiative], and it is quite often that new initiatives and growth projects simply do not fit into the established firm. This can lead to the initiative failing or taking too long. [...] CarShare is an example of a new initiative that is, in reality, a threat to the core business or that may become a competitor to the core. Then my experience is that it is almost hopeless if you do not really cast off all the mooring lines and let [CarShare] be allowed to run its course, and then [Automotive] can do what they are supposed to do. – Informant 4, Automotive*

In practice, the principle of keeping the edge at arm's length means that *Automotive* and *CarShare* operate and act independently of one another, neither having excessive influence over the other. Although *Automotive* is the majority owner and can use their shareholder power to force strategic choices that would benefit them, they make decisions solely for the benefit of *CarShare*.

> *Yes, [arm's length] means that [Automotive] do not come and control what we should do. What we make and deliver, we do it for [CarShare] and not for [Automotive]. [...] It is not what is most important for [Automotive] that controls [CarShare]'s strategy. – Informant 6, CarShare*

> *With [arm's length], in short, I mean that when the board members are in the boardroom, the formal body that [CarShare] is administered through, they must at all times make the choices that are best for [CarShare], and not the ownership agenda. [...] If [group CEO of Automotive] and I should make a choice for [CarShare], and use our shareholder power, - because we do have the majority - to start forcing through strategic choices that are important for [Automotive], but not necessarily right for [CarShare], then you are out of arm's length. – Informant 1, Automotive*

Arm's length does not only involve acting independently of one another; in the case of *Automotive* and *CarShare*, the principle also involves minimal contact between the core and the edge regarding day-to-day operations.

When it comes down to what we do, operationally, in everyday life, then we have very little to do with [Automotive]. Development has nothing to do with [Automotive]. Me, on market and sales, we have nothing to do with [Automotive]. Sometimes on PR, as we talked about, but then we are talking about 2-3 times a year. On procurement, on cars, there is some interaction because we buy quite a lot of cars from [Automotive] as well, or [Automotive Retail]. On operations and customer service and such, it is mostly nothing. – Informant 5, CarShare

One reason the principle of arm's length is beneficial is that it would slow down *CarShare* if they constantly had to check with key personnel in *Automotive* before making important decisions. The established group has, naturally, much longer decision processes.

As a small company, we have short decision lines. At [Automotive], a much larger company, you naturally get longer decision lines, so it would also slow us down if we were to always check with the marketing director of [Automotive] or [Automotive Retail] or [Automotive Import], if we were allowed to run that campaign or should have those prices or something. So that is really the reason why we operate at arm's length. – Informant 5, CarShare

Moreover, to maximize *CarShare*'s potential upside and stand-alone strategic value, the edge initiative is allowed to cooperate and develop relations with whomever they want, including *Automotive*'s main competitors. Suppose *Automotive* was to lay down guidelines for how *CarShare* should conduct its business and whom to collaborate with. In that case, it could hinder *CarShare* on its way to success, as what benefits *Automotive* not necessarily aligns with what benefits *CarShare*. Additionally, if the two entities were too tightly connected, *CarShare* might lose its credibility in the market.

It is clear that if [the relationship] had been too tight and [Automotive] should start thinking about our communication, business model, or focus areas, it would have been limiting. – Informant 5, CarShare

We could have chosen to say, "you are only allowed to have [Automotive] brands on the car fleet." One has chosen not to do these things because we have believed that we should not limit them but that [CarShare] should have its own strategic buoyancy, which has also been important to create credibility in the market for [CarShare]. – Informant 2, Automotive

An informant from *CarShare* commented that operating at arm's length from the established has been an essential factor in securing and strengthening their competitiveness so that *CarShare* does not simply become a tool for *Automotive* to sell more cars.

The most important reason for [arm's length] is really that [CarShare] should focus on succeeding with our own business model. We will not be a tool for [Automotive Retail] to sell an extra car per year, which is very quickly done in such collaborations or constellations as this [...]. [Automotive Retail] could easily say that "all 1000 [cars] should be bought from us, so we sell a bit more cars this year". This would have limited our competitiveness on the customer side because [the customers] need other types of cars, affordable cars, bigger cars, smaller cars, than what is in the portfolio of [Automotive]. So, on the car side, we are completely dependent on being able to compete on an equal footing with traditional car rental companies and other car sharing services around the country and the world. – Informant 5, CarShare

The interviews reveal unfortunate consequences of not keeping innovations at arm's length, exemplified by one of their competitors who started a car sharing service. Contrary to *CarShare* and *Automotive*, they forced the car sharing service to only rent out cars from their own brand. Even though the cars in the street served as good branding of the established business as it was a sustainable choice, the cars were electric with low range and not fit for car sharing. Evidently, by controlling the initiative, the established firm created a lousy starting point for a successful business.

[Competitor] was doing car sharing. And what do they do? They bring in 300 [cars from their own brand]. And that car was an early-stage electric car with a very low range. You do not have to think very hard to realize that it may not be the best car to try to start a car sharing service with. But you do it because it is the right brand, it is electric, right, so it ticks off an ESG box, it ticks off the branding box and the advertising box. But it gives you an insanely bad base for starting a commercial service. This is what I mean by the type of ownership control that can be extremely unfortunate. – Informant 1, Automotive

CarShare buys some of the cars for their car fleet from *Automotive*. Nonetheless, it is a mutual understanding that *CarShare* should not receive significant benefits from *Automotive*. A crucial component of keeping the edge at arm's length is thus that the relationship with the core is market-based. This means that *CarShare*, for example, do not receive cars or services from *Automotive* at a lower price than the market price.

The interface between [Automotive] and [CarShare] must be market-based as a starting point. So that means [CarShare] cannot go in and expect to get a cheaper car or cheaper services other than what you can find in the market otherwise. [...] There are negotiations. – Informant 1, Automotive

Automotive treating *CarShare* as a regular player has presumably reduced resistance and potential sabotage from the core. Even though *Automotive* is a strategic partner and supplier of cars to *CarShare*, they have decided to only cooperate when it is value-adding for both parties.

> *What is often underestimated when giving another company advantages is that if both parties do not get something out of it, then the organization itself will often actually sabotage that type of initiative. Because [Automotive]'s car dealers will not accept [CarShare] with open arms unless we show that we can add value to them. – Informant 3, CarShare*

A market-based relationship is particularly important for the investor narrative. Suppose external investors will be invited in at a later stage. In that case, it is crucial to show that *CarShare*'s success is not based on benefits and favorable deals from *Automotive*.

> *Because if you have a financial agenda with [CarShare] and have to go to an investor and present the case. If any questions occur about if the reason for [CarShare]'s success is that they have achieved sourcing benefits, or other benefits, from [Automotive], then it does not stand alone. It is a demanding investor story to tell. – Informant 1, Automotive*

To sum up, informants from both entities highlighted the importance of operating at arm's length as a prerequisite to achieve and prove stand-alone success. In addition to ensuring autonomy, it has facilitated external relations, strengthened *CarShare*'s competitiveness, and ultimately made *CarShare* able to prove its stand-alone value. In this manner, keeping *CarShare* at arm's length has contributed to the case company being able to innovate at the edge (Figure 5).

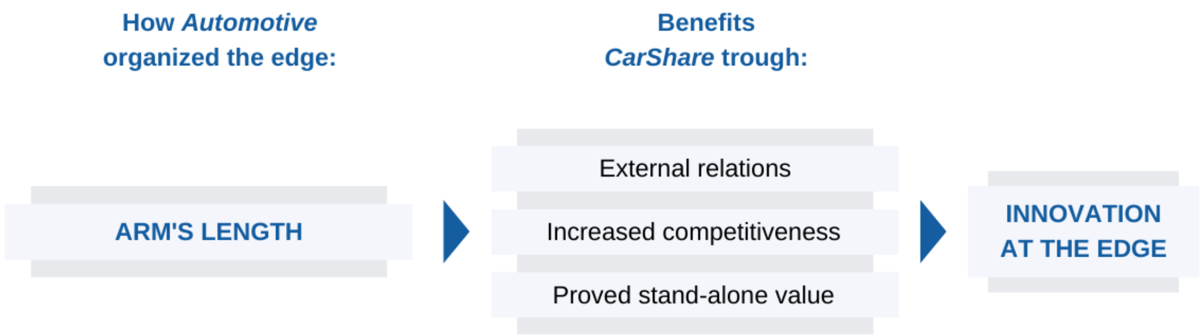

Figure 5 - How arm's length contributes to innovation at the edge

5.1.3 Management sponsors working to shield the edge

CarShare has multiple sponsors that hold management positions in *Automotive* and act as links between the established core and the edge initiative. The sponsors have been concerned with managing the relation to *CarShare* according to the principles of arm's length.

> *From [Automotive]'s perspective, we saw that we needed someone dedicated to follow up [CarShare] because it was quite a different "animal" than the rest of the group, a role that could in a way be the link between [CarShare] and the group. – Informant 2, Automotive*

> *The next important task with [CarShare] was to make sure that [Automotive] did not interfere too much in what they were doing and to keep arm's length to the core. – Informant 4, Automotive*

The sponsorship happens informally through casual talk and formally through the board of directors. The management sponsors have emphasized informal communication to make the collaboration with *Automotive* more agile, thus making things as easy as possible for *CarShare*. All the sponsors have at some point been representing *Automotive* on *CarShare*'s board of directors, either as an observer, a board member, or chair of the board.

> *It is on the board that the big decisions have been made, but I have somehow sparred a little more informally [...] so we have tried through this role to also be a little agile *laughter*, meaning that [CarShare] must not make specific requests for resources and formalize everything but be able to mature a little. – Informant 2, Automotive*

The activities the management sponsors carry out vary across roles and the stage of development of *CarShare*. Two of the sponsors were initially most concerned with removing resistance between the established and the new. Management sponsors committed to reducing friction can reduce the noise down to *CarShare*.

