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The implementation of change for incumbent multinationals

A strategic analysis of Telenor Research performed through a dynamic capability lens.

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Abstract

A common perception in the field of strategic management is that incumbent multinational companies (MNCs) usually fail to remain relevant in their industry and rarely introduce radical product innovation when they confront certain types of market or technological changes. The existing theory on dynamic capabilities suggests that MNCs attempting to change when faced with market discontinuities can draw on a certain set of capabilities to innovate their business model. The micro-foundations of the dynamic capability framework (the distinct skills, processes, procedures organisational structures, decision rules and disciplines, which undergird the enterprise-level sensing, seizing and transforming capabilities) are difficult to develop and deploy due to their idiosyncratic nature.

The purpose of this paper is to study the dynamic capability phenomenon on a real case setting; adopting a longitudinal case study approach. The research object of this project is the incumbent multinational company Telenor, who needs to adjust its business strategy in order to remain a pertinent actor in its sector. This paper investigates the mechanisms through which, the company's research unit develops dynamic capabilities in order to sustain change at Telenor. The sensing, seizing and transforming roles of Telenor Research are assessed through a qualitative analysis where data have been collected through the interview of seven research unit managers. In doing so, the findings provide an example of case application towards the concept of dynamic capabilities.

The qualitative data collected have been analysed following a template analysis method and sensing and seizing capabilities have been identified. These are notably supported by the corporate open innovation philosophy and engagement towards new technologies. Evaluation of the transformation capabilities could not, however, be fully assessed in this research since Telenor Research does not have the responsibility to transform knowledge into business value.

Key words: change, incumbent multinational, dynamic capabilities.

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1. Introduction

Well-established multinationals companies usually fail to remain competitive in their industries when they confront certain types of market or technological changes (Christensen, 1997). Incumbents –defined as, firms that manufactured and sold products belonging to the product generation preceding a radical product innovation (Mitchell & Singh, 1993) – are prone to technological inertia because of their investments in the existing market (Ghemawat, 1991). The literature and the theory of inertia strongly suggest that incumbents are less likely than non-incumbents to introduce radical innovations (Utterback, 1994) or to survive in a context of radical change. Nonetheless, a dynamic organizational structure added to strong technological capabilities may keep incumbents nimble and innovative in a context of discontinuous changes. Being able to cope with rapid, irregular and radical change implies, for incumbent firms, the reconfiguration of their business model to enable new business value creation. One approach to explain multinationals' ability to reconfigure their resource base, in the face of a rapidly changing business environment, is that of dynamic capabilities (Teece et al,. 1997).

For open economies exposed to rapid technological change, the dynamic capabilities framework highlights strategic managerial and organizational competences that can enable a firm to achieve competitive advantage, and then semi-continuously change so as to maintain it (Teece, 2007). According to Teece (2007), dynamic capabilities can be broken down into three succeeding phases: (i) sensing and shaping new business opportunities and threats; (ii) seizing opportunities; and (iii) orchestrating and reconfiguring the firm's resource base and activity system to create direct business value (Teece, 2007). However, developing and exploiting dynamic capabilities in a real business context is harder than explaining it. If an enterprise possesses resources and competences but lacks dynamic capabilities, it has a chance to make a competitive return. It may even achieve a supra-competitive return for a short period, but this can only be sustained long term by chance.

In order to study the dynamic capabilities phenomenon, this paper will delve deep into a particular industry that has undergone multiple phases of discontinuous change and in which companies are expected to be particularly exposed to path dependency (Bidmon & Knab, 2014; Tushman & O'Reilly, 1996): the telecommunication industry. This industry has a paradoxical aspect: on the one hand it can be regarded as mature, with fierce competition

among existing players on price and performance; while on the other hand it can be seen as an emerging industry in which new technologies and business models emerge and converge (Kaulio et al., 2007). The telecoms industry is currently facing radical technology-driven change. The combination of three important change forces set an uncertain and unclear future for telcos (i.e. mobile telephony companies): the rise of internet born-global firms; the imminent launch of 5G networks; and the development of artificial intelligence technologies.

The purpose of this paper is to explore the role of dynamic capabilities as a critical factor in value creation by drawing on the case of the mobile service provider, Telenor. The radical change faced by telcos lead to Telenor embarking on a journey from being a traditional mobile operator to becoming a preferred deliverer of digital services. Telenor is well aware of the threats imposed by over-the-top (OTTs) internet companies but whether Telenor is capable of more than sensing is unclear.

2. Research Project Purpose

This paper concerns well managed multinationals who have their competitive antennae up, invest aggressively in new technologies and listen astutely to their customers, and yet still lose market dominance. The research project considers a longitudinal case study of the Norwegian mobile service operator, Telenor. The goal of this research is to investigate how an incumbent firm uses its portfolio of organizational and strategic responses and resources to face uncertainty and discontinuous change; observed through dynamic capability lenses.

Beside its strong footprint in network connectivity, Telenor is a company that needs to constantly adapt to the constraints imposed by the fast-paced environment in which it operates. In the 1990's, Telenor was able to move from being a state-own domestic company to a public limited multinational company. This first radical change was possible due to the dynamic capabilities that the firm possessed at that time. As of today, the digital revolution and the need to become a digital service provider requires Telenor to rethink its business model. The digital revolution represents the second most important radical change that the telecom company has had to face, and this sets the business context of this research project.

In line with the situation described above, this master thesis responds to the following research question:

How do incumbent firms implement change?

A strategic analysis of Telenor Research performed through a dynamic capability lens.

The concept of dynamic capability aspires to be a relatively parsimonious framework to explain an extremely seminal and complicated issue: to what extent an incumbent firm and its management team are able, in a context of uncertainty, to spot profitable new business opportunities, make the decisions and institute the discipline to act on these opportunities, while at the same time staying agile so as to continuously refresh the foundations of its early success and generating economic surpluses over time. Therefore, since dynamic capabilities are seen as processes embedded in firms, this paper adopts an organizational and empirical angle, rather than an economic and formal modelling one.

The research project is guided by the following research objectives:

- What do dynamic capabilities look like and how do they work in practice?
- Are some of these capabilities generic?
- To what extent are dynamic capabilities related to the firm strategy?
- How did Telenor Research's dynamic capabilities change over time?

To answer these four research objectives, the paper is structured as followed. Chapter 3 proposes a literature review of the theoretical concept of dynamic capabilities. This is followed in Chapter 4 by a detailed description of the particular case studied. Chapter 5 then presents the research design followed for this project. An interpretation of the empirical findings is presented in Chapter 6 and the paper closes with a discussion of the topic in Chapter 7 and conclusion in Chapter 8.

3. Literature Review

Dynamic capabilities have gained a significant prominence in strategic management research. Introduced by Teece in 1997, the concept of dynamic capabilities has come a long way in a short period of time, evolving in a coherent research programme characterized by cumulative progress. The study of dynamic capabilities has advanced to a point at which the literature comprises not only theoretical research but also a great deal of empirical work (Schilke et al., 2018).

This chapter is organized as followed: Section 3.1. presents the initial dynamic capabilities framework as it has been thought by Teece, Section 3.2. highlights how the framework has evolved since its introduction and finally, Section 3.3. points out how several scholars have nuanced the theory.

3.1 The dynamic capability framework

Before digging into the theory, one essential consideration lying behind the concept of dynamic capabilities is their nature. The dynamic capability literature makes a conceptual distinction between operational capabilities and dynamic capabilities. Operational capabilities –also called 'ordinary capabilities'– determine how a firm maintains and leverages its status quo in term of scale and scope of activities, whereas dynamic capabilities enable the firm to change (Zollo & Winter, 2002). Operational capabilities enable operational effectiveness, whereas dynamic capabilities allow sensing and seizing new business opportunities (Teece, 2007). In other words, dynamic capabilities are meant to adjust or alter operational capabilities or the firm's broader resource base, eventually leading to new value creation strategies (Eisenhardt & Martin, 2000) and a sustained competitive advantage (Teece, 1997). Collis (1994) was the first one to hierarchically locate dynamic capabilities. In his paper, he suggested that dynamic capabilities are nested within a larger hierarchy of capabilities. At the bottom of the hierarchy lie the operational capabilities, termed 'zero-order capabilities', which can be modified by dynamic capabilities referred as 'higher-order capabilities' (Collis, 1994). Furthermore, he added that dynamic capabilities can themselves be modified by 'second-order' or even 'higher-order' dynamic capabilities (Collis, 1994). There is a broad consensus in the literature underlying the contrast between ordinary and dynamic capabilities and how they relate to change.

In the field of strategic management and in a regime of radical change, the concept of dynamic capabilities identifies the dimensions of idiosyncratic capabilities that can be seen as a source of competitive advantage as well as to explain how a certain combination of corporate competences and resources can be developed, deployed and protected. One of the first constructed statements regarding the concept of dynamic capabilities can be found in Teece et al. paper (1997), where dynamic capabilities have been defined as 'the firm ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments'. The term dynamic can be defined as: the capacity to renew competencies to achieve congruence with the changing business environment. Complementarily, the term capability refers to the key role of strategic management in appropriately adapting, reconfiguring and integrating internal as well as external firm-specific resources, organizational skills and functional competences to match the requirements of the new business environment (Teece, 1997).

The dynamic capability perspective originally had, as one of its primary foci, the modification of the firm's asset base, hence explaining its strong theoretical link with the resource-based view theory. Academics usually considered the dynamic capability perspective as an extension of the resource-based view (RBV) of the firm (Helfat & Peteraf, 2003; Schilke et al., 2018). When Teece et al. (1997) presented their concept of dynamic capabilities, they sought to differentiate it from the more static orientation of the RBV. While the RBV focuses on the rents accruing to the owners of scare firm-specific resources by emphasizing the enterprise's existing resource base –defined as the firm's tangible assets, intangible assets and its operational capabilities– the dynamic capabilities framework primarily addresses purposeful change of the firm's current resources. Furthermore, compared to the RBV, the dynamic capabilities framework puts more emphasis on the firm's external environment (Helfat & Winter, 2011) and gives a long-term perspective to this managerial framework. Teece (1997) accentuated the contrast between the two theories by arguing that winners in the actual global and competitive market place have been firms that can demonstrate timely responsiveness as well as rapid innovative and managerial capabilities developed to effectively redeploy and coordinate internal and external resources. Thus, the rational is that the RBV did not adequately explained how and why certain firms can have a competitive advantage in a situation of rapid and unpredictable change (Eisenhardt & Martin, 2000).

Dynamic capabilities thus reflect the firm's ability to achieve new, innovative and difficult-to-replicate competitive advantage given its market position and path dependencies (Leonard-Barton, 1992). Leading to the argument that firms' competitive advantage lies in their managerial and organizational systems, which fundamentally rests on corporate processes shaped by their positions and paths. Managerial and organizational processes can be understood as the firm routines or patterns of current practices. The firm's position refers to its current specific endowment in technology, complementary assets, customer base and its relationships with external actors. Thirdly, the enterprise's path refers to the strategic alternatives available to the firm, the presence of increasing returns and attendant path dependencies (Teece, 1997).

Teece's initial framework has subsequently been enhanced by the clear definition of the nature and micro-foundations of the concept of dynamic capabilities (Teece et al., 2007). While Teece's first typology (1997) focused more on coordinating activities, learning and reconfiguring; the second framework elaborates on the three-step practice of: sensing, sizing and transforming business opportunities (Teece et al., 2007). A comparison of the two typologies shows that Teece (2007) placed greater emphasis on sensing while Teece et al. (1997) mentioned this as a sub-process of reconfiguration. Secondly, while Teece et al. (1997) devoted more attention to coordination, the new typology includes this aspect in its transforming step. However, Teece (2007) discussion of organizational processes must not be seen as a suppression of the original typology but rather as an elaboration of it.

In Teece's (2007) second typology, the dynamic capabilities framework includes difficult-to-replicate enterprise capabilities that are required to adapt to changing customers demand as well as new technological opportunities. Firm's dynamic capabilities also embrace their capacity to develop new products and processes, shape their ecosystem and innovate their business model. It is hypothesized that superiority in these orchestration abilities undergird a firm's capacity to successfully innovate and consequently capture sufficient value to deliver superior long-term business performances. As Teece (2010) argued, firms with strong dynamic capabilities are intensely entrepreneurial. However, the micro-foundation of dynamic capabilities, identified as "the idiosyncratic processes, skills, organizational structure, discipline and decision rules" underpinning firm's sensing, seizing and reconfiguring capabilities are difficult to develop and deploy. Moreover, the literature

highlights the fact that dynamic capabilities are difficult to buy or sell consequently entailing significant sunk costs along their development.

The typology advanced here perceives dynamic capabilities as the foundation of firm-level competitive advantage in regime of rapid change. The framework indicates that the extent to which an enterprise develops and employs superior non-imitable dynamic capabilities determines the nature and amount of intangible assets it can assemble and the level of economic rent it can benefit from. A firm's ability to manage threats, exploit new business opportunities or reconfigure itself depends on its level of commitment and investment, which is in turn dependent on its own ability to sense its environment (Teece, 2007). Sensing its environment and looking for new business opportunities relies on scanning, learning and interpretive activities where large investments in R&D are usually required. As mentioned by March and Simon (1958), in order to identify and shape new business opportunities, enterprises must constantly scan, search and explore both local and distant markets and technologies. While management teams tend to be tied to established, ad hoc problem-solving competences (Winter, 2003), overcoming a narrow search horizon is, however, costly and challenging. For multinational companies, Chesbrough (2006) explains that adopting an 'Open Innovation' approach is now a mandate for successful sensing. The open innovation concept and practice accentuates the importance of broad-based external research and subsequent integration involving suppliers, customers, complementors and academics. Once new opportunities are glimpsed, managers must figure out how to interpret new events, which technology to pursue or which market segment to focus on (Teece, 2007). Hence moving on to the second step of the framework: the seizing phase.