> *And then my role on the side has been to work in between, both informally and semi-formally, but to smooth a little where there are frictions. – Informant 2, Automotive*

> *I am extremely concerned with trying to reduce friction in the ownership towards [CarShare]. [...] Then you must talk to people in the organization, talk to the right people and be a bit connected. [...] Dare to take up the conflicts associated with internal friction over the years, right, instead of just closing your ears and just letting yourself be exposed to it [...]. Try to limit the noise down to [CarShare] and rather take it yourself in your department. So, in many ways facilitate the necessary funding for strategic clarifications, add what we can of positive synergies, and try to reduce the noise and friction in several areas. – Informant 1, Automotive*

The initial resistance from the core has also required two management sponsors to spend time systematically managing upwards. According to one of the informants, ensuring that the edge initiative is well-rooted in the top-level management of *Automotive* has been essential for *CarShare*'s success. To ensure that the edge has a firm standing in *Automotive*, the sponsors had frequent talks with *Automotive*'s senior executive team, the board, and the owners. Additionally, the management sponsors informing the CEO of *Automotive* about the development of *CarShare* allows him to concentrate on core activities.

> *It has been very little formal, but [Informant 1] has basically taken care of a lot of the anchoring upwards, which is also necessary, and has made it possible for the group CEO, for example, to have a little distance to [CarShare], or at least be able to concentrate on the core business. [...] I have also used my influence towards [Automotive] to make them understand that, yes, [CarShare] must be allowed to fly. [...] [A]nchoring upwards, as such, is absolutely crucial. The top manager in the line must stand behind initiatives like this 100% for it to succeed. – Informant 4, Automotive*

Furthermore, as it may take time before innovation initiatives become profitable, it is essential for the sponsors to ensure that the senior executive management, the board, and the owners not stifle the initiative in times of crisis or if it does not pay off straight away.

> *The opposition around the concept, and maybe the lack of understanding of the business model, has been, if not a challenge for [CarShare], then somehow it has required that you constantly work toward the owners because there are enough forces that talk down the concept. [...] So, for us it has been very important to ensure anchoring with both the senior executive management, the board, and the owners. Such innovations take time. It may be that you replace large parts of the senior management at least, perhaps also the owners and the board, but ensuring these ongoing updates and understanding among them, that make you dare to have stamina also through crises, as a covid year, where you will not be tempted to stifle what you do not make money on today. – Informant 2, Automotive*

After some time, when *CarShare* gained a stronger foothold in the market and in *Automotive*, the sponsors moved on to protect *CarShare* from other disturbances, such as corporate tasks like business reviews. The sponsors now prevent *CarShare* from spending valuable time on tasks *Automotive* would like them to do, but that would not necessarily create value for themselves.

After some time, my role has been to sort of ensure reporting, as [CarShare] has grown, and you have somewhat started to report in business reviews, for example. So, we have also done it on their behalf to relieve and ensure that we have not put the clammy corporate hand over them. – Informant 2, Automotive

We have often been asked by [Automotive] if [CarShare] could contribute here and there. And regarding that, the owner representatives from [Automotive] have been good at protecting us a little. Because if we are to run around and just give lectures and things like that, we will not be able to do our job. – Informant 3, CarShare

In conclusion, the three management sponsors play a vital role in *CarShare*'s continuous development. They reduce friction, anchor the initiative at the firm's top level, and relieve the edge from non-value-creating activities, depending on the phase of the initiative. Our findings indicate that this is an essential part of innovating at the edge (Figure 6).

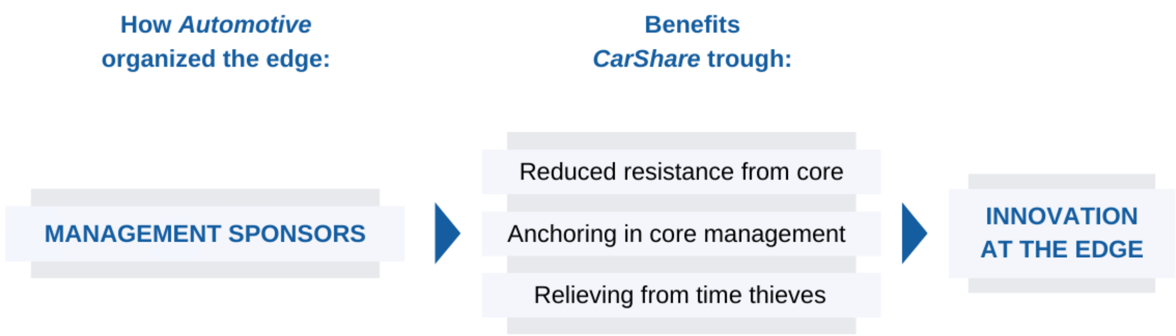

Figure 6 - How management sponsors work with the edge initiative

5.1.4 Ownership and funding strategy to reduce risk and incentivize edge team

Automotive being an industrial owner affects how *CarShare* operates. Other types of investors, for example VCs, are often willing to take higher risks. On the other hand, industrial owners need to be sure of profitability before making significant investments due to their long-term perspective. *CarShare* thus spent 2020 on proving its profitability, a priority many firms in the startup phase do not make.

At that time, [Automotive] as investors were very concerned that we needed to gain control of the underlying profitability. And it was in many ways the focus in 2020, naturally also due to covid because you scaled back a bit on the growth of the car fleet. [...] When you have that security, you can start scaling with industrial capital. But this is where these venture players think a little differently, so it was quite demanding to meet them, right, because I cannot burn off [NOK] 200 mills from our owners without having a reassurance that this will be profitable one day. But venture capital can do that to a greater extent. They take a much higher risk. – Informant 1, Automotive

The funding strategy *Automotive* has used when investing in *CarShare* includes investing stepwise as it reaches predefined business milestones. Throughout the years, the ownership structure went from the entrepreneurs of *CarShare* having the majority to *Automotive* now owning 77,5% of *CarShare*. Milestone investing made it necessary for *CarShare* to focus on its goals while simultaneously setting up in the most cost-effective manner.

You start with the entrepreneurs having a majority. We started with the entrepreneurs having about 90% ownership and [Automotive had] 10%. Also, we had agreed that if they ticked the right boxes during the following year, [Automotive] would go in with... Yes, that led to 50 million going in. And then, in a way, the ownership fraction turned in favor of [Automotive], which was always the plan, in a way, an agreed-upon path choice between the entrepreneurs and [Automotive]. – Informant 2, Automotive

[Gradual investment] has been strategic to ensure that [CarShare] organizes cost-effectively. And I really think the management of [CarShare] has been very focused on this as well, that you somehow do not end up with a lot of funds and burn cash away before you have found the product-market fit and can hit the gas. – Informant 2, Automotive

Milestone investing reduces the risk for *Automotive* as it makes it possible to pull out of the initiative without too big of a loss if it is not successful. In this manner, the investment made by *Automotive* has similarities to VC as they diversify the risk rather than putting all the eggs in one basket.

It has been a type of gated approach for [Automotive], which has reduced the risk. Which allows you to pull the plug along the way somehow if it fails. And that is the experience, right. We did another case that braked right off, that we did not succeed with. And having an entrance where you can limit your losses, I have great faith in that. That is the venture approach, right, you must make several bets and not put all your bets on one card, and rather jack it up when things start to fly. – Informant 1, Automotive

Having an industrial owner bring some perks to the edge initiative, the most prominent being the long-term commitment of capital. Most of the informants brought up a substantial change in the business model of *CarShare* that was done in 2019, moving from sourcing cars from private owners (P2P carsharing) to acquiring their own car fleet (B2C carsharing). Informants pointed out that the long-term commitment from *Automotive* gave *CarShare* the security it needed to make such changes and experiment. If, for instance, a VC company owned *CarShare*, it might have given up on them during this change.

> *I think the best thing about [Automotive] as an owner is a long-term perspective. So, for example, when [CarShare] had to turn the business model around, then maybe a VC owner would then… or a financial owner might throw away the cards. While we had a more long-term capital, a larger strategic lens in a way, which made it worth it for us to continue the development. – Informant 1, Automotive*

> *And we could potentially have started [CarShare] with venture capital and so on, but then I think we would be done in 2019 when we did not find out that peer-to-peer was not the right direction. So [industrial capital] is a little more patient and actually more open to trial and error than traditional private equity tracks. – Informant 3, CarShare*

> *Also, with such a safe owner instead of VC for example, like, [Automotive] invested in the vision/mission and the people, and not in a business plan, which allowed us to turn around a bit. – Informant 6, CarShare*

Automotive's industrial ownership has not been without its drawbacks. Because *Automotive* is an established and well-known actor in the industry, competitors first viewed *CarShare* with distrust and skepticism, believing the two entities were more closely linked than they are. This skepticism was reduced over the years when *Automotive*'s competitors realized that *CarShare* operates independently.

> *So we do collaborate with a lot of players outside [Automotive], also direct competitors. 2/3 of the car purchases we make this year are from direct competitors of [Automotive]. And we use workshop services from direct competitors of [Automotive Retail]. And it works very well most of the time, but some direct competitors of [Automotive] probably are skeptical of us and wonder if we have a hidden agenda. But to a lesser and lesser extent, I would say. They see that we cooperate well with others, and then you build trust over time. – Informant 3, CarShare*

The benefits that *Automotive* receives from *CarShare* are mainly financial, as they own 77,5% of it. However, there are some less tangible benefits, such as increased understanding of the market for new mobility and knowledge about building new ventures from scratch. *CarShare* also helps *Automotive* brand itself as an innovative firm with a sustainability focus. Even though *CarShare* is a small part of *Automotive*, the edge initiative is mentioned

108 times in their last two annual reports, as, among other things, an example of the group's ESG efforts.