Seizing opportunities involves maintaining and improving technological competences and assets' complementarity while business opportunities are ripped. Henceforth, getting ahead may require significant up-front investments. Investments will likely involve committing financial resources behind an informed conjecture about the particular technologies, organizational designs or marketplace future. The proficiency with which such treats will be overcome and how new opportunities will be embraced will notably depend on the quality of the firm's routines, leadership, decisions rules and strategies used to evaluate these new investment opportunities. In environments of rapid technology-driven change, it is clear that investment choices require unique managerial skills, thus implying selecting the right 'strategic architect' (Teece, 2007). In fact, the seizing phase requires leadership skills in

making quality decisions, communicating goals, expectations and values, while at the same time motivating stakeholders. Decision making skills and managerial judgements therefore take a greater significance in this context and an important class of dynamic capabilities emerges around the manager's ability to override possible dysfunctional features of established decision rules and resource allocation processes. One should not be surprised if a firm is able to sense a business opportunity but fails to invest in change processes. Incumbents in particular may tend to eschew radical competency-destroying innovation in favour of more incremental competency-enhancing improvements. Thus, the critical strategic element associated with capturing value from innovation depends on the firm's ability to identify and manage 'bottleneck assets' and 'choke points' in its value chain.

Finally, when business opportunities have been sensed and seized, the most challenging step is to manage the threats by redefining the corporate business model and subsequently innovating the means by which economic value is created. However, ordinary transformations such as improving the service or products' quality, controlling the costs, reducing inventories or even adopting best practices –which refers to the concept of 'technical fitness'– will not be sufficient to achieve long-term competitive success (Teece, 2007). Success will require the creation of new products, services or processes supplemented by the implementation of new organizational forms and business models. This will be driven by an intense entrepreneurial management style constantly honing the 'evolutionary fitness' of the firm (Teece, 2007). Two yardsticks can be used to calibrate capabilities, as introduced above: technical fitness and evolutionary fitness (Halfat et al., 2007). Technical fitness expresses how well a capability performs its function while evolutionary fitness emphasizes how efficiently a capability enables a firm to make a living (Halfat et al., 2007). It has been further argued that both technical and evolutionary fitness range from zero to higher-level capabilities. The important consideration here is that dynamic capabilities assist in achieving evolutionary fitness by shaping the firm's business environment, underlying their profound entrepreneurial nature. However, incumbent firms tend to frame new business opportunities in a manner consistent with their existing asset, knowledge and problem-solving skills – surrounded by their established business model and organizational frame– meaning that even if managers sense opportunities they might not be able to successfully transform them into business value. Managers must overcome two constraints to develop dynamic capabilities: the cognitive limitations and the framing biases arising from established assets (Teece, 2007). To overcome these some scholars have suggested the concept of co-specialization.

The management team's ability to identify the needs and opportunities to develop or purchase co-specialized assets is fundamental to the concept of dynamic capabilities for incumbents facing discontinuous periods of change. Co-specialized assets are a particular class of complementary assets where the value of an asset is a function of its use in conjunction with other particular assets. Both innovation and reconfiguration may necessitate co-specialized assets being combined for change to proceed. However, the ability to identify, develop and combine specialized and co-specialized assets is rare. These asset orchestration and corporate renewal capabilities require leadership skills that must be sustained by dynamic capabilities.

To sum up, according to Teece's (2007) typology, dynamic capabilities, reflected in distinct organizational processes, aim to gain a comprehensive understanding of the business environment, change factors and emerging opportunities and threats (sensing), making strategic choices among investment opportunities and business model innovation (seizing) and reconfiguring the organization's resources, structure and capabilities (transforming). The ambition of this framework is to explain the sources of firm-level competitive advantage over time as well as to provide guidance to managers to avoid the zero-profit condition that can arise when homogeneous firms compete in perfectly competitive markets. Dynamic capabilities mainly reside in the top-level management team abilities but also strongly depends on the organizational structures and processes in place.

3.2 Dynamic capabilities orchestration and performances

The dynamic capabilities framework endeavours to capture the key variables and relationships that need to be manipulated to create, protect and leverage intangible assets to achieve firm-level competitive advantage, attain superior enterprise performance and avoid the zero-profit trap (Schilke et al., 2018). Consequently, firm's performances are central to the theory and seen as the aim of dynamic capabilities (Laaksonen & Peltoniemi, 2018). The need to first sense and seize business opportunities and then transform them when radical change occurs, requires the allocation, reallocation, combination and recombination of resources and assets. A key strategic function of entrepreneurial management is thus to find new value-enhancing combinations inside the enterprise but also among external entities. Because many of the most valuable assets inside the firm are knowledge related and hence non-tradable, the coordination and integration of such assets through collaboration is meant

to create economic value that cannot be replicated. Hence, accentuating the approach of open innovation proposed by Chesbrough (2006). Moreover, the dynamic capabilities framework recognizes that firms are shaped but not necessarily trapped by their past thus allowing the managers to make important differences through investment decisions.

Several scholars (Eisenhardt & Martin, 2000; Teece, 2007) have overcome the tautology risk linked to the framework by suggesting that dynamic capabilities should be observed through the changes they cause to the firm's resource base. Such changes may then improve the overall firm performances. Possessing dynamic capabilities does not necessarily lead to higher performance; the performance outcomes are dependent on the quality of the ordinary capabilities that the dynamic capabilities alter as well as the evolutionary fitness of such capabilities (Laaksonen & Peltoniemi, 2018).

3.3 Nuances

Although the dynamic capabilities perspective has become one of the most frequently used theoretical lenses in strategic management research, critics have repeatedly voiced their frustration with this literature, particularly bemoaning the under-specification of the framework. It has been qualified of conceptually vague and tautological, with inattention to the mechanisms by which resources contribute to competitive advantage as well as criticized for it slack of grounding (Priem & Bulter, 2000). In fact, dynamic capabilities are not a unitary concept but rather characterized by a set of capabilities that manifest themselves in various distinct forms (Eisenhardt & Martin, 2000; Helfat & Winter, 2011). As such, scholars have developed different ways to dimensionalize the dynamic capabilities construct. Chief among these approaches are distinctions between: the types of processes in which they are engaged, their degree of routinization (Winter, 2003), the functional domain to which they apply (Eisenhardt & Martin, 2000), their hierarchy (Collis, 1994) and their focal unit of analysis (Adner & Helfat, 2003).

One issue of ongoing debate is whether dynamic capabilities are all necessarily highly routinized. Teece & al. (1997) and Teece (2007) incorporated organizational routines as important elements of dynamic capabilities and this aspect has been emphasized by Winter (2003) and Helfat & Winter (2011). In addition, Eisenhardt and Martin (2000) stated that dynamic capabilities are relatively similar across firms –assimilated to 'best practices'– and

describe them through various examples of particular routines such as the ways of managing R&D, of communicating within the firm or performing M&A. Yet there is also evidence that some activities appear to be less routinized. For example, Winter (2000) specified that dynamic capabilities are firm's systematic and persistent features, although he took issues with their routine-based dimension. He argues that unlike routines, which are invisible and unknown to the managers, the control levers and dynamic effects of dynamic capabilities are known and thus, must be built through the manager's analogous role of 'architect'. Nonetheless, it turns out that firms' activities are frequently routinized. For example, although product development may have non-routine characteristics as the managers involved explore new ideas, new product development often takes place within a stable framework of recurring organizational processes, therefore it can somehow be characterized as routinized practices. As Adner and Helfat (2003) argued in their original conception of the 'dynamic managerial capabilities', managerial decision-making often relies on stable underpinnings that enables practiced and patterned behaviours. In summary, whereas dynamic capabilities can be associated to routine, the specific degree of routinization of firms certainly differ between individual instances of dynamic capabilities.

There is a broad consensus in the literature that dynamic capabilities contrast with ordinary capabilities by being concerned with change (Collis, 1994). Change often occur by force majeure from the environment. In their paper, Helfat and Winter (2003) distinguish two ways to carry out change: through the ad hoc problem-solving capabilities or with dynamic capabilities. As opposed to the concept of dynamic capability, ad hoc problem solving is not routinized; in particular, it is not highly patterned and not repetitious. It typically appears as a response to novel challenges from the environment or other relatively unpredictable events. In other words, while ad hoc problem solving is seen as organizational improvisation to react to change, dynamic capabilities prepare for change and typically involve long-term commitments to specialized resources (Winter, 2000). However, relying on dynamic capabilities and having no occasion for change is merely to carry a cost burden. In fact, attempting too much change, perhaps in a deliberate effort to exercise dynamic capabilities, can impose additional costs when the frequent disruption of the underlying capability outweighs the competitive value of the novelty achieved. Contrasting with the ad hoc problem-solving method that disappear if there is no problem to face. Thus, while developing dynamic capabilities implies sunk costs, following an ad hoc problem-solving method only involves opportunity costs. Ad hoc problem solving can thus be considered as a

substitute to dynamic capabilities and may be considered to be economically superior (Helfat & Peteraf, 2003). In conclusion, defining the cost-benefit balance of capabilities investment is essential.

Finally, the most frequently studied moderator to the concept of dynamic capabilities is that of environmental dynamism. Several research papers (Teece et al., 1997, Helfat and Winter, 2011; Schilke et al., 2018) have shown that environmental dynamism is an important antecedent to dynamic capabilities and is a relevant contingency when examining their effects (Eisenhardt & Martin, 2000). In fact, effective patterns of dynamic capabilities vary with market dynamics, in particular, dynamic capabilities vary in their reliance on existing knowledge. In moderately dynamic markets –where market boundaries are clears and players are well known-, effective dynamic capabilities heavily rely on firm's embedded cumulative and existing knowledge. In these situations, firms plan and organize their activities in a relatively ordered fashion where the decision-making process is linear. On the other hand, in high-velocity markets –where market boundaries are blurred, market players are shifting and successful business model are unclear-, dynamic capabilities relies much less on existing knowledge and much more on rapidly creating situation-specific new knowledge. Hence leading to non-linear and unpredictable changes. In high-velocity markets, dynamic capabilities rely extensively on new knowledge created for specific situation, thus, routines are purposefully simple and adaptive to changing circumstances. Although not completely unstructured, the price of that adaptability is unstable and lead to unpredictable outcomes. In other words, dynamic capabilities in high-velocity markets are simple, iterative and experimental processes, that rely on quickly generated situation specific knowledge and interactive execution to product adaptive but unpredictable outcomes (Eisenhardt & Martin, 2000). In conclusion, although environmental dynamism is likely to be a highly relevant condition determining the extent to which dynamic capabilities may affect organizational outcomes such as firm performance, dynamic capabilities can, in practice, exist and help companies to compete in both highly dynamic or relatively stable environment (Helfat & Winter, 2011).

3.4 Summary of the literature review

This literature review shows that the recent stream of research and empirical work moved the dynamic capabilities perspective significantly forward while addressing earlier criticisms regarding their under-specification. Confusions and mystery surrounding the theory of dynamic capabilities probably arise from linking the concept too tightly to notions of generalized effectiveness and the generic formula for sustainable competitive advantage. As of today, the most frequently used definitions of dynamic capabilities are complementary to one another and have achieved substantial clarity. To conclude, there are no general rules regarding investing in dynamic capabilities of whatever order as a partial hedge against the obsolescence of existing capabilities; if well structured, they can potentially yield sustainable advantages. Dynamic capabilities must be included in the strategic analysis tool kit of managers, but the strategic analysis itself remains a matter of understanding how the idiosyncratic attributes of the individual firm affect its prospects in a particular competitive context.

4. Case Presentation

The multinational firm Telenor, Norway's largest telecom operator, has been chosen as a research site for this project. Telenor, as an incumbent mobile operator, has historically operated in a relatively stable environment, but in the recent years, its business landscape became uncertain. The current digital revolution accompanied by multiple new disruptive technologies have created a unique context of radical change that will be studied in that paper.

The following chapter presents the company in Section 4.1. Section 4.2. exposes the different phases of change that Telenor has been through. Finally, Section 4.3. introduces Telenor Research, the group unit studied in this research project.

4.1 Telenor Group

Founded in 1855, Telenor is one of the world's major mobile operators. Connecting the world has been Telenor's main domain for more than 160 years and the company is now able to provide connectivity services to more than 174 million customers across Scandinavia and Asia. The group has in the region of 20,000 employees worldwide and achieved NOK 110 billion revenues in 2018.

Telenor is an incumbent large mobile operator and has a solid position in voice telephony, text messaging and data. At the time of writing, Telenor has a portfolio of mobile operations in Norway, Sweden, Denmark, Thailand, Malaysia, Myanmar, Pakistan and Bangladesh, and has just acquired a Finnish mobile operator called DNA. Telenor enjoys a leading position in the Nordic region in mobile, broadband and TV services. Furthermore, the company is financially solid and 97% of its revenues in 2018 came from its connectivity activities. Nevertheless, for the first time in its history, the group financial results were highlighted by a negative organic revenue growth of -0,6% in 2018 (Telenor financial report 2018). These results are, however, in line with the current flattening status of the telco industry. Not too long ago, Telenor's main source of income came from SMS and voice telephony but this has been wiped out by digital companies offering internet solutions such as iMessage, WhatsApp or Messenger. Hence, this paper will study the managerial strategies implemented to adjust to the new market dynamics in order to be able to generate new sources of revenues.

Telenor's 2020 strategic outlook is driven by the ambition to transform its customers' experience. Telenor exists to connect its customers to what matters the most and believes that delivering internet access and connectivity is the foundation of it. By enabling its users to connect their digital lives, Telenor aims to offer a personalised experience based on their customers' needs and preferences. In essence, Telenor objective is to create business value by becoming more efficient in how it operates, how it delivers its services and how customers experience Telenor.

4.2 Different phases

Telenor has undergone drastic changes over the past five decades. It has gone from being a state-owned monopoly to becoming a multinational quoted on the Oslo and New York stock exchanges.

In the 70's, Telenor (called "Televerket" at the time) was part of the Norwegian state administration and was characterized by the effort of delivering basic telephony services to the country. In the 80's, a large deregulation took place in the telecommunication industry and this shaped Telenor desire to become independent of the state. It finally became independent of the state administration in 1994, after 11 years of political struggle, and became organized as a state-owned limited company. The company then became very competitive and embarked on its international growth strategy at the turn of the 21st century. The third and most recent radical change that Telenor is currently experiencing is linked to the digital revolution and the new challenges imposed by the emergence of internet companies that modify the telcos competitive landscape. Overall, these successive phases of change have been most of the time initiated by several forces such as changes in regulations, technology, leadership style, development of new knowledge etc.

Telenor has been able to turn around and succeed several phases of change in the past and this has been possible due to the presence of dynamic capabilities at the time. However, whether Telenor has been able to sustain the existence of the dynamic capabilities required to implement strategic change is the matter of this research thesis.

4.3 Telenor Research

Telenor Research is a group unit dedicated to scientific research. Its mission is to create business value for Telenor's business and group units through applied research. The research unit plays a key role in providing insights and competences supporting Telenor's vision to become a software and data-driven company. The unit conducts research within key areas such as customer insights, market dynamics, new technologies, data analytics, innovation and so on.

The research unit is cross-disciplinary; researchers are experts in their field and in 2018, 75% of them held a PhD. According to their field of expertise, researcher's roles can be divided into three different types of deliverables. Firstly, researchers conduct pure research projects by working on scientific papers and developing direct relationships with academia. Second, Telenor Research provides research-based analysis and recommendation to other business or group units operating across Telenor markets. This can be assimilated to an internal advisory and consultancy role where researchers work on real business cases and aim at solving the most complex corporate issues as well as to stimulate innovation. Finally, researchers perform internal training and teaching with the goal of transferring the knowledge developed internally. Hence, Telenor Research embodies a supportive function to the entire group, whether it has to deal with technology or business-related topics.

The research unit has also been subject to many organizational changes along its 60 years of existence. In 2018, the group unit was composed of 40 researchers; 25 years ago the unit counted 600 researchers. It was previously a research and development unit, while now it only focuses on research. There was also a time in 2010, when Telenor's senior management decided that the research unit was no more relevant to the group and would have to be disseminated. Thus, over the years, the status of the unit has been very different in term of people, priorities, projects and responsibilities. However, the last six years have been more or less stable in term of organization, management style and tasks.

The analysis conducted in this paper will be based on the actual status of Telenor Research and will evaluate its abilities to lead strategic change whilst keeping in mind what the group unit has already been able to achieve in the past.

5. Research Design

Having identified the purpose of this paper, the next chapter will describe the research methodology. A thesis' research design can be defined as the overall plan of action guided by the research question and designed to achieve the research objectives (Saunders et al., 2016). The research design is explained in the following sections: section 5.1 outlines the research strategy followed; section 5.2 explains the data-collection phase; section 5.3 describes the template analysis used to analyse the data; and section 5.4 raises the concern of data validation. Ethical concerns are considered within every step of the research methodology and will be covered in this section wherever necessary.

5.1 Research strategy

The aim of this paper is to investigate the ability of a particular incumbent firm to implement change when facing uncertainty. This will be strategically observed through a dynamic capability lens. These settings are found in the telecommunication industry, which in the past twenty years have been affected by frequent market and technology-side discontinuities such as the liberalization of the state monopoly markets, the introduction of mobile telephony, the Internet bubble or more recently, the launch of streaming services. Furthermore, imminent discontinuities, due for example to the launch of 5G networks, have already been sensed by most of the leading telcos. Thus, in line with the goal of this research project (i.e. seeking new insights about the dynamic capability phenomenon in a real-life settings), this paper will constitute an explanatory mode of study. Explanatory researches emphasize the study of a situation or a problem in order to explain the relationship between variables (Baxter & Jack, 2008).

Supported by numerous empirical studies, the dynamic capabilities' literature is now broad. However, academics still struggle to set clear boundaries to the topic and on top of that, there is a real lack of applied studies to real cases. In fact, no precise guidelines have been written on how to observe the dynamic capability phenomenon and how to measure it. As Dubois and Gadde (2002) argued, 'the interaction between a phenomenon and its context is best understood through in-debt case study'. Hence, the best way to answer the present research question will be to follow a case study approach. The 'case' will refer to the Norwegian telco: Telenor and more precisely its research unit. A case study approach is considered to be

a well-equipped method to pair with an explanatory design since it enables to get in-depth inquiry about a topic within its real-life settings (Yin, 2014). Due of its in-depth nature and its need for corporate information access, a case study research might appear to be challenging. However, the present research is conducted as part of the FOCUS Research Centre at the Norwegian School of Economics; NHH and Telenor have collaborated on research projects for more than a decade hence easing access to corporate information, data and managers.

In his paper, Yin (2014) distinguishes between four case study strategies based upon two discrete dimensions: single case versus multiple case (nature) and holistic case versus embedded case (unit of analysis). Due to the unique nature and the particular focus on one business unit (Telenor Research), this paper will be a structured around a single and embedded case study.

In line with the case study approach followed, qualitative data will be collected in order to identify common themes and patterns originating from the conceptual framework of dynamic capabilities. This approach is recognized as 'abductive' where known premises are used to generate testable conclusions (Saunders et al., 2016). The expected result of the research project conducted here is to demonstrate that Telenor Research is a dynamic capability to the Telenor Group and that it is thus able to provide the required means to sustain Telenor's change.

5.2 Data collection

This paper is a qualitative research where primary qualitative data have been collected and interpreted to make sense of the subjective constructed meaning expressed about the phenomenon of dynamic capabilities studied in the particular context of radical change. Such research is usually referred to as naturalistic since researchers need to operate within natural settings in order to establish trust, participation, access to meaning and in-depth understanding (Saunders et al., 2016). In order to assess the presence and quality of the three components of the dynamic capability framework (sense, seize and transform), in-depth qualitative information, opinions and perspectives have been collected by interviewing seven persons. Conducting research interviews helps to gather valid and reliable data that are relevant to the evaluation of the situation. The goal of research interviews is to ask

purposeful questions to participants who will be able to provide rich and detailed comments and opinions about the phenomenon studied.

5.2.1 Sample

The goal of this paper is to evaluate Telenor Research's ability to support strategic change. Qualitative data was therefore collected by interviewing seven top-level managers from the research unit. Interviewees were all based at Telenor's headquarters in Oslo. Since it was essential to interview participants that could provide insights, opinions and perspectives on the topic matter, purposive sampling has been used. This non-probability sampling technique involves subjective judgement (Saunders et al., 2016) when selecting the respondents. One main issue in empirical studies is to define the right sample size. According to Saunders (2016) scale definition of non-probability sample size (set between 5-25 respondents), I believe that seven respondents is sufficient to gather enough insights to meet my research objectives. The seven participants selected have a managerial role in Telenor Research and have been working for Telenor for a long-enough time to be considered as individuals who are well aware of the current stance of the particular group unit as well as the company at large.

5.2.2 Interview guide

The qualitative analysis exposed in Chapter 6 is based on the collection, analysis and interpretation of respondents' meanings as well as their understanding of the phenomenon studied. These were captured by conducting one-to-one interviews with managers from Telenor Research. The interviews were conducted in February 2019 at Telenor's headquarters in Oslo, Norway. A few days before the interviews, a short description of the research project and objectives and an interview guide were sent to the seven participants. This upstream communication allowed the respondents to review the questions in advance and prepare their answers, thus heightening the quality of the data collected.

The interview guide (See Appendix A) has been structured in accordance with the initial template framework designed to analyse the qualitative data collected. The template analysis method followed will be presented in the next section. Hence, the interview guide is organized into six distinct parts as shown in the following table (Table 1):

	SECTIONS	CONTENT
1	CONTEXT	Settings
2	SENSING	Ability to identify opportunities
3	SEIZING	Ability to work and go ahead with opportunities
4	TRANSFORMING	Ability to transfer knowledge and create value
5	CONCLUSION	Dynamic capabilities
6	TELENOR RESEARCH EVOLUTION	BU's evolution and different radical change faces

Table 1: Outline of the interview guide

The questions prepared for the section 'Telenor Research evolution' have only been discussed with two of the participants who both have more than 25 years' experience with Telenor Research and who are thus able to provide insights about how the group unit has evolved and changed over the years.

The questions used in the interview guide derived from the literature, the theory considered, common sense and discussion with industry experts. Additionally, several Telenor Research corporate reports and internal documents, made available for the purpose of this research project, were used to increase the relevance and preciseness of the questions asked during the interviews. Allowing respondents to argue or comment on real corporate cases or achievements enhanced the richness and quality of the data collected. Careful attention has been given to design questions and an interview flow that did not put the interviewee in an embarrassing position.

The interviews followed a semi-structured format: starting with background questions and then moving on to open or probing questions. Background questions such as "*What is your role in Telenor Research?*" or "*Since how long have you been working for Telenor?*" were mainly used in the first part of the interview to map participants' profiles and cover their

professional experiences and tenure related to the telco industry. Then, the other parts of the interviews used open or probing questions. Open questions such as *"To what extent to you think that the open innovation philosophy adopted by the Telenor Group supports your research activities?"* or *"Do you consider Telenor as an innovation leader?"* were used to encourage the interviewee to provide extensive and developmental answers that can be used to reveal attitudes or obtain facts. Thirdly, probing questions were used. These work like open question but imply a particular focus or direction. Examples of probing questions used during the interviews are: *"Telenor operates in a business context where radical change and disruption seem to be the guiding themes. Do you believe that in this uncertain environment, Telenor Research is still able to identify new business opportunities?"* or *"How do you control the risk of knowledge leakage when partnering or collaborating with other entities?"*. Probing questions were also used to seek an explanation when the interviewee's meaning was not clear or when his/her answer did not reveal the reasoning involved in the initial question. Due to the non-standardized structure followed, the phrasing as well as the order of the questions asked varied according to the flow of the conversation in order to encourage participants to freely expose their thoughts. The goal being to make the interview as naturalistic and interactive as possible. Finally, it has to be mentioned that during the analysis phase, follow up questions were asked to one of the respondents for clarification.

As it has been highlighted in the literature review, dynamic capabilities are not something that a company can claim having but rather a phenomenon that could be observed through behaviours, decisions or actions. Participants were asked to illustrate their thoughts with as many real case examples as possible in order to facilitate the observation of the phenomenon. Then, it can be observed that the respondents exemplified their answers according to their field of expertise and due to the diversity of profiles interviewed (See table 2), a rich pool of examples have been elaborated.

Interview number	Participants field of expertise
#1	Strategy
#2	Business model
#3	Economist
#4	Technology - Artificial Intelligence
#5	Human Resources
#6	Technology –Artificial intelligence
#7	Technology -5G

Table 2: Participants expertise.

While conducting a case study research, collecting data through semi-structured interviews has three main advantages (Saunders et al., 2016). First of all, conducting face-to-face interviews allow to better understand respondents' opinions and feelings about the situation. Secondly, a semi-structured approach usually allows interviewees to explain and build on their own answers. In fact, respondents may use words or ideas in a particular way and the opportunity to 'probe' these meanings add particular significance and depth to the data collected. Thirdly, using semi-structured interviews may raise concerns or ideas that the researcher did not considered at a first place, but which may be interesting and significant to better understand the topic.

Finally, due to the nature of the questions and to enhance the quality of the data collected, the seven interviews have been audio recorded and transcribed. Furthermore, in line with ethical concerns, each participant has signed a consent form allowing their data to be used and each interview's transcript has been sent back to the respondent for confirmation. In addition, since the data will be stored, the research project has been notified and registered to the Norsk Senter For Forskningsdata (NSD).

5.3 Data analysis

Based on the opportunity to explore a phenomenon in its real-life settings, the collection of qualitative data through semi-structure interviews is likely to be characterized by a large and rich amount of complex data. Because of the expected mass of data collected, the need to explore, analyse and synthesize the information in order to further address the research objectives will be done using a template analysis. The ultimate goal of the analysis being to link the meanings found in the data to the conceptual framework of dynamic capabilities.