> *[When it comes to benefits from CarShare] I would say financial, clearly. [Gaining] understanding and maturity around working with that type of business and, like, creating growth, creating new opportunities, but also how we should work in our core, of course. Employer branding and, in a way, positioning, helping to position [Automotive] as an attractive workplace, of course. Sustainability and sort of showing that we also, both through electrification and [CarShare], really go out in front to reduce the CO2 footprint, both through electrification specifically and sharing assets between several users. And it is kind of an ESG argument here too. So [the benefits] are probably quite broad. – Informant 1, Automotive*

> *For [Automotive], [CarShare] has been important, also towards the outside world, to show that we are innovative and intend to take a position in new mobility. – Informant 2, Automotive*

The benefits of the ownership are also related to knowledge sharing, as *Automotive* has a lot of car competence, and most of the employees in *CarShare* are skilled tech experts. This can create positive synergies for both parties, inspiring and learning from each other.

> *There is also another advantage… You establish a firm with many tech profiles that do not know anything about cars. Then you connect them to one of Northern Europe's largest car groups. You will probably enjoy that mix from both sides, in that we can borrow car expertise, and [Automotive] also get inspiration on their digitization agenda. – Informant 3, CarShare*

> *Those who come from tech do not gain access to the industry. They cannot get cars at the right price, it is difficult. [...] The agreements we had had with [Automotive], for example, when we got that agreement with [one of Automotive's car brands], were very important for what we have achieved. – Informant 6, CarShare*

Incentivized entrepreneurs

The ownership structure between *CarShare* and *Automotive* creates the potential for incentivizing the employees of *CarShare* through ownership. As *Automotive* wanted their new initiative to be run by the most competent people, they needed something extra to attract and motivate employees. The entrepreneurs were thus given ownership to reduce risk and attract the right people.

> *[The initial eight entrepreneurs] all came from outside of [Automotive]. The core idea was, how do we recruit the best people? We believed we had to give them co-ownership to create that drive and passion for it. – Informant 1, Automotive*

[...] you acquire a type of competence where it becomes quite disproportionately expensive to pay a fixed salary. Then it is sort of risk-reducing for [Automotive] to use co-ownership. – Informant 3, CarShare

The employees of *CarShare* point out that they are not necessarily financially motivated. However, if one is to give everything, one needs to have clear benefits, such as ownership. One of the informants, who had been working in the startup environment for years, was headhunted as a part of the founding team. Initially, the informant was highly skeptical of joining an initiative founded by a large established firm. However, the ownership structure and *Automotive*'s funding strategy were able to change his mind. The informant also added that having a safe industrial owner gives the employees of *CarShare* security, as well as not having to look externally for funding, which frees up much time for the entrepreneurs to spend on other value-creating tasks.

What triggered me was a financing plan activated by… which had some milestones to achieve but also had room for change. [...] Which I think is right because you can then have less risk in a starting phase, which makes you able to attract not only those who have the possibility to eat pasta and live on the office floor for the first three years. [...] [Automotive] was an established company starting something and gave quite a lot of the ownership away, which I am convinced is what one needs to get the right talent. And the financial plan [helps us] to both have that and to have peace around financing. It often takes 40-50 percent of a startup's first and second person to secure financing. So it is a tremendous cost to look for funding all the time. – Informant 6, CarShare

Having entrepreneurs as co-owners also helps keep the initiative operating at arm's length from the core. The employees not only working in *CarShare* but also owning it makes it more critical for *Automotive* to be more rational and consider *CarShare* when making decisions, which aligns with keeping *CarShare* at arm's length.

So, I think it has been very important, perhaps, especially towards the traditional organization that… I believe it's been an advantage that one had sort of external co-owners from the beginning since we had to say all the time that we cannot just continue as we want, but it also has to be done in respect of the minority shareholders, which made it possible to be more clinical and rational, and not sitting there optimizing decisions based on the interest of the existing core. – Informant 2, Automotive

Finally, informants state that co-ownership could be useful if the case company decide on bringing in external capital to *CarShare* in the future.

[Co-ownership] has also been important in the form of maybe a more long-term race. We have believed all along that if one were to bring in external capital, it is important that [the entrepreneurs] are co-owners. – Informant 2, Automotive

In summary, *Automotive* has approached *CarShare* as a VC investor by providing milestone investments. However, the industrial capital has a long-term perspective and focuses on risk reduction. This has resulted in the entrepreneurs focusing on setting goals and operating cost-effectively. However, the ownership structure had drawbacks, such as suspicion from potential external partners. Nevertheless, this initial disadvantage can be outweighed by benefits such as knowledge sharing, incentivizing entrepreneurs, and the possibility to experiment and adapt the business model accordingly. These factors combined contributes to the case company innovating the edge (Figure 7).

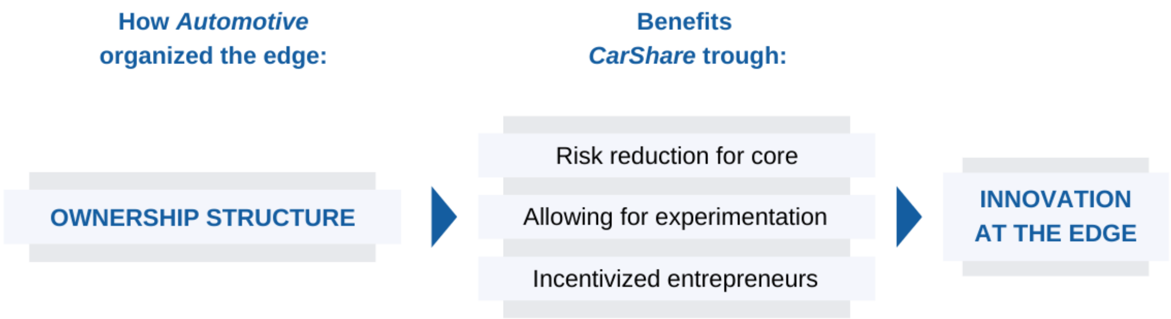

Figure 7 - How the ownership structure contributes to innovation at the edge

5.1.5 How established firms can innovate at the edge

In conclusion, resistance from employees in *Automotive* occurred when they established *CarShare*. However, this has not affected the edge to a large extent because it is organized at arm's length and has management sponsors working to reduce the tension. The arm's length principle provided *CarShare* free reins to make the best choices for themselves, thus contributing to them developing trust-based external relations and increasing their competitiveness. The management sponsors contributed to keeping conflicts from the core to a minimum while acting as time thief relievers as *CarShare* evolved. Finally, industrial capital allows for experimentation and is risk reducing for the core, while co-ownership ensures that the edge attract competent and passionate people. Keeping the edge at arm's length and having management sponsors, in addition to a mutually advantageous ownership structure, have facilitated innovation and growth for the edge. In (Figure 8) below, the themes and relationships from the analysis are illustrated to answer the first part of the research question about how large established firms can innovate at the edge.

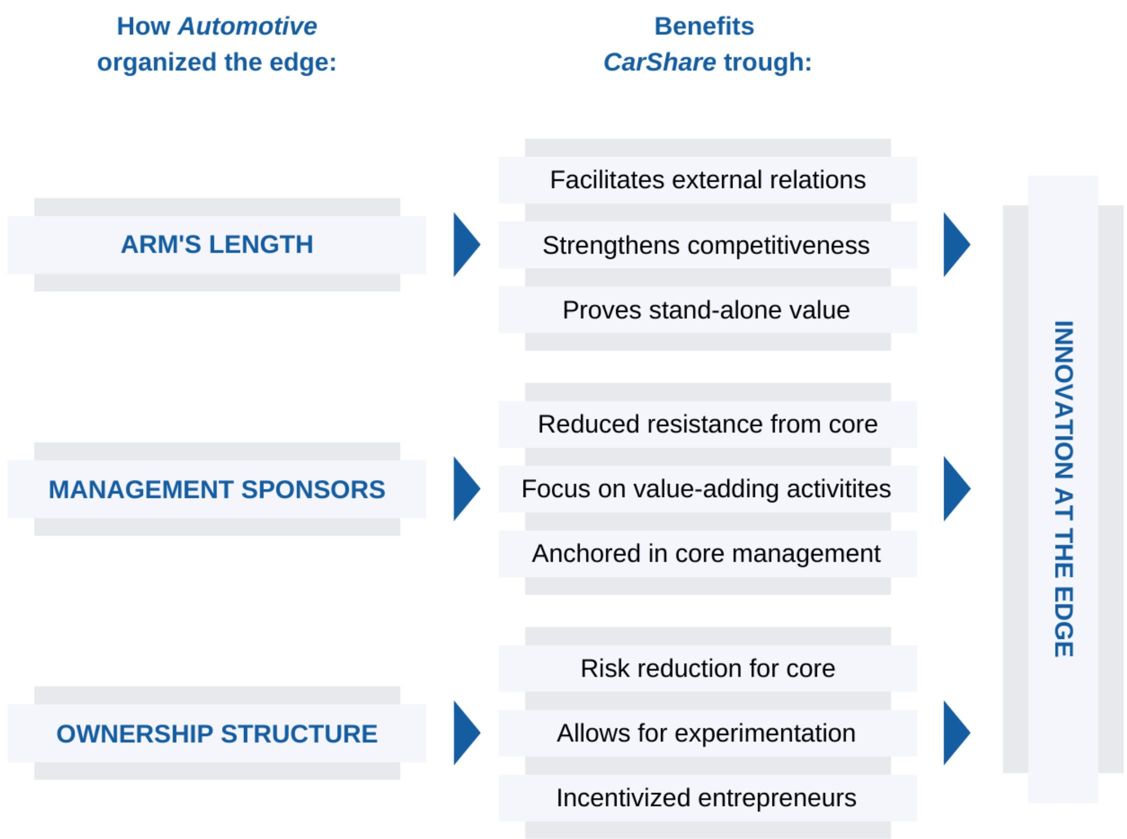

Figure 8 - How established firms can radically innovate through an edge solution

5.2 How has *Automotive*'s intent with *CarShare* developed over time?

When conducting this study, *CarShare* had been on the market for about four years. Two years ago, *CarShare* proved profitable. Since then, they have downgraded the pursuit of profits in favor of maximizing value creation by accelerating the growth of their car sharing platform. Over the next few years, *CarShare* plans to expand geographically to two other countries. This has raised questions about bringing additional owners on board. The second part of the analysis will shed light on how *Automotive*'s intent with the edge initiative has developed and changed over time.