Braun et Clarke (2012) defined the template analysis method as a 'foundational method for qualitative data analysis'. The template analysis is a type of thematic analysis that balances a relatively high degree of structure in the process of analysing textual data with the flexibility to adapt it to the needs of a particular case study (Cassell & Symon, 2012). The essential purpose of this method is to identify pre-defined themes, codes and patterns that frequently occur across the data set. Central in the technique is the elaboration of a coding template, usually developed on the basis of the literature and conceptual framework studied (King, 2012). A coding template is a hierarchical list of themes and codes, used as the central analytical tool in template analysis (Saunders et al., 2016). Themes are defined as the current and distinctive features of participants' account that characterize perceptions and/or experiences seen by the researcher as relevant to the research question (Braun & Clark, 2012). While a code labels data to a specific meaning and refers to a theme. The flexible characteristic of this analysis method relies on the fact that the initial template is based on a number of themes and *a priori* codes coming from the literature, which are then supplemented by the use of themes and vivo codes emanating from the data analysis. Consequently, the template may continue to be revised until all of the data have been coded and analysed.

The template analysis conducted for the Telenor Research case was divided into five chronological steps:

1. Development of the initial template
2. Data coding
3. Devising and linking themes plus the development of supplement codes
4. Exploring relationship
5. Sense making

A key decision in template analysis is to decide when to begin developing the initial template.

There are no fixed rules for that (Cassell & Symon, 2012), thus it was decided to start thinking about the coding template after having carefully reviewed a large amount of academic papers and empirical studies about the concept of dynamic capabilities and before conducting the interviews. The initial template has been designed in parallel of the interview guide since both parts are closely related. Following a deductive approach (Yin 2014), the literature and the existing theory devised the initial template developed for this research project. The seven following themes appeared to be particularly relevant: sensing, seizing, transforming, value creation, limits, balance and people. In addition, each theme was composed of several *a priori* codes that were expected to be identified when analysing the interviews. The template used to analyse the data is presented as a mind-map in Figure 1 and the coding template can be found in Appendix B.
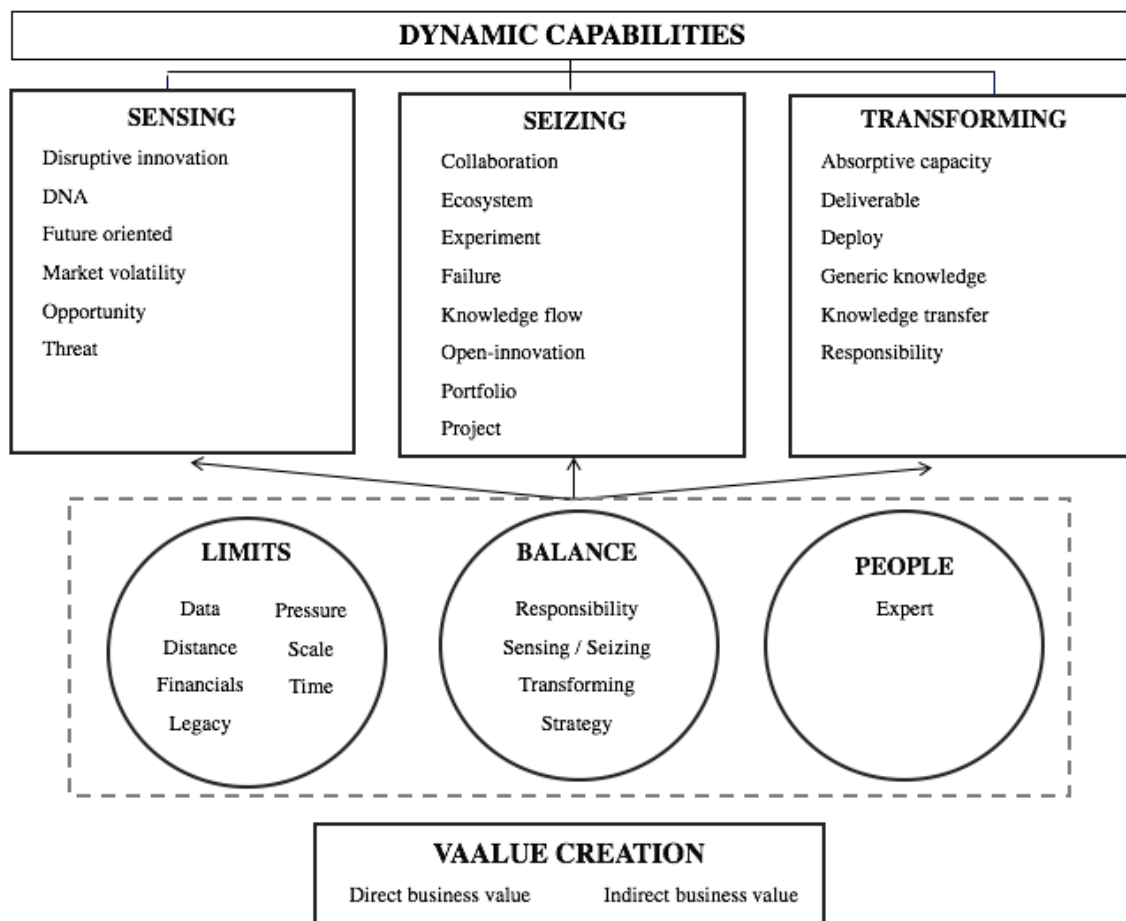

Figure 1: Mind-map of the template analysis

The second step of the analysis consisted of coding the data. It involved labelling some units of data within the seven transcripts with a code that symbolizes or summarizes the exact meaning of the word or short phrase coded (Cassell & Symon, 2012). Retrieving the data under relevant codes aims at making each piece of data accessible for further analysis. It should be noted that only the relevant data have been coded and that one data unit can refer to multiple codes. The approach to coding followed for this project was guided by the purpose of the research as expressed through the research objectives and the research question. The coding analysis has been done manually and organized in an Excel file where the data were stored according to their code and theme affiliation.

Thirdly, using a template analysis was beneficial for this case since it allowed the themes and codes to be revised or changed according to the new findings. While codes aim at showing the occurrence or non-occurrence of a phenomenon, it happened that some initial codes such as '*knowledge transfer'* or '*open-innovation'* defined prior to starting the interviews were too broad and had to be narrowed down during the analysis. Likewise, some codes have been changed, merged or deleted. Furthermore, themes have also been redefined along the process in order to connect them in a well-structured analytical framework where hierarchical relations can be observed. For example, as it is illustrated in the mind-map, the themes *Sensing, Seizing* and *Transforming* are logically connected; the *Limits, Balance and People* are themes that influence the three on the top without being connected to each other while the Value creation theme can be seen as a final outcome. Furthermore, it can be observed that themes do not have to be equally composed in term of the number of codes they relate to and that a certain code can be identified very few times or many times in the whole analysis.

Finally, these data are likely to be used not only to understand the 'what' and 'how' but also place more emphasis on 'why'. This will lead us to Chapter 6 and 7, the empirical findings and discussion parts.

5.4 Data validation

Underpinning the present discussion of research design is the issue of data validation. Data validation is the process of verifying the quality of the research data, analysis and interpretation to establish their reliability and validity (Saunders et al., 2016). Reliability

refers to replicability and consistency of research. Internal and external reliability can be differentiated. Internal validity implies ensuring consistency along the research project while external reliability ensures that the data collection technique and the analytic procedure would produce the same findings if they would be repeated by different researchers on other occasions (Denzin & Lincoln, 2011). Secondly, validity refers to the appropriateness of the measures used. Internal validity relates to the accuracy of the analysis while external validity is concerned with the issue of findings generalization (Denzin & Lincoln, 2011).

For this research project, the preparation and conduction of interviews have been influenced by the need to ensure data quality while using semi-structured interviews. First of all, conducting semi-structure interviews reveals several forms of bias: the interviewer's bias and the interviewee's bias (Saunders et al., 2016). Interviewer's bias can happen and limit the quality of the data collected when comments, tones or non-verbal behaviour from the interviewer creates bias in the way that interviewee responds to the question being asked. On the other hand, interviewee's bias is caused by the interviewee's perception about the interviewer or perceived interviewer bias, the outcome of this may be that the interviewee provides only a partial picture of the situation. To overcome these threats and put Telenor Research managers at ease, the questioning approach used on this study was carefully prepared as well as the introduction to the interview, and attentive listening skills were displayed during the interviews. Secondly, to ensure data validity and credibility, a note – including a description of the research project as well as the interview guide – was sent to the participant a few days before the interview rounds in order to allow them to prepare and thus ensure the richness of the data collected. Thirdly, because this research project is based on a case study, the biggest threat to data quality relies on the lack of standardization and generalizability of the empirical findings. In fact, due to the small sample analysed as well as the deep specificity of the case studied, it is important to recognize that the findings cannot be statistically generalized, thus limiting the extent to which they are applicable to other settings. However, it can be underlined that the research conducted here is not intended to be repeatable since it reflects the reality at the time the data was collected in a situation which may be subject to change. Furthermore, as it has been done in this paper, being able to relate the research project to existing theory demonstrates that the empirical findings observed have a broader theoretical significance than just the case that form the basis of this work (Denzin & Lincoln, 2011).

From a more general standpoint, being aware of the threats implied is required to be methodologically rigorous and to carry out research in a way to avoid threatening the reliability of the empirical finding and conclusions.

6. Empirical findings

This chapter presents the empirical findings of the analysis of qualitative data collected through the interviews of seven managers belonging to the Research unit of Telenor. It is organised as follows: section 6.1 sets the empirical context; sections 6.2, 6.3 and 6.4 respectively deal with the sense, seize and transform components of the dynamic capability framework; section 6.5 illustrates how business value is created from the process; section 6.6. lists seven factors that can be seen as a limit to the development of dynamic capabilities; and finally, section 6.7 summarizes the key empirical finings.

6.1 Empirical context

Before digging into the analysis of the different components of the dynamic capability framework, it is important to define the empirical context in which the analysis has been conducted. It has been possible through the interviews to gather a wide range of information regarding the telecommunications industry as well as the current business challenges faced by Telenor.

6.1.1 The telecommunications industry

The telecommunications industry currently faces a massive digital revolution enacted by a new type of competitor: the over-the-top companies (OTT). The telecoms sector appears to be vulnerable to the new competition posed by these digital entities who offer new types of free digital services. OTT players offer a wide range of digital content and streaming services using telcos' networks. These new players – such as Facebook, WhatsApp, Snapchat or Messenger – have also increased their dominance in former core telecoms services like voice calls and text messages. Today, these internet companies not only enjoy about 80% of all messaging traffic (McKinsey, 2018), but also account for a major share of international voice traffic per minute. Furthermore, OTT players have taken a large chunk of telecoms companies' market share, diluting their value proposition and resulting in a general flattening tendency in the industry. This has consequently left the traditional mobile operators with no choices but to adapt.

6.1.2 Current challenges for Telenor

Telenor, as an incumbent telco company, is now wondering if digital is a threat or an opportunity for its business. As digital services proliferate in the telecommunications industry, Telenor is in the middle of a paradox (Elter et al., 2018). Should the company try to compete with the new born-global companies by diversifying and offering digital services to its end-users, or should it remain a connectivity provider and continue to exploit its competitive advantage in its core business? Firstly, 'thinking digital' is now deeply embedded in Telenor's business model; the company facilitates the diffusion of digital products and services through its network. Internet companies use the Telenor network to offer their services, thus implying that Telenor provides the essential connectivity infrastructure for functioning and growing the digital economy. Furthermore, it is forecast that the global number of digital customers will skyrocket, in terms of the time spent using digital platforms as a mean of communication (McKinsey, 2018). At the same time, consumer behaviour within traditional communication services is changing, even if the overall level of communication activity grows, the time customers spend on the traditional mobile services such as SMS and voice calls is expected to decline. Finally, as the digital revolution accelerates, more and more born-digital companies enter the core telecommunication market using innovative business models and technologies; leaving incumbent companies, such as Telenor, to wonder if they can keep up or if they will be displaced. While considering this paradox, it is important to mention that Telenor, as most of the other big European telcos, has not yet been able to monetize digital services. There is no doubt that in this context of uncertainty, Telenor's value proposition has to change. How successful this change might be, is what is studied in the next sections. Figure 2 illustrates the two main scenarios that Telenor is exposed to.
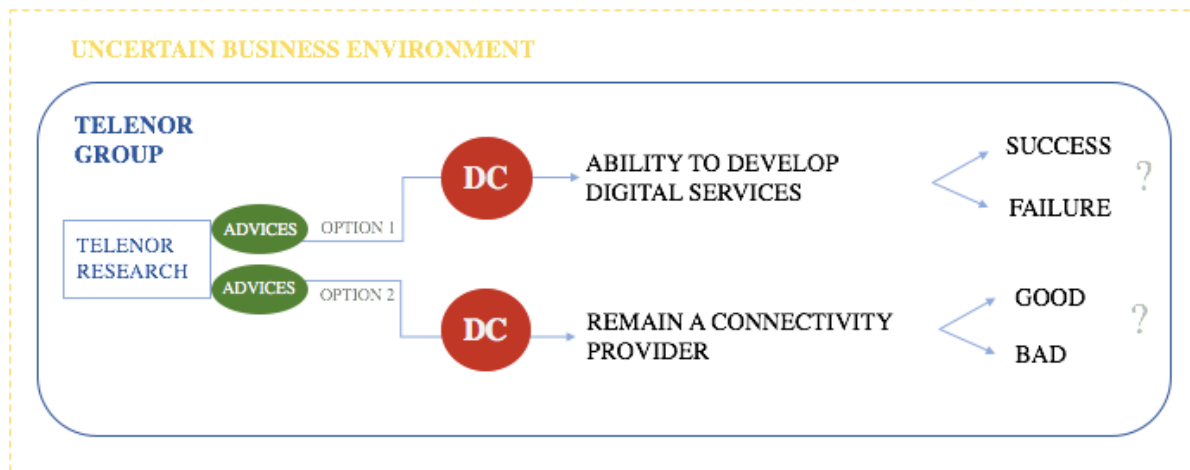
Figure 2: Different scenarios for Telenor future.

6.1.3 Telenor Research

Whether it is to remain a connectivity provider or to heavily engage in the digital revolution, Telenor Research is there to advise the group's senior management on the best strategic directions to be taken in order for the company to remain relevant and competitive in its business environment.

Telenor Research's goal is to create business value through applied research. Researchers' mandates are threefold: they have to advise the group and business' units in order to solve the most complex internal issues; they have to boost innovation; and they have to train employees on the new business and technologic trends. Researchers are domain experts and work on different topics such as technologies, economics, human resources and business modelling. Through the several projects conducted, Telenor Research advises on strategic options that could help to tackle corporate issues. Even if a direct causality cannot be made between what Telenor Research recommends and the degree of successful change in the company, the potential of Telenor Research to dynamically sense, seize and transform new business opportunities that could possibly lead to change will be examined.

6.2 Sensing

The central tenet of dynamic capabilities is to explain how organizations may dynamically adapt and align their routines and resources to create value and achieve a competitive advantage (Teece, 2007). According to Teece (2007), dynamic capabilities can be defined in

term of sensing, seizing and transforming. The sensing component of the framework encompasses analytical systems to learn, sense, filter, shape and calibrate new business opportunities or threats. Thus, the first micro-foundation of the dynamic capability framework includes all the processes that help an organization to collect and analyse market information.

Evaluating Telenor Research's ability to sense its business environment was investigated with the first part of the interview guide. From the interviews it was easy to understand that the sensing activity is part of Telenor Research's DNA. Sensing new business opportunities is, and as always been, of the responsibility of Telenor Research. As a traditional research unit, Telenor Research is mainly a sensing unit where researchers have the core capabilities to identify new business opportunities as well as possible threats to the company. This has been emphasized by one of the managers interviewed:

> "*I think that by being a research department, the sense part is kind of inherent. I mean especially, I have a technical background and I think that for all technical researchers that I know at Telenor, this is just part of who they are. They are reading and understanding what is going on and just keep up to speed on what is happening around us, both on what type of papers are published and on what are the big companies doing.*" *(Participant 4)*

Having the responsibility to sense new opportunities does not, however, mean that Telenor

Research actually has the competences, processes and structures in place to do it. It has in the past been able to sense good business opportunities. For example, in the 1990's when it decided to become a private company or in the beginning of the 2000's when the company started its internationalization. These successes were underlined by two participants who have been working in the company for more than 25 years and experienced these strategic changes:

> "*The company has been really adept at changing and has been innovative.*" *(Participant 5)*

> "*Telenor is able to turn around, it has done that in the past and I think that it will be able to do that in the future.*" *(Participant 3)*

However, successfully demonstrating the practice of sensing capabilities once, does not mean that the company will hold them forever. In fact, it has been emphasized by scholars that sensing capabilities must be continuously trained and renew to be efficient (Eisenhardt and Martin, 2000; Teece, 2007; Winter, 2003). Since this paper focuses on the current dynamic capabilities of Telenor Research, only the actual sensing processes and actions are evaluated.

Considering the current business environment –ruled by the digital evolution– Telenor Research's mangers have shaped their current research work according to the main threats and opportunities identified. The digital economy with its new digital players bring new products and services to the markets and these are eating away the traditional phone calls and SMS services offered by Telenor. The traditional revenue drivers of 10 years ago are more or less evaporating and this is leading to a phase of flattening growth for Telenor. On top of that, some constant and discontinuous blockers to innovation have to be managed in order to stay competitive in the business. Identifying the threats to the business is only the first part of the sensing process; managers must then be able to translate these into new business strategies to further adjust the group performances. Exploring new business opportunities can relate to the adjustment, amelioration or extension of the current business model of the company. For Telenor Research, the biggest part of the sense process is to explore niche areas. One of the managers interviewed accentuated this point when he said:

> *"Even if we might be able to make money from being an access provider, we, of course, are looking for new opportunities and try to experiment new concepts to take a stronger position and like this we are able to fight against new competitors." (Participant 1)*

However, the exploration of new business opportunities has to be bounded. According to most of the participants interviewed, Telenor Research must focus on exploring new business opportunities that are linked to the firm's core business or should enter new verticals that could still show synergies with the core business. That is why on the technology side, Telenor Research has decided to focus its research portfolio on three main topics: Artificial Intelligence (AI), Internet of Things (IoT) and 5G.

It can be observed that Telenor Research has been able to sense, earlier on, the threats that will inevitably force the company to change its business model. As one of the participants

said: *"It is very hard to predict what is going to be important in the next 5 or 10 years"* (Participant 1) and the difficult thing is to *"identify where the knowledge is needed"* (Participant 2). However, Telenor Research is well aware that the digital economy is led by technological pushes rather than market pulls. As one participant said: *"technology is the engine, it pushes things and things are changing"*. In line with this new business context, Telenor Research has understood that the company needs to leverage its technology capabilities. The new digital economy is broad and researchers have understood that Telenor cannot explore the whole digital industry but will have to focus on exploiting specific technologies that are close to their core capabilities. This has been pointed out by one of the managers:

> *"There are a lot of digital things that I think we should stay far away from. But then there are other areas where we could build on core capabilities and sort of expand what we are doing. Interesting areas for expansion are more on platform related stuffs around IoT."* (Participant 3)

Being able to select the most promising business opportunities by only exploring a certain type of new technology that could further lead to value creation illustrates good sensing capabilities. However, sensing capabilities should not only be observed when facing uncertainty or when change is needed. Telenor Research also use its sensing capabilities to defend and extend the current status of the company and more precisely to build on and extend its tradition core business. This is for example done with topics such as research on churn predictions.

In a fast-paced business environment like the one Telenor operates in, where new digital technologies and services enter the market in a disruptive way, the company's strategic decisions need to be future oriented to be successful. What Telenor Research tries to do is not to wait for the threats imposed by the market to really impact on their business, but to try to anticipate them in their research. One way to do that is to conduct pure research projects to be able to challenge the senior management with new strategic directions rather than waiting to be challenged by the board to solve some specific corporate issues. By adopting this vision, Telenor Research shows sensing capabilities.

> *"Over the last decade, Telenor Research has had the role of trying to assess trends for the decade. For example, last year, we had a project called 'Telenor*

2027', where we assessed what we believe are the main trends that will be coming in the next 10 years. That kind of research we do to sense the future. We are systemizing technology trends, how can we anticipate that these technology trends will impact on the business, customer trends and competition etc. So, we do a lot of work on that kind of work issues, that is then feed into the group strategy's outlook." (Participant 2)

To conclude, since Telenor Research does not only have to advise on current corporate issues but also needs to anticipate developments in its work, it shows the need for sensing capabilities. Telenor Research is well in track with the new business opportunities linked to the digital economy and this shows great signs of dynamic capabilities. This is supported by the long-term vision that Telenor adopts in its research. Finally, considering the overall optimistic view of the managers' interviews with regards to the sensing capabilities and results of the group unit, it can be said that Telenor Research holds good sensing capabilities. This point was clearly expressed by one of the interviewees:

"We are able to sense and that does influence decisions on innovation at the very top of the company." (Participant 5)

6.3 Seizing

The seizing step of the dynamic capability framework addresses the previously sensed business opportunities and typically involves research and development activities for the firm. Telenor Research used to be a research and development unit, but at the time of writing the unit focuses only on the research side while the development steps are mainly the responsibility of the different business or group units concerned by the change.

While the sensing phase might seem quite abstract and broad, the seizing step should lead to tangible results. Telenor Research's sensing activities are structured around its research portfolio. The research portfolio emanates from the sensing activity and is composed of the most strategically relevant research topics. The research topics are: *"not only important today but most importantly within the next five to ten years" (Participant 4)*. The research topics are updated every year on a rolling basis. While some research topics can be set on the agenda for the next five years, others might be projected on a 10-year time-scale (e.g. the one linked to technology topics). A research topic is then split into several research

programmes and each of these is composed of research projects that can be either pure research (i.e. academia work) or advisory and development projects initiated by the business units (i.e. advisory work). Telenor Research's portfolio is constantly adjusted to fit the new business opportunities sensed. For example, the 'technology' side of the current research portfolio is driven by three main research topics: 5G, Artificial Intelligence and the Internet of Things. As one of the participants pointed out:

> "*The combination of 5G coming up, the IoT ramping up and the AI is what we call 'the perfect storm' and we are stepping up to these main areas.*" *(Participant 1).*

As one of the participants said, sensing is really about *"getting our hands down in the dirt and trying to fix things" (Participant 7).* In addition, the research topics selected must not only be relevant to the telecommunication industry but, most importantly, they must relevant and meaningful to Telenor Group's growth and performance.

Telenor Research counts about 40 researchers and this is not enough in human resource terms to cover projects of the scale required by the 5G, AI or IoT topics. That is why, in line with the corporate strategy, Telenor Research sticks to the philosophy of open innovation. Open innovation has become a new paradigm for organizing innovation. The concept was introduced in 2003 by Chesbrough and defined as the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation (Chesbrough, 2006). Once open innovation is adopted, the firm's boundaries become permeable and allow combining the company resources with the external co-operators (Chesbrough et al., 2018). The fundamental notion behind this concept is that knowledge for innovation is widely distributed in the economy, or in more popular terms, 'the smartest people work for someone else'. In an unstable environment, it is unlikely that any one single collaborative relationship with an external partner will suffice. Thus, the diversity of a firm's inter-organizational ties can function as a proxy to dynamic capabilities that enable a firm to acquire and maintain a heterogeneous network of positions that confer access to a variety of capabilities and resources as well as the opportunity to gather and screen relevant information from diverse sources (Døving & Gooderham, 2008).

The digital economy imposed new ways of working internally as well as externally. Accordingly, a majority of the recent projects initiated by Telenor Research have been

carried out either in collaboration with internal entities in the group or with external partners like universities, multinationals or governments. For example, the European Union has recently given Telenor Group the responsibility for its new European project to accelerate the uptake of 5G across Europe. Consequently, operating under this EU research umbrella, Telenor Research took the initiative to participate to a project called 5G-Verticals INNovation Infrastructures (5G-VINNI) comprising 23 partners and including major operators, academia and industry vendors. Being involved in this type of large and significant research project gives Telenor Research access to data and financing that the unit could not get without being part of this joint-project. By opening its research work, Telenor Research gets scale and can exploit external resources. Getting the trust of the European Council for such a project shows that Telenor Group is highly able to investigate and develop knowledge and comes to conclusions about a particular topic and thus highlights the presence of seizing capabilities. Hence, Telenor Research believes that collaborating with the right partners can enhance its research project scale and visibility as well as lead to more accurate results and consequently better internal strategic decisions. However, to succeed with this type of project, Telenor must be attractive to other entities and must have strong abilities to cooperate with external entities, this point has been underlined by Participant 5:

> *"We are kind of building up competences so we can be attractive as partners to*
> *the one side and be able to actually take that competence indoors and then being*
> *able to translate that into some sort of value." (Participant 5)*

The sensing activity is not only about fighting the competition, it is mainly about understanding, creating new relations and even collaborating with competitors. Besides partnering with Universities, governmental entities or Norwegian start-ups Telenor Research also join its forces with other multinationals who share the same agenda. For example, Telenor Research finances a research laboratory specialized in Artificial Intelligence in Trondheim. In order to get a better exposure and perspectives to the topic and to gain access to a wider range of data and domain experts, Telenor invited three other Norwegian incumbent firms to join the laboratory and share their research projects, knowledge, experiences and findings regarding AI. One of the companies invited is the financial services firm DNB. The bank confronts the same challenges regarding digitalization and needs to work on how they will be able to exploit AI to improve their end-user relations. By having the same research outlook, while not competing in the same industry, Telenor and DNB can

share their knowledge about AI and thus increase their capabilities to understand the topic and take the best strategic decisions for their own businesses. In this situation, Telenor Research does benefit a lot from opening its research activities and this was pointed out by one the participant when he discussed the benefits of sharing Telenor knowledge with external partners:

> "*The inclusion of DNB and other partners in the lab is quite new. Until now, it has really been about sharing knowledge, sharing what type of use cases we are working on and what type of methods we are using. So, I think that the lab, and this set up provides a very open environment for sharing. Which is quite beneficial, so it means that my data scientists can talk and share experiences and everything with people from DNB. But now, we are also moving to a more mature phase where we are discussing with them concrete joint projects. Because there are some areas within AI that Telenor and DNB have joint interests in solving it.*" (Participant 4)

However, as one of the other participants underlined, opening Telenor Research innovation processes does not mean outsourcing the entire research work. Sharing information and absorbing knowledge from the outside is only a complement to the internal research activity. In fact, being able to develop, assimilate and apply the knowledge internally is key. For example, Telenor exploits some DNB corporate data to test its AI models; however, even if the data are not from Telenor database, it is essential that the AI algorithms are tested by Telenor's researcher in order for them to developed tacit knowledge about the subject matter. This tacit knowledge will further lead to value creation. Thus, while adopting an open innovation philosophy, the research unit is seen as a link between the inside and the outside of the firm, with knowledge flowing in and out. In fact, a common feature across successful knowledge creation processes lies in the explicit linkage between the focal firm and the knowledge sources located outside of the firm (Døving & Gooderham, 2008).