5.2.1 From R&D to a strategic position for the future

CarShare is a part of the portfolio of *Automotive*'s new business unit *Automotive Mobility Services* (Figure 2). The goal of this department is to ensure the survival of *Automotive* in the fast-changing market for mobility. They do so strategically by positioning *Automotive* in the future mobility ecosystem and financially by working as a private equity investor with portfolio companies to create value for their owners. When *Automotive* started to become curious about new mobility and car sharing in the mid-2010s, they did not find a suitable car sharing service to acquire. They instead decided to invite external entrepreneurs and organically build one themselves. From the start, the edge initiative was perceived as an experimenting R&D initiative on the path to new knowledge and innovative solutions.

> *So, it is kind of a financial portfolio goal where the task is to create value for our owners. So that is one part of it. The other part of [Automotive Mobility Services] mandate is about contributing to position [Automotive] in a future mobility ecosystem. – Informant 1, Automotive*

> *[...] so one decided to be proactive and establish a firm to take a position and explore. A bit like an R&D entrance. – Informant 2, Automotive*

> *[CarShare] was born as R&D, let us test and see what this can give. [...] It was not just the success of the business concept that was important, it was about creating an R&D environment and attracting leading people, skilled people. Therefore, we organized it on a kind of radical model. – Informant 1, Automotive*

Automotive Mobility Services has invested in different firms related to mobility over the last years, for example, a car wash service and a tire hotel. *Automotive*'s former CEO initially thought that the edge initiative, if succeeded, would simply join the ranks of additional services that *Automotive* offered to its customers.

> *My initial idea was to create a car sharing service as an addition to the existing range of services in [Automotive]. That was the starting point. – Informant 4, Automotive*

However, this was not how the story of *Automotive* and *CarShare* developed. Already at an early stage, *Automotive* started to consider the edge initiative as more of a strategic position that might assist in shaping the future of mobility. On their websites, *Automotive* states that they have set a strategic goal of replacing 30% or more of their revenue with new mobility services within 2030. *CarShare* might be a contributor to this.

> *With [CarShare], [Automotive] hopes to have established a strategic position for the future. To offer cars as a more flexible and greener form of transportation. – Informant 2, Automotive*

5.2.2 Integrating *CarShare* into *Automotive*?

Consistent with the initial experimentation mindset, informants state that there has been no long-term plan for how the relationship between *CarShare* and *Automotive* should develop over time. As *CarShare*, after some time, was considered a strategic position, *Automotive* started considering integrating the edge into the established group. When asked about *Automotive*'s integration plans, one informant stated:

> *Yes, [it has] definitely [been considered]. [...] We have actually quite recently made the decision. We have spent the spring, I would say, 2021, on that choice. – Informant 1, Automotive*

The same year they considered integration, *Automotive* carried out a technical due diligence on *CarShare* to, among other things, create a better understanding of future data integration opportunities.

> *A year ago, we ran a small technical due diligence under the auspices of [Automotive]'s IT department [...] looking to see if there were any technological stumbling blocks if one at some point should decide to integrate [CarShare] in [Automotive]. – Informant 4, Automotive*

Automotive considered integration as they perceived the technology that *CarShare* have developed to be useful for the traditional value chain. *CarShare* has attracted many tech experts who could help *Automotive* improve the customer journey across the group by utilizing their technical competence and existing tech platform.

> *The reason we looked at it in the first place was that a lot of what we have developed is useful for the traditional value chain. – Informant 3, CarShare*

Nevertheless, it was quickly decided that it would be best for both parties not to integrate *CarShare* into *Automotive*. The reason was mainly to preserve *CarShare*'s future competitiveness and value creation potential by operating at arm's length, allowing them to make decisions in *CarShare*'s best interest regardless of *Automotive*'s wishes.

We have most certainly considered [integration]. One reason why it was quite quickly put aside… it went pretty fast, I think it was about a year ago that we agreed that it might not be so wise… If [CarShare] is to be competitive over time, you must utilize the market as it is. And that is absolutely necessary to become competitive. – Informant 4, Automotive

Yes, there has been talking of [integration], and we have turned it down. [...] The conclusion at the time was that the potential for value creation is greater by working independently than by baking it into the traditional value chain. – Informant 3, CarShare

About a year ago, *Automotive* saw its edge initiative's full financial potential and now believes that *CarShare* can experience substantial international growth. It is argued that integrating it into the established group would slow down the rapid development and growth of the initiative. As one informant states, ultimately, it is better to own a small share of something big than a large share of something small and slow-moving.

You could have integrated [CarShare] into [Automotive] and it would have been a fairly usable thing, but if we are to allow it to become big it must be released. And then it is better to own 30/25/40 percent of something very successful than owning 100 percent of something slow and steady moving forwards. – Informant 4, Automotive

The decision of not integrating has also been to ensure flexibility from *Automotive*'s corporate owner perspective, as not integrating *CarShare* makes it less risky and easier to pull out of the initiative if it fails.

[Not integrating] has also provided flexibility from a corporate owner perspective, where it could have been much more difficult to say that you did not succeed, or if you saw that you were not the right owner eventually, then it is very difficult to sell a company that is 100% internal. – Informant 2, Automotive

Informants also mentioned concerns about merging two different organizational cultures, as *Automotive* is an established firm while *CarShare* is a startup. The fear of the two cultures colliding and the edge initiative falling apart substantiated the decision not to integrate *CarShare* into the established group.

It is allowed to try to problematize what would happen if you had tried to integrate it. Because it is an entirely different culture, there are other incentive mechanisms and there are completely different reasons why [the employees] work in [CarShare] and not in [Automotive]. Somehow, they have their own drive and motivation around the [CarShare] case. I am not at all sure you could have chosen to integrate them into the core without it falling apart. – Informant 1, Automotive

Automotive has now reached a point where integration is no longer an alternative. Concurrent with deciding not to integrate *CarShare*, *Automotive* began changing the intent of the edge initiative from being strategic to being more financial and focused on maximizing stand-alone value.

> *At some point, the financial value of [CarShare] is simply greater than the strategic value by trying to integrate it. – Informant 1, Automotive*

5.2.3 An agenda to maximize finanical value

The edge initiative is now mainly perceived by *Automotive* as a financial asset. By cultivating the financial agenda, informants from *Automotive* believe that they can increase *CarShare*'s value creation, which in turn can contribute to a significant increase in value for *Automotive*'s owners. To be able to utilize the huge potential *Automotive* see in *CarShare*, they now want to focus on increasing the stand-alone value of the initiative.

> *What value does [CarShare] represent if we dare to hit the gas and somewhat cultivate the financial agenda? We see that it can represent a fairly significant value for the owners. [...] We do not consider integration. The idea is that we should maximize the stand-alone value of [CarShare]. And it has been a bit redeeming, like, the movement in ownership from it was born as R&D; let us test and see what this can give, to think that this is a strategic platform for us. Here we can invest, and we can use that in the future. Having gone from that, to now thinking that [CarShare] has a huge potential. We must dare to hit the gas pedal. We must, well… dare to [potentially] invite other financial investors to the table and just hit the gas. And take it further out at arm's length. And be prepared that one day there will be an exit on [CarShare]. It is a big journey to go through. – Informant 1, Automotive*

> *Where we stand today, I feel that [CarShare] has become a more industrial commitment, whereas [Automotive] will be more of a financial investor in the future. Because [CarShare] could be suitable as an integral part of [Automotive]'s service spectrum, but both [Informant 1] and [the group CEO] and I are much stronger in the belief that this has become a more financial investment, and if we do not consider it as such, we will limit value creation rather than developing it. – Informant 4, Automotive*

As the potential value creation of *CarShare* is presumed to increase, there are several reasons for *Automotive* to cultivate a more financial agenda. First, the industry is immensely capital-intensive; for scaling *CarShare* to become a large international player in the car sharing game, fresh capital is almost a necessity.

> *Car sharing is very capital-intensive. [...] We are big and have insane earnings from the core, but at some point, we also face the balance capacity you undertake. Because the goal of [CarShare] is to grow to 10.000 cars by 2025, and if you think about the balance, you will then have to carry on the books, then it will require quite a lot of effort. – Informant 1, Automotive*

Second, getting external investors enables *Automotive* to spread risk and diversify. Instead of breaking the bank betting on the edge initiative, they can keep a certain stake in *CarShare* and spend the rest of the money adding other exciting new mobility companies to their portfolio.

> *[To invite in external investors] has not been a goal in itself, but if this company is to move to 1500-2000 cars and into other markets and eventually have a car fleet of 10/20/30/40,000 cars, it requires quite a large balance capacity. I am not sure that [Automotive] will benefit from putting all their eggs in one basket. – Informant 4, Automotive*

Third, potential new external investors can add knowledge and expertise related to growth and scaling to new geographic markets.