Finally, sensing the right business opportunity and seizing it through the right processes and experiments will not necessarily lead to innovation nor success. Two participants pointed to Telenor's past strategies that appeared to be difficult to execute:

> "*In 2016, Telenor launched a new strategy called 'Digital service provider' and that strategy was all about trying to go head-to-head with big internet*

companies. There has been a lot of learning from that but that is probably not where we can be and it is hard to find a new identity there because things are also changing so fast." (Participant 5)

"Just three or four years ago, many in Telenor were thinking that the company needed to move more into the direction of Facebook or Google, but we realized that such a leap requires fundamentally different capabilities that was not realistically to be built. At the same time, the 5G and IoT technologies emerged, which are closer to the core of our business and we now see business potential in these areas. That is where we now want to differentiate." (Participant 2)

In some situations, seizing business opportunities might not lead to innovation but rather enable the senior management to take the right long-term strategic decisions and avoid falling into business areas that would not be profitable. To avoid taking wrong decisions, Telenor Research cares about analysing the entire ecosystem in which business opportunities lies, rather than only focusing on the opportunities. In other words, Telenor Research assesses the whole constellation of the value chain when considering a new business opportunity:

"In European Union projects, it is not only the technology, it is also the ecosystem: how does it evolves, how do you take out value from the whole telecom sector, how 5G is actually used to increase the revenues or the share etc." (Participant 7)

To conclude about the sensing component of the dynamic capability framework, it can be observed that Telenor Research conducts most of its projects through collaborations and partnerships. Although many core dynamic capabilities have their focus on the reconfiguration of resources within the firm, a majority of Telenor Research's dynamic capabilities are related to the development and exploration of inimitable collaborative interfirm relationships that confer access to resources and capabilities from differentially endowed firms. The group unit is usually able to select the right partners that will benefit its research and allow it to develop an in-depth understanding of a phenomenon to further lead to the right strategic decisions. Collaborating with other entities is also a means for Telenor Research to be active in the academic community – *"to be there, to be visible"* (Participant

6)– as well as to hedge its risk to miss important business opportunities. As one of the participants said: *"We would not be able to do anything without external sources"* *(Participant 1)*. Most of the examples show that Telenor Research is able to find out things and has the capability to prioritize the projects that are essential for the development of the company. All of these components lead to the conclusion that Telenor Research appears to be agile while seizing opportunities. Again, having good sizing capabilities at a certain time does not mean that the unit will have this forever. To remain relevant, these capabilities have to be trained and renew overtime.

6.4 Transforming

"Our objective has been to work on the problems where we can really transform how we are doing things. And that means, identifying the opportunities that are big enough and important enough and not to do a 2% improvement here and there, but to really work on the cases that can be transformative." (Participant 4)

The transformation step refers to the ability to reconfigure and recombine the corporate assets and organizational structures to match the firm's internal processes with the seized opportunities (Teece, 2007). While sensing and seizing are Telenor Research's full responsibility, developing new products, services or processes are not. Telenor Research is a research unit and has a supportive function. The knowledge developed by Telenor Research is transferred to the group or business units concerned, who then lead the relevant transformation process. This has been highlighted by one of the participants:

"The research knowledge in itself –isolated- is not a solution but is a capability to problem solving." (Participant 2)

Telenor Research develops generic knowledge that can then be transferred to the business units and applied in different locations. For example, 5G pilots are currently run in collaboration with Telenor Norway. Even though the 5G pilots are trained locally, the final models or algorithms should be applicable to all of Telenor's markets. Telenor Research usually runs the first pilots locally (in Norway) and these are then handed over to the other business units when tested and operational. The other business units will be responsible for running their own pilots before operating the final product or service.

"We have set that our ambition should be to develop the first used cases and have these tested. When they are tested and proven, someone else should take the responsibility to replicate them to additional BUs." (Participant 4)

"The objective should always be that even if we work with Telenor Norway, we should always be able to scale it and make it replicable in Asia." (Participant 4)

Telenor Research creates different types of deliverables: it can be advice on corporate issues that have been initiated by the BUs, it can be to stimulate innovation through pure research or to train employees in order to increase their awareness regarding the new technologies or new business model possibilities. Researchers are therefore supposed to possess new algorithms, new network solutions or new business model propositions at the end of the sensing step that will then be transferred to the business units concerned during the transformation step of the dynamic capability framework (as mentioned by Participant 2).

"When Telenor Research stopped having the development as part of the unit, we needed to emphasize the knowledge transfer to the business to enable them to develop and transform based on the opportunities that Research has sensed and seized." (Participant 2)

Being able to transfer the knowledge developed internally to the person concerned, whether it is to senior management or to business unit managers, is rather difficult. Beside the fact that knowledge transfer can be defined as a way to organize, create, capture and distribute knowledge and ensure its availability to other users, the important point here is that Telenor Research does not see the process of knowledge transfer as a transaction.

"Instead of thinking about knowledge as a transaction you are handing over to the business side to act on, you have to think about what is the business problem that needs to be solved and how can that problem best be solved with the knowledge from different people. We are fundamentally moving away from knowledge as a transaction into identifying the problems that needs to be solved and then find out how can you staff a team with different knowledge background that together are solving the problem." (Participant 2)

Thus, for Telenor, knowledge transfer must not be seen as an action where the full responsibility is transferred from Telenor Research to the BUs but rather something where

Telenor Research brings its knowledge and understanding of a certain phenomenon to help the business unit solve a particular corporate issue.

> *"That understanding does not answer the business problem. That is an understanding that enables you to sit down with the business people and to work on the practical issues." (Participant 2)*

That will require, on the one hand, to bring researchers over and on the other hand, make sure that the receiving part has the necessary absorptive capacity to proceed the information supplied. For the transformation phase, researchers closely work with the business people concerned. This point has been emphasized by two managers during the interviews:

> *"A really important way to transfer knowledge is to basically do things together – physically." (Participant 3)*

> *"The challenge is not to only be experts in our subject fields, we also need to be able to explain results and findings and interact with the rest of the business." (Participant 5)*

On the other end of the spectrum, the receiving units must also have the absorptive capacity to acquire, assimilate, transform and exploit the knowledge that is shared (Cohen & Levinthal, 1990). To succeed in that, Telenor Research has understood that the two parts involved must work on a common agenda. In addition, very reliable corporate execution phases are needed. Two managers elaborated on the absorptive capacity of the BUs during their interviews:

> *"The operational side is much better equipped with competent people who are capable of absorbing the knowledge. This was not the case historically." (Participant 2)*

> *"It has to have people that are willing to take an extra mile and fight the legacy, which is motivation." (Participant 6)*

Finally, two types of deliverables have to be identified. On the one hand, Telenor Research does advisory work on particular business cases that originate from the business units or internal entities such has the head of strategy or the board of directors. On the other hand, Telenor Research is in charge of stimulating innovation by challenging the senior

management. This is done through pure research where Telenor Research must be able to push forward new business opportunities. While Telenor Research tends to push new information and findings towards its key stakeholders – *"usually push it towards the Board, the senior management and towards the Head of Strategy" (Participant 1)*–, Telenor Research also held some events such as the 'breakfast meetings' to communicate more broadly with Telenor employees about the company's future challenges and industry trends.

> *"We try to be active ourselves in kind of pushing what we believe in, where are the possibilities and try to sell that to the BUs with of course listening to their needs." (Participant 7)*

> *"An important part of our work is to disseminate insights and contribute to business development. This is basically done through talks and presentations and it should be about concepts and ideas." (Participant 2)*

To conclude, we can observe that Telenor Research has an advisory function in the firm and is not in charge of nor has the responsibility to transform the knowledge developed though the sensing and seizing phases into new products, services or processes. Furthermore, even if Telenor Research is an essential part of the transformation step, it does not have the mandate to check on the different units that the new knowledge has been well understood and implemented to the daily business activities. Researchers only communicate, signal and jointly help solving corporate issues. Thus, Telenor Research contribution to transformation mainly takes place through active knowledge transfer and makes it difficult to evaluate whether Telenor Research has the ability, by itself, to dynamically transform the knowledge it has developed.

6.5 Value creation

In strategic management, business value is an informal term that includes all forms of value that determines the health and well-being of a firm in the long run. As stated earlier, the overall goal of Telenor Research is to create business value for the company. Figure 3 exposes how Telenor Research aims to create value throughout its research activities.
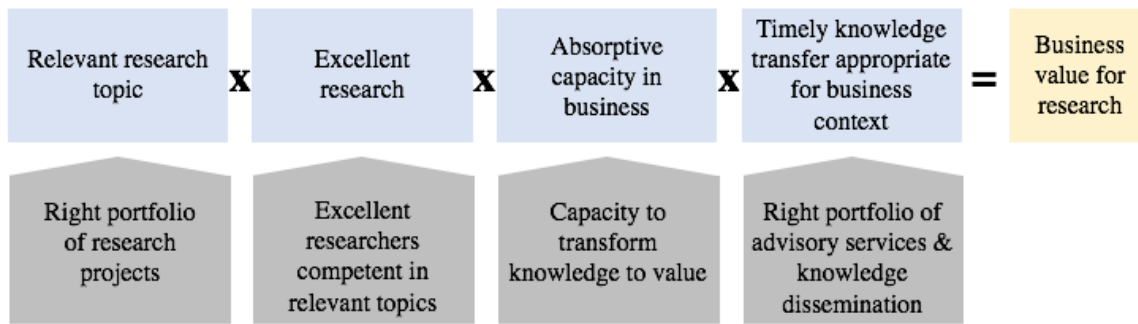
Figure 3: Telenor value creation's model

This value creation scheme can be associated to the dynamic capabilities framework. The *'Relevant research topic'* box relates to the topics or content addressed by the research unit and results from the sensing activities. The *'Excellent research'* box relates to good sensing and seizing capabilities. Finally, the *'Absorptive capacity in business'* and *'Timely knowledge transfer appropriate for business context'* belong to the transformation component of the dynamic capability framework. Added together, these four factors must lead to business value creation. However, a particular distinction must be made between direct and indirect business value.

In fact, while Telenor Research is able to develop strong knowledge and influence the corporate strategy, the group unit does not monetize any of its findings and consequently does not create direct business value nor business benefits. The direct business value is instead created by the business units who actually transform the knowledge developed by Telenor Research.

Telenor Research projects result to the creation of indirect business value. The knowledge developed and the competences that the researchers acquire overtime can be considered as indirect business value. A good example of how Telenor Research generates indirect business value is through its artificial intelligence laboratory in Trondheim. Telenor Research leads in-depth research on artificial intelligence, but these projects have not yet lead to any tangible results. However, the researchers involved in these projects aim to influence other actors, test new algorithms as well as show the world that Telenor is developing advanced competencies on artificial intelligence. Hence, even if the laboratory does not directly lead to business value creation, its indirect implications and long-term vision make really good inputs and will highly influence Telenor change strategy. One of the participants exemplified her reasoning with the AI-lab example:

"The very fact that Telenor is the only company from Norway which is represented in the expert group at the European Commission, advising on AI strategy for Europe is because of these collaborative activities that we have with the AI-lab and partners. In itself, that creates a lot of value for AI research and development in the AI-Lab and beyond." (Participant 6)

"We have put funding into the AI-Lab, aiming to create awareness about the need for building AI competence in Norway and creating awareness among other Norwegian companies to get involved and fund that activity. By that, we believe Telenor can create impact in the society, hoping that this will accelerate investments and the emergence of start-up companies out of this research centre" (Participant 6)

To conclude, Telenor Research creates indirect business value by being able to develop new knowledge and influence important actors in the telecommunications industry. However, we will see in the next chapter that the type and amount of indirect business value created might not be relevant enough to lead strategic change, as well as to improve group performance and efficiency.

6.6 Limits to the concept of dynamic capabilities

When analysing the interviews, seven redundant limits to Telenor Research's ability to develop dynamic capabilities have been raised by the participants. The limits are the followings: legacy, time, scale, pressure, distance, financials and data. These factors can be considered as moderators to the concept of dynamic capabilities and can potentially impact negatively on the overall result of this analysis.

6.6.1 Legacy

Even though the Telenor Group has adopted a decentralized organizational structure, where the business units are very independent, the multinational still has an historically strong legacy footprint. Participants all agreed to the fact that the present corporate legacy curtail their research projects. For example, participants said that legacy tend to slow down the approval process required by the Board to go ahead with a project or limit their ability to get their advices considered by the other business units. Ultimately, legacy comes at the cost of

facilitating cross-unit collaboration and exchange of data. Some participants accentuated this point with the following arguments:

> "*It is not the few simple things here and there that you need to fix but it is like 20 years of legacy and technology that have to be transformed, and that is a really big task.*" *(Participant 4)*

> "*Being involved with the rest of the company means that you need to do a lot of politics and things that goes along with it. I mean you need to kind of engage with the business and that is a different language and a different way of work than the research.*" *(Participant 5)*

> "*We have a lot of knowledge about what happen around us and we know that we need to do something but we are not that good at executing it.*" *(Participant 1)*

Accordingly, the researchers must be willing to take the extra mile to fight the legacy and benefit from the knowledge developed. However, it has to be noticed that one of the participants still observed some benefits arising from this strong legacy system:

> "*I always say that there are good reasons for why large companies like Telenor have legacy systems. For many years, we have been operating a successful, multinational business, and all those systems have fit for purpose. Now, the times have changed, and we need to find more agile ways of doing work.*" *(Participant 6)*

To sum up, the best way to reduce the negative impact that the company legacy potentially has on Telenor Research's ability to implement change would be to find the right balance between the organizational procedures and systems in place in order to smoothen the processes while still being structured and organized.