> *We believe that [external investors] can add a lot related to expertise regarding growth and scaling. – Informant 1, Automotive*

Another reason the financial strategy may make sense is that *Automotive* believes the car sharing market will consolidate in time.

> *[...] we believe that this market will be consolidated in time. We believe growth is crucial for being a future winner and having the opportunity to either be consolidated or consolidate other players. So that underpins that the financial agenda might be right for the company. – Informant 1, Automotive*

Raising new capital will change the rules of the game for both *Automotive* and *CarShare*, meaning that *Automotive* as the majority owner, will need to keep *CarShare* at an even greater arm's length from the core. The management of *CarShare* and the owner representatives of *Automotive* must start looking at the edge from an investor perspective.

> *[CarShare] might be refinanced now, and capital will then be raised to make quantum leaps in volumes and balance. Then the rules of the game will be different, and there must be more arm's length and more investor perspective, really, from everyone participating in this. – Informant 4, Automotive*

CarShare is aiming for international growth and is facing a tough choice when they now have to consider how to proceed. Nothing is determined, but one of the informants that are no longer involved in the initiative predicts the outlook as follows:

In five years, it may be an internationally large car sharing company where [Automotive] owns X percent and perhaps some other investors, and the entrepreneurs are still involved. I do not know, but if [CarShare] is really successful, I bet that [Automotive] has a minority share and the entrepreneurs are still involved and there may be some large PE funds or something that is in as the majority shareholder. – Informant 4, Automotive

5.2.4 *Automotive*'s changing intent with *CarShare*

The management of *Automotive* and *CarShare* has been on quite the journey regarding the ownership agenda, moving the intent of the edge from R&D and experimentation to a strategic position to finally, a more financially motivated strategy (Figure 9). The different trajectories considered along the way, as well as potential benefits and challenges, will later be explored in the discussion chapter, aiming to gain further insight into how the intent of an edge initiative can develop.

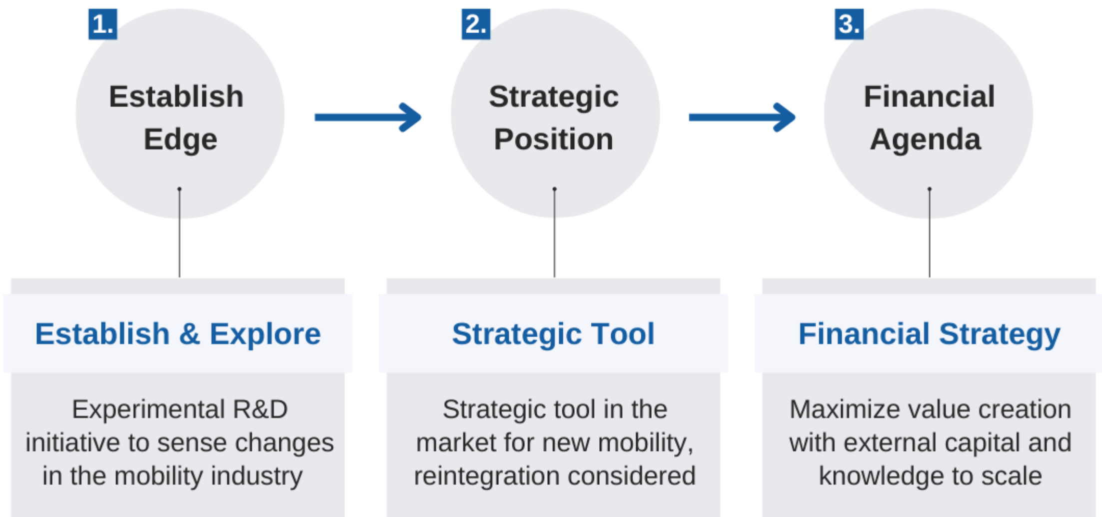

Figure 9 - Automotive's changes in intent with CarShare over time

6. Discussion

This chapter presents a discussion of the thesis' findings in relation to presented literature. We discuss interesting insights that can supplement, nuance, or clarify existing literature in this particular context. To answer the research question at hand clearly and concisely, the discussion is divided into two parts: 1) how established firms can innovate at the edge, and 2) how an edge initiative can develop over time. After the discussion, we present the thesis' contributions to theory and its implications for practitioners.

6.1 How can established firms innovate at the edge?

In the above analysis, we examined a large established firm and its edge initiative, both operating in the automotive and mobility industry. We see that our case shares similarities to both innovation at the edge (Hagel et al., 2019) and the ambidextrous solution (O'Reilly and Tushman, 2004, 2016), thus suggesting the case company's edge solution may draw on features of both. In the following discussion, we will therefore bring both theories into play.

Automotive identified an edge market, car sharing, created from fundamental economic shifts. The case company has utilized the shifts related to the advancement of digital technology, increased environmental consciousness, urbanization, and the subscription economy to develop and scale a digital mobility platform. This is similar to the edge solution described by Hagel et al. (2019), who suggest that edges should align with disruptive forces in the economy. The creation of *CarShare* was motivated by a desire to position *Automotive* in the future mobility ecosystem and has allowed *Automotive* to sense, experiment, and eventually gain a strong foothold in the emerging car sharing market.

6.1.1 A competing edge can unleash core resistance

Although resistance is argued to be normal human behavior when faced with organizational change (Bovey & Hede, 2001; Worral et al., 2004), the innovation approach aims to avoid resistance and go under the radar by providing the edge with the minimum resources required to make progress (Hagel, 2019). Despite *Automotive*'s efforts to avoid raising resistance in *Automotive* by starving the edge, our findings brought to light some internal resistance from which the management sponsors had to work to shield the edge.

A possible explanation for the resistance towards *CarShare* might be that the edge initiative is placed a bit too close to the traditional core both product- and marketwise, moving into the inner parts of the adjacent area in Nagji & Tuff's (2012) matrix (see Figure 1). In the large cities, *CarShare* and *Automotive* are partly competing for the same customers as we can imagine that some of *Automotive*'s traditional customers would now prefer to rent a car when they need it instead of owning one themselves. This can lead to the core perceiving *CarShare* as a potential threat and triggering such negative reactions as the findings elucidated. Resistance could perhaps have been avoided by creating an edge that only generates additive revenue rather than threatening to cannibalize a part of *Automotive*'s traditional revenue stream (Hagel, 2019). However, a note of caution is due here since the resistance towards *CarShare* was most prominent during an industry downturn and the finding should thus be interpreted accordingly. If it is the recent period of prosperity in the industry or simply *CarShare*'s success that is responsible for the decreasing resistance towards the edge, one can only speculate.

The fact that the employees of *CarShare* barely noticed the resistance that arose shows that some mechanisms might have been in place to reduce the scope of the friction. Organizing it at arm's length, having management sponsors, and starving the edge are mechanisms that might have decreased the level of resistance and contributed to scaling the edge. We will further address this in the following sections.

6.1.2 Arm's length to ensure autonomy

A key feature of Hagel et al.'s (2019) edge solution is that the edge is given autonomy from traditional core practices. The case company's principle of arm's length may be a practical example of how to provide edge autonomy.

We notice that *Automotive* has set up its edge initiative similarly to many ambidextrous cases (Benner & Tushman, 2003; Tushman & O'Reilly, 1996), in that the edge is a distinctly separate unit, placed at a different location with minimal daily interaction. In our case, neither the development, marketing, sales, operations, or customer service teams collaborate with their corresponding team in the other entity. One can assume that the core not interfering in the daily operations of *CarShare* makes it harder for *Automotive* to dictate how the edge operates, enabling the edge to act solely in its own interest. Perhaps one might argue that organizing at arm's length, in reality, is placing the edge initiative at the edge of the core organizationally as well as product- and marketwise. *CarShare* was also given a mandate to build a mobility service that radically differed from *Automotive*'s core business. All these factors might have contributed to providing the edge autonomy and to a certain extent ensuring that employees at *CarShare* did not notice the resistance from *Automotive*.

Even though the new unit is structurally separated from the core, it may still benefit from its expertise (O'Reilly and Tushman, 2004, 2016). Our findings accordingly show that *Automotive* and *CarShare* stay connected regarding funding and the edge drawing on car knowledge from the core. A benefit that reveals itself from how this edge solution is organized is thus to be able to utilize the benefits of keeping some connection to the core while simultaneously remaining autonomous.

Furthermore, Hagel (2019) proposes going beyond the core when looking for partners and resources for the edge. Our findings suggest that operating at arm's length has enabled *CarShare* to do just that. By operating at arm's length from the core, *CarShare* has had to exploit the rest of the automotive and mobility market and create its own business networks, consisting of several car retailers, tech platforms, insurance companies, and other car service providers. The external focus reminds us of open innovation, where Chesbrough (2003) claims that the outcome of collaborating with external players can be higher than keeping an innovation internally. Hagel et al. (2019) also strongly recommend working with external players as it allows the edge to gather rapid feedback, which can be used to accelerate its learning. Our findings suggest that the formation of external trust-based relationships, to a great extent, can be attributed to *CarShare* being kept at arm's length.

The example from the analysis of the car retailer who tried to start car sharing exclusively with cars from their own brand is a perfect example of a decision made that is not optimal for the edge but still goes through due to the established firm pushing their agenda. As this example illustrates, not being able to operate in the free market or make decisions autonomously could lead to the downfall of an edge initiative, thus making this principle essential for success with the case company's edge solution.