6.6.2 Time

In high-velocity business environments where fast innovative responses are required timing is critical. The rate of technological change is rapid, and the nature of future competitors and markets is difficult to determine, so, firms need the right capabilities to adapt and capitalize such environments. Thus, being agile and acting fast is key to Telenor success. While Telenor Research has usually been able to sense new business opportunities earlier on, as

one of the participants explained, moving fast forward is more difficult for the big incumbent company.

> *"Evidences show that we are able to respond to new business opportunities but as an incumbent operator we are sometimes quite slow on certain areas. So, of course, we have challenges regarding how to create new revenues and how to innovate. We are able to observe what happen around us but very often it takes a lot of time to move Telenor forward. It is like a tank ship, Telenor has a huge number of employees and you really need to push the agenda overtime."* *(Participant 1)*

Furthermore, another participant explained that Telenor Research has not been able to get on board regarding the new digital messaging and voice call methods offered. Consequently, Telenor has not been able to tackle new entrants such as WhatsApp, Snapchat or Messenger, thus leading to the loss of a large amount of the company market share. This is because Telenor Research has not been able to understand what was really going on in the market at a certain time. One of the managers explained that with the following statement:

> *"If Telenor, and other telcos, would have really been able to understand what was going on, what was happening in the environment, they would have probably been able to make this type of product. But I am not sure if we understood it on time."* *(Participant 4)*

However, there are also counter examples showing that Telenor Research can be really early in its work compared to what is happening in the market and this is the case for the current research topics of 5G, artificial intelligence and the Internet of Things, where Telenor efforts are quite advanced compared to its competitors. This is explained by participant 4:

> *"What we try to do is, when we see these new trends, like AI -we were quite early to spot that something was going on- then our job is to build competences on that in the first stage. Maybe we were not really producing any tangible results in the first couple of years since it was more about building the capabilities, building the knowledge, spending time looking into the technology and maybe just giving presentations on new topics and inspiring people. Now, when it is becoming mature and when a lot of other people are interested, then our work also enters a*

*new phase and we get closer to actually working on concrete projects."
(Participant 4)*

Thus, initiating a research project at the right time is essential to perform and be competitive, making the timing parameter an essential moderator to the concept of dynamic capabilities.

6.6.3 Scale

There was a time in the 1970's when Telenor Research numbered more than seven hundred researchers. The size of the unit has changed a lot during the past four decades and is now down to forty experts. One of the participants indicated that:

"Being only 40 to 50 researchers, we are actually too little to get scale on certain areas, and we are using European Union Projects (i.e. Horizon2002 projects) to bring us scale." (Participant 7)

Being too small can clearly limit Telenor Research capabilities to sense, seize and transform new business opportunities or threats. Hence, the research unit overcomes this by sticking to its open innovation philosophy that allows the company to get scale on its projects. One of the drawback of this strategy is that Telenor becomes somehow dependent on its partners.

"We are only 40 people so you cannot really build a lot of new knowledge without being connected to the outside."

6.6.4 Pressure

As in every multinational, the research unit is pressured by the board of directors as well as by the stakeholders to deliver results. Three participants out of the seven interviewed also accentuated the fact that they feel pressured by the commercial units:

"It is quite natural that Telenor's commercial units are short-term oriented. We are pressured by the Board and by the commercial units to monetize emerging growth opportunities and deliver results but we are also trying to pursue long-term projects. So, it is a constant balancing game between what we can pursue long-term, how we can practice open innovation and also what we can deliver short-term to the BUs. It is not always easy." (Participant 6)

Even if it has been previously mentioned that sensing, seizing and transforming business opportunities at the right time is crucial, being pressured by different stakeholders who wait for deliverables can also negatively impact the quality of the results. Thus, Telenor Research must be able to find the right balance between autonomy and directives from above.

6.6.5 Distance

Telenor is born in Norway and has its DNA there. Norway is Telenor's biggest and more profitable market. Telenor Group is headquartered in Oslo and its Norwegian influences are irrefutable. One of the drawbacks of this is that Telenor Research tends to focus its work too much on Norwegian, or to a broader extent Scandinavian, problems and to collaborate too often with the group unit Telenor Norway. Telenor Research is running its 5G pilots in collaboration with Telenor Norway, for example leaving, the Asian units on the side.

> *"There is a bias in the sense that we are working more with Telenor Norway and maybe also more with the Scandinavian units than the Asian units and that has to do with distance." (Participant 5)*

In this case, distance can be understood both in term of geographical distance but also in term of cultural distance since Telenor counts business unit in Pakistan or Myanmar, to name two. Researchers strongly argue that they develop generic knowledge that is applicable to all markets, however, being too Scandinavian focused when operating in a worldwide industry and having markets abroad might be senseless. Telenor senior management is aware of this bias and has duly asked its research unit to work more closely with the Asian business units.

6.6.6 Financials

While other mobile operators are struggling with huge debts, Telenor is a wealthy and stable company. Telenor is one of the most financially solid telcos in Europe because it has sold off some units and it has been able to reduce its costs faster than others. However, the budget allocated to the research unit is not considered as sufficient by the managers interviewed. It allows them to conduct decent research projects and experiments but participants pointed out that with a higher corporate budget, they could be able to: travel more to Asia and thus include the Asian units more easily to their research work, hire new experts that would increase the competencies of the teams or even conduct more in-depth experiments. One of the reasons to this might be that a large amount of the company net income is distributed to

shareholders thought dividends instead of being reinvested in the company. Participant 1 pointed out that:

> "*The challenge here is that we see that we make money on our core business and that we should spent that money on new initiatives, but very often we are in a squeeze because investors are often short-term oriented and they want to have pay out through dividends at the moment and do not want to invest in the future.*" *(Participant 1).*

Telenor Research's financial limitations can penalize its capabilities to advise on strategic change and is consequently seen as a moderator to the concept of dynamic capabilities.

6.6.7 Data

> *"Then the last source of limitation is access to data. I mean, we had so many good ideas that we could have done with the right data for understanding more about our customers and markets."*

Telenor Research bases its research work on data and Telenor as a whole is a company that possesses a wide range of data sources. However, according to most of the respondents, the issue here is that:

> *"The problem is that we have a lot of data in Telenor but they are here and there in different silos and they are not accessible."(Participant 1)*

Telenor has databases that are typically accessible, but they are all stored in different places and in different formats that make them almost impossible to exploit and virtually useless. Consequently, a real effort is needed here to streamline and make accessible the data for various purposes. Again, this lack of discipline negatively impacts Telenor Research's ability to dynamically exploits its environment and resources.

In conclusion for this sub-section, we observe that obtaining a systematic means to promote strategic change through dynamic capabilities requires a substantial commitment of organizational effort, time and funds.

6.7 Empirical findings summary

The strategic analysis presented above shows that Telenor Research's sensing and seizing capabilities are undeniable. Telenor Research is engaged in a wide range of research projects that aims at providing the best strategic and technologic solutions in order to remain relevant in its new business environment. Furthermore, through its open innovation philosophy, the incumbent company is able to outdo some of the limits identified. The empirical findings suggest that Telenor Research, through its sensing and seizing activities, contributes to Telenor Group dynamic capabilities. However, the research unit is not set up nor has the responsibility to transform the sense and seized business opportunities. The Telenor Research case indicates that the transformation step could be better characterized by the action of active knowledge transfer. This competence does not, however, fully satisfy the complete transformation capability requirements and does not lead to business value creation.

Studying the sensing, seizing and transforming components independently allowed an investigation of the presence of specific capabilities and reveal that Telenor Research does not possess a fully fledge transformation capability. Hence, while the result suggest that the research unit is an essential driver of strategic change for the company, it does not fulfil, by itself, all the characteristics required to be considered a dynamic capability to the group.

7. Discussion

The following chapter discusses three general observations resulting from the precedent analysis: section 7.1. extends the concerns about the transformation step; section 7.2. evocates the lack of social capital: and section 7.3. discusses the possible implication of other types of capabilities to the framework.

7.1 Finding the right balance

The empirical findings underlined Telenor Research's responsibility and capabilities towards sensing and seizing activities while we observed that the transformation duty is shift to the business units who received the knowledge and are in charge of converting it into corporate value.

Based on historical findings, the role of Telenor Research towards transformation has always been unclear. In the past five years, Telenor Research has been a highly autonomous unit where the knowledge developed is handed over to business units who then work on transforming this knowledge into business value. However, ten to fifteen years ago, the research unit was pushed by the senior management to work more closely with the business units. The Telenor Research organizational structure and role of twenty years ago shows that it was a research and development unit that not only had to conduct research but was also in charge of the development of new products or technologies (Elter & Myhre, 2014). Thus, we can observe that the transformation role has been swinging in and out of the Research unit along the years and made it rather unclear. Therefore, raising the following managerial concern: to whom should the transformation responsibility belong in order to implement change in the most effective way?

At the time of writing, Telenor Research is not fully involved into the transformation process and senior management is well aware that this status impacts negatively on the change potential of the whole company. In fact, Telenor Research is a highly autonomous entity where the actual lack of collaboration between the research unit and the other business units sets a less dynamic and innovative environment. This is why the senior management has asked the research unit to increase its business impact by working more closely with the business units. That implies for Telenor Research to participate and be involved in the work

that leads to the transformation as well as ensure that the knowledge is well absorbed and implemented. Participant 2 explained that:

> "*We have received a request from our internal board of directors that we should step up our ways of work to further increase business impact from research.*" *(Participant 2)*

While this seems to be a more efficient way to operate, the researchers are concerned about the drawbacks of this new role. Some of the managers interviewed mentioned that by spending more time with the business units, they will have less time to focus on their research activities, which may eventually deteriorate the quality of their research. The following quotes underline the general concern about this organizational change:

> "*Increasing our contribution to the business transformative means that you need to spend more time on it, that decreases your time available to do good research and it is consequently a balancing act.*" *(Participant 2)*

> "*The danger is that the quality of the research may potentially deteriorate, if we do not balance it well. That is the danger and is some of the challenges when dividing efforts on sense, seize and transform.*" *(Participant 2)*

Moreover, decreasing researchers' available time to do research and work on projects would consequently decrease their ability to renew their sense and seize capabilities and could eventually decrease their dynamic capabilities. As the concept of dynamic capabilities relies on the combination of sense, seize and transform capabilities, stepping up Telenor Research's capacity to contribute to transformation will potentially deteriorate its research work and consequently reduce the unit's abilities in sensing and seizing. More time spent on implementing new business ideas will lead to less time to renew the unit's sense and seize capabilities. Accordingly, it seems that neither Telenor Research nor the senior management have yet been able to find the right balance between the sensing and seizing components and the transformation role. In line with this point, Participant 5 argued that:

> "*You need to be in touch with the rest of the company in order to be a dynamic agent but you also need to have a critical mass of novelty in the unit. So, you need to strength that balance, and I think that this is a really fine balance, so, too much work on transferring and implementing is going to maybe make this*

balance not perfect. Being too heavy on the research side or being too heavy on the implementation side becomes irrelevant and isolated." (Participant 5)

Regarding this situation, one popular business case that Telenor should be aware of is the one of the conventional film manufacturers, Kodak. Although the company developed and patented many of the components of digital photography, it was not able to overcome its core rigidities and develop new business models based on the new technologies (Lucas & Goh, 2009). In fact, despite its large investments in digital photography that allow the senior management to sense and seize the need for digital assets, the company failed the final transformation step (Elter et al., 2018). This scheme is pretty similar to the actual situation of Telenor and highlights the fact that being good at sensing and seizing does not evidently mean that transformation will be successful.

7.2 Building social capital

Even if Telenor Research has been asked to work more closely with the business units on the transformation activities, the transformation step is still not the unit's responsibility. Telenor Research does, however, have the responsibility to transfer the knowledge developed internally to the business units concerned. The key element here is not the knowledge as such, because we previously observed that Telenor Research has high sensing and seizing capabilities, but rather the capabilities it has to transfer it in an efficient manner.

One general observation coming from the interviews is that the research unit is kind of isolated from the rest of the business. Beside the fact that Telenor Research works really closely with the top management in order to strategically advise them, the research unit does not extensively interact with the rest of the business, giving them a status of 'outsider'. This gap is the consequence of a lack of social capital between Telenor Research and the other operating units and this distance probably impacts the degree to which Telenor Research is able to convince or simply work with the business units.