One last important element in keeping the edge at arm's length is having a market-based relationship between the core and the edge. When buying cars for its car fleet, one could imagine *Automotive* giving *CarShare* favorable conditions and prices. Even though cheaper cars could aid in making *CarShare* more profitable, our case suggests that it may be disadvantageous to give the edge such perks. Employees at *Automotive* might be displeased with *CarShare* getting benefits on behalf of *Automotive*'s profitability and thus sabotage deals. This case also shows that organizing the edge at arm's length can be beneficial to show potential future investors that *CarShare* is not too tightly connected to the core and is responsible for its own success.

6.1.3 An evolving management sponsor role

The edge literature states that senior management sponsorship is fundamental for the edge if it wants to contribute to transforming the established firm's future (Hagel et al., 2019). In *CarShare*, we found multiple management sponsors, yet none of them expressed an immediate desire to transform *Automotive*'s future. Our findings provide new insights into the role of management sponsors and suggest that the role should not be considered fixed but evolve as the edge develops.

As mentioned, *CarShare* has not gone under the radar of *Automotive*'s employees, and tension has occurred. An essential prerequisite to success in the early phases of innovation initiatives is to have an integrator to manage such tension (Gilbert & Bower, 2002; Hagel et al., 2019; O'Reilly & Tushman, 2016). Accordingly, our findings show that the sponsors' most important task in the early phases is to shield the edge from resistance from the core. It is logical to assume that the sponsors' efforts to remove this resistance allowed *CarShare* to solely focus on its challenges without dealing with internal tension and negative remarks from *Automotive*. *CarShare* having management sponsors working systematically to handle tension is similar to the ambidextrous solution, which claims new ventures depend on active senior oversight and support to survive (O'Reilly et al., 2009).

Furthermore, two of the sponsors worked systematically upwards, anchoring the edge initiative in the executive management, the board, and the owners. One of these sponsors had previously been the CEO of the established firm, while the other is currently a part of the senior management team as EVP Mobility Services. This gives them both knowledge about and access to the top-level of *Automotive*. Our findings revealed that the sponsors kept the established firm's CEO informed about *CarShare*'s progress, which allowed him to focus on core activities and keep a distance to the edge. One might ask if the fact that the CEO could have a primary focus on the core rather than being extensively involved in the edge also contributed to reducing the level of resistance from *Automotive*'s employees. This is in line with O'Reilly and Tushman's (2004) argument that the new unit should be incorporated into the current senior management hierarchy.

As the edge evolved and started to gain a foothold in both *Automotive* and the rest of the industry, shielding against resistance became less important in favor of relieving the employees of *CarShare* from time thieves. When the edge had successfully set up an organization that was growing, it seemed like *Automotive* started flaunting *CarShare* and treating it more like something to be proud of. This is shown in *Automotive*'s annual reports. While *CarShare* was only mentioned 10 times in 2017, the initiative is mentioned a total of 53 times in 2021, where they highlight the success of *CarShare* and its positive contribution to society. Our findings indicate that this development changed the management sponsors' role. In this phase, the core started wanting *CarShare* to report its work in business reviews and host inspirational lectures. Our findings show that the management sponsors thus had to relieve the employees in *CarShare* from these time thieves. The help from management sponsors freed up time that the edge instead could spend on value-creating activities, eventually contributing to scaling the edge faster.

6.1.4 Venture approach to starve the edge

The literature on the edge solution proposes to starve the edge to avoid resistance from the core (Hagel et al., 2019). In the case of this thesis, *Automotive* is starving the edge by providing *CarShare* with the least amount of funding necessary to reach predefined business milestones. As Hagel et al. (2019) also suggest, this can ensure that the initiative proves itself before requesting more capital. However, the case of *CarShare* and *Automotive* shows that starving the edge did not completely remove resistance from the core but rather contributed to minimizing the risk for the core business. Milestone investing was risk-minimizing because *Automotive* did smaller step-by-step investments rather than one large upfront investment. Additionally, the established firm had the option to pull out along the way without significant losses if *CarShare*'s growth was not satisfactory.

Informants state that a benefit of having industrial capital with a long-term perspective is being allowed trial and error. The experimental mindset, in our case, is an aspect that might set the edge solution apart from the ambidextrous solution. While ambidextrous units often have a more urgent pressure from the established firm for something to happen (O'Reilly & Tushman, 2008), *CarShare* did not have as much time pressure to release their solution, thus being given more room for experimenting. *CarShare* also had to prove itself eventually but has a more long-term perspective focusing on future opportunities rather than threats. Despite informants stating that it is the industrial capital that facilitates experimentation, it might as well just be the nature of the explored edge solution. This is aligned with Meyer et al. (2022) proposing that the ambidextrous solution will work better when faced with outside threats, while the edge solution might be more beneficial when facing uncertainty.

Our findings also highlighted some negative aspects of *Automotive*'s ownership stake in *CarShare*. Despite *CarShare* operating with complete autonomy, forming relations with whomever they want, competitors of *Automotive* had some initial skepticism towards *CarShare*, believing their bond is stronger than it is. Hagel et al. (2019) emphasize the importance of building external relations for edges to survive and grow. However, one might ask if the authors are too optimistic in their views on long-term trust-based external relationships, as competitors might believe the established owner of the edge has a hidden agenda. Our findings imply that being owned by a large player in the industry might make it more important for the edge to show the outside world that they operate at arm's length.

6.1.5 Co-ownership to attract and motivate the right talent

While Hagel (2019) emphasizes recruiting for passion rather than competence, our findings provide new insight by suggesting that giving the edge-team ownership can foster passion and commitment. *Automotive*'s joint venture approach with the gradual acquisition of *CarShare* is one of the most frequently mentioned aspects in the interviews, despite co-ownership being nonexistent in the literature (Edwards, 2012; Hagel et al., 2019). *Automotive* believed co-ownership was essential to attract the best people and create dedication and passion amongst them, ultimately *creating* passion rather than hiring for it. Hagel et al. (2019) state that working in an edge initiative can be risky due to inevitable uncertainty and constant iteration. However, in this case, *Automotive* might have found a way to outweigh this risk by providing the entrepreneurs ownership. Accordingly, our findings suggest that giving the edge entrepreneurs a part of the potential upside by providing co-ownership, contributed to attracting and motivating people. This is especially important in today's labor market where firms fight to attract and keep the best employees.

The findings also reveal that having an established firm in the back can save the entrepreneurs from time spent securing capital. An informant states this was motivating, as securing startup financing usually takes time away from daily operations. This aligns with the ambidexterity literature, which points to having an established firm in the back as beneficial, as the innovation unit can draw on its resources (O'Reilly & Tushman, 2004).

6.2 How can an edge develop over time?

While the edge literature mainly discusses edges' potential to gain attractiveness and eventually become the new core, Hagel (2019) simultaneously remains open to the fact that the trajectory of an edge can change and develop over time. Our findings highlight how *Automotive* has reassessed its intent with *CarShare* as it has developed.

6.2.1 Spin-off and scale with external investors

In 2021, *Automotive* opted to pursue a more financial ownership agenda, believing that the financial value can outweigh the strategic worth if *CarShare* is allowed to scale properly. Aligned with Garvin (1983), the idea is to potentially invite external stakeholders on board and spin *CarShare* off to maximize growth and value creation.

A frequently mentioned benefit of inviting external investors is the access to fresh financial capital. Informants argue this is necessary for the planned expansion and scaling of *CarShare*, as car sharing is vastly capital-intensive (Cohen & Kietzmann, 2014). Informants predict that the market for car sharing will consolidate in the future and perceive growth as crucial to being a future winner in the market. However, the needed capital investment presents a risk if *Automotive* is to take it on alone. Hence, sharing the risk by inviting external investors can be a strategic risk-reducing measure. Additionally, spinning *CarShare* off can free up capital to invest in other innovation initiatives and mobility solutions, thus enhancing and diversifying *Automotive*'s mobility portfolio.

It is feasible that an ownership collaboration might provide *Automotive* with new insight related to innovation and venture development. Sapienza et al. (2004) suggest that spinning off an innovation initiative can add valuable knowledge to accelerate the growth of the spin-off firm. This is similar to what our findings reveal to be a benefit of pursuing a more financial agenda and collaborating with external investors.

Chesbrough (2003) argues that using ideas from external collaborators can give increased insight into future technology opportunities. If *Automotive* invites external collaborators in the form of new investors to the table, they can gain valuable insights that might benefit them when sensing the market for new business opportunities. As our findings indicate, *Automotive* plans to continue as a co-owner of *CarShare*, which may allow them to use the spin-off to sense what is going on in the market for new mobility. Harlan (2018) found in his case study of corporate spin-offs that the new units can gain knowledge and improve their product quality when they are spun off to compete in a larger global market; improvements that later can be brought back to the established firm if the spin-off continues to serve it. As of now, *CarShare* is not providing any essential services for *Automotive*. However, if this changes in the future, *Automotive* may secure innovation gains even after the potential spin-off if the edge introduces new features when expanding into new markets that may be brought back to the established business. Besides the financial reward of selling equity and the established firm learning more about scaling ventures, one could ask what kind of innovation gains the core business is left with if they were to spin off *CarShare* now.

External investors might contribute to *CarShare* scaling rapidly and taking future market shares in the market for new mobility from *Automotive*. It may thus be wise for *Automotive* to assess whether the employees in *Automotive* perceive *CarShare* as a competitor, as spinning it off might result in perceiving the edge as even more intimidating. This aligns with Garvin (1983), who argues that most established firms dislike spin-offs because their presence can imply increased competition. Spinning off *CarShare* might be perceived as particularly dangerous to *Automotive* in the future as *CarShare* employs high technological skills and is utilizing the technological shift Hagel (2019) predicts. However, since *CarShare* was created to tap the market for car sharing, a market segment not currently served by *Automotive*, they may pose no direct competition as of now.

Lastly, if *Automotive* were to bring in external investors and spin-off *CarShare*, the financial agenda would likely take precedence and might minimize the advantages of having an industrial owner, such as allowing for trial and error. However, although our results indicate industrial capital was essential in the establishment phase of the edge when *CarShare* experimented with its product-market fit, a more financial agenda might be what *CarShare* needs in this next growth phase. Finally, even though our findings suggest that spinning off with external investors might be necessary to reach the level of growth *Automotive* and *CarShare* envisage, it is not the only potential trajectory of the edge.

6.2.2 Integrate to reap potential synergies

In the spring of 2021, the case company decided not to integrate *CarShare* into *Automotive*. Integration of edges is largely unexplored in the academic literature, but a few ambidextrous cases on integration, such as VG and Schibsted, have been exemplified (Meyer et al., 2022).

Integration of ambidextrous units can be beneficial when the new venture's competence, culture, and work processes can benefit the core (Meyer et al., 2022). Our findings reveal that *CarShare* has highly skilled tech professionals and an advanced technology platform. In its latest annual report, *Automotive* stated that they want to renew core IT systems and improve its digital customer solutions. As such, one could argue that *Automotive* can benefit from both the tech competence, the agile development methodology, the technology-can-fix-everything mindset, and the technical solutions *CarShare* has developed. Hence, one could consider the above criteria to be met, which would be an argument in favor of integration. However, reaping the mentioned advantages of integration would require the edge's tech resources to spend time on core activities rather than edge activities, which informants state would dampen the innovation and scaling of the edge, thus *CarShare*'s own value creation.

A second argument for integration has to do with increasing *Automotive*'s ability to innovate, as integrating *CarShare* could facilitate a higher amount of knowledge sharing regarding innovation and new technology. Our results suggest that *CarShare* provides the core with knowledge about creating growth and new opportunities. A more interactive relationship between *CarShare* and *Automotive* might accelerate these effects. However, integration would likely involve closer interaction between *Automotive* and *CarShare* regarding day-to-day operations, resulting in less autonomy for the edge. Being an integral part of *Automotive* would thus make it harder to operate at arm's length. This disadvantage might negatively affect the growth and innovation of *CarShare* and thus outweigh the benefit of increased innovation gains to *Automotive*.

As *Automotive* is a large firm with established policies and many internal stakeholders, we can in line with Markides & Charitou (2004) assume that integrating *CarShare* could have imposed some restraints. The size of *CarShare* as of now is relatively small compared to *Automotive*'s core business and its desire for growth, which according to Christensen and Overdorf (2000), can pose a risk of allocating too few resources to *CarShare*. Additionally, our findings show that *CarShare* works agile and operates as a startup with a flat hierarchy and short decision-making processes. Being integrated into a established firm could remove some of the benefits of being organized like this. As mentioned, *Automotive* ran a due diligence on the technical aspects of *CarShare*. However, to uncover potential synergies or difficulties, the case company might have benefitted from further investigation into policies, working methodologies, and organizational culture when discussing integration.

Finally, it is worth mentioning that the current literature on whether to integrate innovation units into the core is not linked to the edge literature or this context; thus, the learnings are not necessarily transferable to a firm working with innovation at the edge.

6.2.3 Continue with the current edge set-up

Even though the current circumstances may imply that scaling with external investors or integrating into the core business are the best options, it is still possible to continue working with the initiative as it is today. It is likely to believe that this option would lower the pace of *CarShare*'s growth, as informants express that external capital is needed to scale and expand at the desired pace. Maintaining the current set-up does, however, allow the edge to prove that they can scale according to Hagel's (2019) descriptions. The author underlines that edges should be able to grow from within, ultimately removing the need for external funding. Assuming *CarShare*'s growth prospects continue, they might gain increased acknowledgment from the core, attracting both people and resources as they keep growing and reaching new milestones. It is possible to envision a future where the need for car retailers is drastically reduced due to changes in politics or consumer needs due to increased population in cities, climate initiatives (Jørgen & Pedersen, 2018) and technological development (Schwab, 2016). As such, in a decade or five, it is imaginable that *CarShare* ultimately pulls *Automotive* towards the edge, as suggested by Hagel (2019). If the scenario mentioned above becomes a reality with time, it would not be a bad idea for *Automotive* to have an innovative edge ready to gradually become the new core business.

6.3 Contribution to theory

Initially, we explored the literature on innovation at the edge of large established firms (Hagel, 2019; Hagel et al., 2019; Edwards, 2012; Meyer et al., 2022). Currently, there is scarce literature presenting how established firms can implement edge solutions and how edge initiatives can develop over time. We also acknowledge that the existing literature is mainly based on consultancy reports and presents the edge solution in broad lines. Thus, our study aims to contribute to developing research-based knowledge about innovation at the edge by serving as a foundation for future research.

Our explorative case study revealed that organizing the edge at arm's length can provide the edge autonomy. This finding coincides with the encouragement to provide the edge with autonomy presented in the literature (Hagel et al., 2019). In addition, our study supplements the literature by exemplifying organizational aspects of how to operate at arm's length. However, we find that external players might see the connection to the established firm as a hindrance to initiate collaborations. Thus, our study contributes to theory by exhibiting the importance of showing the outside world that the edge operates independently from the core.

Despite the literature embracing the importance of management sponsorship, it does not go into how the sponsor role can evolve. Our findings can supplement current edge literature by exemplifying the importance of management sponsorship and showcase how the role can develop as the edge initiative matures.

This thesis accompanies the edge literature in that our case company starve their edge by providing funding as it reaches milestones (Hagel, 2019). However, our findings contribute to theory by demonstrating how the established firm in practice can execute this and shows unexplored benefits such as risk reduction for the core. Additionally, the study brings insight into how long-term ownership commitment from the core can facilitate an experimental mindset. The study also highlights providing the entrepreneurs with ownership, which presents an uninvestigated way to attract talent and create passion among edge employees.

Finally, the edge literature has yet to examine the different trajectories of edge initiatives. As our case company has worked for several years with its edge initiative, this thesis may provide insight into how the intent with an edge can change over time and which trajectories to consider. Our study contributes by arguing that one of the main benefits of starting an edge initiative might just be the possibility to change direction along the way.

6.4 Implications for practitioners

It is interesting to consider which practical value and implications the study may have for managers of large established firms. Our findings highlight key features of the edge solution that might facilitate innovation at the edge. Therefore, our study may contribute to practitioners considering whether and how to organize and manage radical innovation initiatives. An established firm considering innovation at the edge should be aware of how key features of the edge solution affects the scaling of the new initiative. Thus, they may use our study when assessing the advantages and disadvantages of innovation at the edge compared to other approaches to innovation.

Finally, the study indicates that large established firms might be doing themselves a disservice by not reflecting on the most beneficial direction of edge initiatives along the way. Our findings emphasize the time perspective and may thus contribute to creating an initial understanding of the developmental stages of edge initiatives that can give practitioners important insight as they make strategic decisions. Nevertheless, we advise considering trajectories based on the desired outcome, whether it us to renew the core, update existing service offerings, or maximize financial value. In any case, we would like to remind practitioners that changing intent along the way as the edge develops is perfectly acceptable; indeed, one of the main advantages of innovating at the edge might be that it allows for experimentation and changes in intent and ownership agenda. Evidently, all cases and contexts are unique, and learnings should be adapted accordingly.

7. Final Remarks

This chapter summarizes the study before presenting its limitations. Finally, we suggest interesting topics for future research.

7.1 Conclusion

Large established firms tend to fall behind start-ups when it comes to radical innovation, especially regarding innovations in the core. Such innovations often consume time and resources, have uncertain outcomes, and may be perceived as a threat alarming the organization's immune systems against change. This has resulted in the development of a new innovation approach, innovation at the edge. Yet scholars and practitioners know little about whether and how to innovate at the edge and how such innovation initiatives can change over time.

The purpose of this master's thesis was to contribute to and lay a foundation for theory on innovation at the edge and enlighten scholars and practitioners on how to establish, manage, and develop an edge initiative. This thesis thus aimed to gain new insight into how large established firms can radically innovate at the edge of their core business and how an edge can develop over time. To answer the research question, we have looked at a large established firm in the automotive and mobility industry and its edge initiative.

The existing edge literature was reviewed conjointly with literature on the ambidextrous solution and open innovation as these innovation approaches seem to coincide in some crucial aspects. We interviewed managers from both entities and utilized secondary data to gain insight into the topic. Informants with years of experience working with or at the edge provided us with an in-depth understanding of how the edge was organized and managed, and how different trajectories have been considered along the way.

The findings of this study show how the case company has several key features that resemble elements presented in the existing literature on the topic. It also reveals some features that are not aligned with nor extensively covered in the current literature. The features are linked to keeping the initiative at arm's length, having management sponsors shielding the edge, the funding and ownership strategy, and how the intent with the edge has changed over time.

Our findings show that keeping the edge initiative at arm's length can provide autonomy by the edge and the core acting independently of one another, placing the edge at a different location, and minimizing day-to-day contact. We notice that this way of setting up an innovation initiative is similar to ambidexterity cases (Benner & Tushman, 2003; Tushman & O'Reilly, 1996). The study also found that arm's length involves the core and the edge keeping a market-based relation, which might contribute to reducing resistance from the core. Our findings indicate that operating at arm's length has enabled the edge to establish valuable relationships with external partners and prove its stand-alone value, which has increased its growth and competitiveness in the market.

Management sponsorship is suggested to be important when establishing an edge initiative, as our case revealed that core resistance occurred. Not only do our findings highlight the importance of management sponsors for reducing friction and anchoring upwards, they also show how the sponsor role can evolve following the development of the edge. Our findings suggest that when the edge gains a foothold in the established business, it might become necessary to shift activities more toward shielding the edge from time thieves, ensuring that the edge team can stay entirely focused on value-creating activities.

The thesis finds that starving the edge can be practiced by providing gradual investments as the edge team reaches certain milestones. This is similar to what the literature suggests (Hagel et al., 2019), but supplements it by suggesting that starving the edge can also be risk-reducing for the core. The long-term perspective of the ownership seems to have allowed the entrepreneurs to experiment and find a good product-market fit. Our findings also suggest that giving co-ownership can incentivize the entrepreneurs, ultimately creating a passionate edge team.

Our last important discovery is how the intent of the edge developed over time. From the establishment of the innovation initiative in 2017 to today, the intent of the edge has moved from being a sensing R&D department to a potential strategic tool, to ultimately having a more financial focus. We further assessed the benefits and disadvantages of potential trajectories for the edge, including spinning it off, integrating it into the core, and continuing to operate as they do today. Ultimately, our findings show that a benefit of innovation at the edge is that the established firm can change intent along the way and take on various trajectories depending on how the edge evolves.

The thesis may contribute to theory and be of value to practitioners on several aspects, both related to insights on the features of the solution and the development of the edge over time. Simultaneously, many aspects of how to innovate at the edge are yet to be discovered, and we encourage scholars to build on the initial foundation this study has laid and continue to explore this promising approach to innovation further.

7.2 Limitations

This thesis possesses some limitations that need to be addressed. Innovation at the edge is an unexplored landscape in the academic literature; hence, we have attempted to describe and explain what it may look like and how it works. Nevertheless, limited research literature makes it hard to compare our findings to other studies.

Another constraint is that we conducted a single case study, making it hard to apply our findings to other contexts. It is, however, important to specify that the goal of this study is not to test theory but rather to build a foundation for future research. Therefore, the context and methodology have been comprehensively explained to give the reader the possibility to determine if the findings can be transferred to another context. Although case studies can richly describe the existence of a phenomenon like innovation at the edge (Siggelkow, 2007), we would need multiple-case studies to develop a more robust theory (Yin, 1994).

Since we wrote the thesis over a short period, it only presents a snapshot of the situation. At the time of the study, things were going well for the edge initiative, and our findings might have been different if the interviews had occurred at an earlier or later point in *CarShare*'s history. As the content of the interviews was partly about happenings in the past, it is also a risk connected to informants thinking about situations in retrospect and not remembering them correctly.

Another limitation is that all the informants were managers and got recommended and approved by our contact person in *Automotive*. This may have affected our findings, as the contact person most likely chose people who were committed to change and positive towards the edge initiative. It is also conceivable that the informant's answers were influenced by the fact that they knew the contact person would read through the thesis before publishing. We tried to reduce this effect by repeating that all quotes used in the thesis were anonymized.

Finally, even though this study has covered several aspects of innovation at the edge, it does not mean that other aspects are less important and should not be emphasized when exploring or applying this approach to innovation.

7.3 Future Research

This thesis has built a fruitful ground for future research on the topic of innovation at the edge of the core in large established firms. However, several questions remain unanswered that future research can address, both qualitatively and quantitatively. First, as industrial and cultural aspects could have influenced our findings, we suggest management scholars conduct similar research in other contexts. This could, for example, involve following multiple cases in different industries and countries over an extended period to test whether the results stand, thus broadening the insight into the edge solution.

Our findings also reveal resistance between the core and the edge, and that management sponsors contributes to reducing this. However, additional insight into how resistance develops over time and how the sponsor position might evolve in tandem would be valuable. To foster a more holistic understanding of the sponsor role, we suggest scholars to dig deeper into this critical role. It would also be interesting to read research about how resistance and the sponsor role evolve as the edge develops and maybe follows one of the discussed trajectories. It would also be intriguing to explore if resistance removal and shielding require a specific skill set or if certain leadership styles might be more effective and appropriate than others when managing edge-core tension.

Moreover, this thesis shows how the purpose of an edge initiative can change over time and how the relationship between the edge and the core develops accordingly. As a result, we suggest that future studies dig deeper into the development of edge initiatives to learn more about potential trajectories. We believe this is critical if the approach to innovation is to gain traction among scholars and practitioners.

Finally, as the literature on innovation at the edge gradually builds up, it could be intriguing with a deeper comparison to the ambidextrous organization, as these two approaches seem to have similarities but also some significant differences. Hopefully, at one point in the future, the research on innovation at the edge can reach the same amount of recognition and attention as the ambidextrous organization.

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8. Appendix

8.1 Appendix A – Consent Form

Informed consent form – Participation in RaCE research program

NHH Norwegian School of Economics

Background and aim
This research is a part of the RaCE project at SNF and NHH Norwegian School of Economics. The goal is to examine how established firms respond to and manage radical technology-driven change. We are targeting individuals within established firms that have information on and experience with organizational changes.

What participation in the study entails
We invite you to participate in an interview lasting 1 hour. If you permit, the interview will be recorded and later transcribed. The audio file will be deleted after transcription and the transcribed version will be anonymized.

How is information about you handled?
Personal information will be treated confidentially. Any information that could identify individuals will be removed (e.g. your name). Transcriptions will be allocated a code instead. Name and contact information, including this form, will be kept separate from any interview data. Only persons participating in the RaCE project at NHH/SNF will have access to the anonymized interviews.

Your firm/organization will be anonymized.

The project will be completed in June 2023.

Voluntary participation
Participating in the project is voluntary. You can withdraw at any time without any further explanation. If you chose to withdraw, all information about you and your interview will be deleted.

Should you have questions regarding the research project, please contact:
Inger G. Stensaker, 9979 2127, inger.stensaker@nhh.no.
Tobias D. Bergem: tobias.bergem@student.nhh.no
Silje L. Fladmoe: silje.fladmoe@student.nhh.no

Should you have other questions please contact: personvernombud@nhh.no

On behalf of SNF/NHH, the Norwegian NSD has approved the procedures followed by the RaCE research project are in accordance with current rules and regulations for handling data.

Your rights
As long as you can be identified in the data material, you have the right to:

- Access in which personal information is registered in your name
- To correct personal information about you
- To have personal information about you deleted
- To receive a copy of your personal information (data portability)
- To file a complaint to personvernombudet or Datatilsynet regarding use of personal information on you

What gives us the right to use personal information about you?
By signing this form you consent to participate in the study.

I have received written information and I am willing to participate in this study.

Signature …………………………… Date……………………………..

Printed name…………………………………………………………...

Please return a signed copy of this consent form to Tobias.Bergem@student.nhh.no or Silje.Fladmoe@student.nhh.no before the day of the interview.

8.2 Appendix B - Interview Guide

Please note that this is the original interview guide and that it was further developed and expanded after the first few interviews, allowing us to compare key themes and dive deeper into phenomena that appeared in previous interviews. The interview guide was written in Norwegian due to reasons explained in the Methodology chapter.

Generelt

1. Fortell veldig kort om din utdanning, tidligere stillinger og nåværende rolle.
2. Hvorfor ble du en del av CarShare, og hva var motivasjonen din bak å involvere deg?

Om *Automotive*

3. Kan du fortelle kort om den overordnede strategien og målene til Automotive?
    a. Hvordan jobber Automotive med innovasjon?
    b. Hva er kjernevirksomheten til Automotive?

Om *CarShare*

4. Hvorfor ble CarShare etablert?
5. Kan du fortelle om strategien og målene til CarShare?
    a. Har CarShares strategi endret seg siden oppstart? I så fall, hvordan?
6. Hvordan vil du beskrive kulturen i CarShare?
    a. Skiller denne seg fra kulturen i Automotive, og i så fall hvordan?
7. Hvem har CarShare rekruttert og hva vektlegges i rekrutteringen av ansatte?
8. Kan du beskrive organisasjonsstrukturen til CarShare?
9. Kan du beskrive arbeidsmetodene/prosessene i CarShare?
10. Foreligger det noen utfordringer knyttet til CarShare-initiativet? I så fall, hvilke?
11. Samarbeider CarShare med aktører utenfor konsernet?
    a. Hvorfor samarbeider dere, og hvordan fungerer disse samarbeidene?
12. Kan du fortelle om CarShares insentivmekanismer?
13. Hvordan er eierstrukturen i CarShare og har denne utviklet seg underveis?
14. Hvordan anvender CarShare teknologi?
15. Hvordan måler CarShare suksess?

Relasjonen mellom *Automotive* og *CarShare*

16. Beskriv forholdet mellom CarShare og Automotive.
    a. Hvor mye informasjonsutveksling foregår mellom selskapene, og hvordan kommuniserer dere med hverandre?
    b. Hvordan fungerer kunnskapsdelingen?
    c. Hvordan fungerer ressursallokeringen på tvers av selskapene?
    d. Hvor er dere lokalisert i forhold til hverandre?
17. Hvor mye autonomi får CarShare fra Automotive?
18. Hva får CarShare av Automotive som en ikke kunne fått fra en hvilken som helst annen eier/investor?
19. Hvordan ser du for deg at koblingen mellom CarShare og Automotive er i fremtiden?
20. Hvordan reagerte ansatte i Automotive da CarShare ble opprettet?
    a. Har reaksjonene/holdningene endret seg?
21. Hva håper Automotive å oppnå av fordeler ved å ha etablert CarShare?

Ledelse

22. Hva ser du på som din viktigste rolle som leder (enten i CarShare eller som forholder seg til CarShare)?
23. Har du noen læringspunkter du ville lært bort til andre som har planer om å starte opp et randsoneinitiativ?
24. Er det noe du vil legge til som vi ikke har spurt om?