A majority of the knowledge developed by Telenor Research is classified as 'tacit knowledge'. Tacit knowledge is the kind of knowledge that is difficult to transfer to another person by mean of writing it down or verbalizing it. Tacit knowledge cannot be seen as a simple transaction between the sender and the receiver, the transfer of tacit knowledge requires strong social capital. In fact, companies that achieve a superior level of knowledge

transfer do so because managers are able to create a 'collaborative context' through the organizational structure and culture in place in the company (Gooderham, 2007). The determinants of social capital lie in the social structure in which the organizational members are located. It has been demonstrated by scholars that a high level of social capital has a positive influence on knowledge transfer (Gooderham, 2010). The implication is that the goodwill that makes the organizational resources available for individual use (–the core intuition of social capital) is of substantial significance for the transfer of knowledge. Furthermore, the concept of social capital comprises three interrelated dimensions: relational, cognitive and structural; in their empirical study, Tsai and Ghoshal (1998) observed that each these three dimensions have a significant positive effect on intra-organizational resource exchange.

The degree of existing social capital between Telenor Research and the other business units is questionable. In order to reduce this gap, senior management would be encouraged to implement some new managerial measures that could be taken at the group level in order to work on the three main pillars of social capital. It should be possible to leverage the degree of structural social capital by improving the transmission channels and this could be done, for example, via cross-functional workshops. Subsequently, it will be easier to increase the cognitive social capital part by working on the motivation and socialization mechanisms through the corporate culture. Finally, such initiative should increase the degree of relational social capital characterized by several facets of the personal relations such as trust or friendship.

Telenor Research has been asked to work more closely with the business units on the implementation side. This should, however, be supported by other initiatives aiming at promoting the construction of social capital in the company that seem to be a prerequisite to collaborative work. This kind of initiative have already been introduced by Telenor Research. One of the researchers, for example, recently spend several weeks within the Telenor Norway business unit to increase his knowledge of the business but also to create new relations with the business people. Even if this is still done within the Norwegian unit and not with foreign units, we can notice a real disposition to change.

7.3 Implication of other capabilities

Companies need capabilities to pursue their goals of creating and delivering value to customers. We observed that in order to compete in fast-paced environments, multinationals need to develop and nurture dynamic capabilities to be able to renew their operational capabilities. The analysis conducted in this paper follows Teece's second typology (2007) based on the sense, seize and transform capabilities that have to be in place to address rapidly changing environments (Teece et al., 2016). However, in line with the objectives of the framework, three other types of capabilities could be considered: removing capabilities, reconfiguring capabilities and orchestrating capabilities. During the transformation phase the resources and activity systems are reconfigured, and some might be removed. To make this change achievable, a well-structured orchestration process should be in place in order to align the change of resource components and the sub-processes in the activity system.

Reconfiguring capabilities refers to the reconfiguration of the resource base and the ability to decide which resources should be within the firm and which ones should be outsourced. Removing capabilities refers to the ability to identify the resources that would need to be changed, build, reconfigured or removed. These two capabilities might be seen as a finality to the concept of dynamic capabilities. Finally, while the sensing, seizing, transforming, reconfiguring and removing may be considered independently, they have to be arranged and coordinated in an agile way. Hence, the orchestrating ability surrounding the framework allows to align all these competencies and to ultimately lead to value creation.

8. Conclusion

8.1 Concluding statement

The need to specify the dynamics of the processes underlying resource development and differentiation has resulted in the dynamic capabilities construct which refers to a firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environment (Teece et al., 1997). Dynamic capabilities can be considered a distinct subset of organizational capabilities; specifically, they are those capabilities that can effect change in the firm's existing resource base, its ecosystem and external environment as well as its strategy. This paper aims to understand the strategic mechanisms that can be applied by incumbent multinationals to promote the development and most importantly the preservation of dynamic capabilities. This paper takes Teece's (2007) conceptualization of dynamic capabilities as a starting point and reports to the longitudinal case study of the Norwegian mobile operator company Telenor. The empirical work conducted in this research paper contributes to the lack of empirical studies regarding the practical application of Teece's framework to real business case.

In order to answer the research question, qualitative data was collected though the interview of seven managers belonging to the research unit of Telenor. The empirical analysis of these data allowed the identification of several capabilities possessed by the research unit and used to advice the senior management on corporate strategy or to directly implement change at the operational level. The results suggest that Telenor Research possesses the capabilities required to sense and seize new business opportunities or threats. The development of these capabilities is highly supported by the open innovation philosophy that drives the Group activities. Telenor Research is able to develop knowledge on key business topics that can be transferred to the business unit or to the senior management to further be transformed into direct business value, through its research projects within artificial intelligence, the Internet of Things or 5G and through its commitment towards important business actors.

However, the incumbent position of Telenor somehow restrains its activities and moderators such as legacy, scale or funds add further difficulties to the development of dynamic capabilities.

The study also reveal that Telenor Research is not in charge of the transformation of knowledge into business value. Even if the research unit contributes to the process and could be more or less involved in the implementation phase, depending on the topic, the analysis conducted in this paper does not enable an evaluation of the transformative capabilities of the company. This consequently leads to the conclusion that even if Telenor Research possesses specific capabilities that allow the unit to perform good sensing and seizing activities, the unit cannot be considered as a dynamic capability in its own right. However, this does not mean that Telenor at large is not equipped with dynamic capabilities, since the transformation capabilities may lie in other business units' activities.

8.2 Direction for further research

To consider whether Telenor at large is equipped with a dynamic capability cannot be concluded based on the data collected through this research project. The specific capabilities identified in this research revealed that Telenor Research does not possess a fully fledge transformation capacity. Whether these capabilities are present in the business side of the organization can only be concluded with more research focused on the business side activities of Telenor Group.

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Appendixes

Appendix A: Interview guide

CONTEXT Settings	**1) What is your role in Telenor Research?** ▪ <u>Purposes</u>: Quick overview of the participants' position to be able to understand their profiles. **2) For how long have you been working for Telenor?** ▪ <u>Purposes</u>: Allows to identify participants who were already working for Telenor in the 1990s' and thus allows me or not to ask questions regarding the past status and goals of the Research unit. **3) How would you define Telenor Research position within the Telenor Group?** ▪ <u>Purpose</u>: Understand what Telenor Research brings to the Group and how does the unit contributes to growth. **4) How would you describe Telenor Research strategy?** ▪ <u>Purpose</u>: Might be relevant to compare participants' vision about the strategy of their business unit. Do managers all pursue the same goal?
SENSING Ability to identify opportunities	**5) What is the actual position of Telenor in its business environment (e.g. competitive leader, good reputation, innovative company, good partner)?** ▪ <u>Purpose</u>: Measure participants' awareness of the current threats and up-coming radical change of the telco industry. ▪ <u>Theme concerned</u>: Sensing ▪ <u>Expected codes</u>: End-users relationships, Disruption, Opportunities, Threats and Technological change. **6) Telenor evolves in a business context where radical change and disruption seems to be the guiding themes. Do you think that, in this uncertain and unstable environment, Telenor Research is still able to identify business opportunities or threats?** ▪ <u>Purpose</u>: How does the unit adapts its daily research activities while facing uncertainty. What is the unit strategy to stay up-to-date? ▪ <u>Theme concerned</u>: Sensing ▪ <u>Expected codes</u>: Opportunities, Technical change **7) How is the annual research portfolio designed? Are the research topics**

coming from internal or external sources or a mixt of both?

- ▪ <u>Purpose</u>: Dynamic capabilities relies on internal as well as external inputs, so here I aim to understand the balance between the internal and external sources of knowledge.

- ▪ <u>Theme concerned</u>: Sensing

- ▪ <u>Expected codes</u>: Collaborations, Portfolio

8) **How are research project' time-scale defined?**

- ▪ <u>Purpose</u>: Evaluate how Telenor Research interacts with its environment and how frequently it up-dates its research portfolio.

- ▪ <u>Theme concerned</u>: Sensing

- ▪ <u>Expected codes</u>: Disruption, Technological change, Portfolio

9) **While sensing your business environment, do you mainly focus on Scandinavian areas? To what extend do you include the Asian markets?**
  - ▪ <u>Purpose</u>: Putting the Asian market aside, would be a limit to the development of dynamic capabilities.
  - ▪ <u>Theme concerned</u>: Sensing
  - ▪ <u>Expected codes</u>: Market volatility, Opportunity, DNA

10) **What is your understanding of the term "radical change"? What type of radical change Telenor could or have faced?**

- ▪ <u>Purpose</u>: To what degree managers think that the upcoming change will impact Telenor business activity?

- ▪ <u>Theme concerned</u>: Sensing

- ▪ <u>Expected codes</u>: Radical change, Disruption

SEIZING Ability to go ahead with opportunities	11) **To what extent to you think that the open innovation philosophy adopted by the Telenor Group supports your research activities?** ▪ <u>Purpose</u>: The open innovation approach has been defined as an antecedent to the concept of dynamic capabilities. Thus, if Telenor Research is able to create value from exploiting this philosophy, it could support the existence of dynamic capabilities. ▪ <u>Theme concerned</u>: Seizing ▪ <u>Expected codes</u>: Open innovation, Collaboration

12) What are the advantages or disadvantages of following an open innovation approach?

- Purpose: Does the approach bring value to Telenor Research?
- Theme concerned: Seizing
- Expected codes: Open innovation, collaboration

13) To what extent do you think that the numerous partnerships/alliances Telenor Research engages in benefit your work? Could you refer to specific examples?

- Purpose: Collaboration with external partners is key to the dynamic capabilities framework.
- Theme concerned: Seizing
- Expected codes: Collaboration, Research portfolio

14) How do you control knowledge leakage while collaborating and opening your research work?

- Purpose: How do Telenor Research controls de main risk linked to open innovation approach? Knowledge leakage could impact the company competitive advantage.
- Theme concerned: Seizing
- Expected codes: Collaborations

15) How mixed (i.e. in term of competences and backgrounds) are the teams assigned to particular projects?

- Purpose: Are researchers not to focus on their specialty and thus are not able to develop knowledge about other research topics linked to the telco industry and the future challenges of the company?
- Theme concerned: Seizing
- Expected codes: Research portfolio, Experts

16) Do you feel, in some ways, pressured by the BoD or stakeholders to deliver quick results?

- Purpose: What type of working environment is set by the management team (i.e. result oriented, innovation oriented). The management style is an important determinant to the concept of dynamic capabilities.
- Theme: Seizing
- Expected codes: Managerial actions, Pressure

TRANSFORMING Create value through innovative change	**18) How is intra-organizational resource transfer performed? To what extend the knowledge developed is transferred to the Asian business units?** ▪ <u>Purpose</u>: Knowing that internal communication and knowledge transfer increase the level of creativity, innovation and performance of a BU. ▪ <u>Theme</u>: Transforming ▪ <u>Expected codes</u>: Knowledge transfer **21) From a general point of view, what impact do your research work has on the other BUs? What type of resources or knowledge to you transfer to them?** ▪ <u>Purpose</u>: Measure to what extend Telenor Research contributes to the other BUs' value creation? ▪ <u>Theme</u>: Transforming ▪ <u>Expected codes</u>: Deploy, Generic knowledge **22) How is Telenor Research knowledge transformed into corporate value?** ▪ <u>Purpose:</u> Explore whether Telenor Research is able to create corporate value by itself or does the knowledge it creates has to be match with other BUs capabilities to create value. ▪ <u>Theme:</u> Value creation ▪ <u>Codes:</u> Direct business value, Indirect business value **23) In the past years, to what extend Telenor Research has been able to impact the operational capabilities of the Group due to its research activities?** ▪ <u>Purpose</u>: Dynamic capability is not a concept that appears all of a sudden but is rather something with a long-term view. Thus, dynamic capabilities should already be embedded into Telenor Research since some time. ▪ <u>Theme</u>: Transforming ▪ <u>Expected codes</u>: Deliverable
CONCLUSION Dynamic capabilities as a whole	**24) Do you think that there is a correlation between Telenor Research management style and Telenor Research performances?** ▪ <u>Purpose</u>: Does Telenor Research management style fits with the dynamic capabilities framework? ▪ <u>Theme</u>: Limits ▪ <u>Expected codes</u>: Legacy, Pressure

	25) Do you think that belonging to a large and profitable multinational is an advantage while evolving in a fast-paced business environment?
	
	    ▪ <u>Purpose</u>: Is there any advantages of being an incumbent?
	    ▪ <u>Theme</u>: Limits
	    ▪ <u>Expected codes</u>: Scale, Legacy, Financials
	
	26) Do you consider Telenor as an innovative leader?
	
	    ▪ <u>Purpose</u>: Do employees have faith in their company's capabilities to face radical change?
	
	27) Do you think that Telenor Research can be considered as a dynamic capability for the Group?
	
	    ▪ <u>Purpose:</u> Do employees believe that their unit is a dynamic capability.

TELENOR RESEARCH
 	
First radical change
	28) What have been the key success factors of Telenor in the 1990's when the company went through a major organizational change (from a state-owned company to a privately held one)?
	
	    ▪ <u>Purpose</u>: Understand how the unit changed over time.
	
	29) How did Telenor Research contribute to the successful transition?
	
	    ▪ <u>Purpose</u>: implications of the Research unit when dealing with organizational change.

Appendix B: Coding template

1. Sensing
   a. Disruptive innovation
   b. DNA
   c. Future oriented
   d. Market volatility
   e. Opportunity
   f. Threat
2. Seizing
   a. Collaboration
   b. Ecosystem
   c. Experiment
   d. Failure
   e. Knowledge flow
   f. Open–innovation
   g. Portfolio
   h. Project
3. Transforming
   a. Absorptive capacity
   b. Deliverable
   c. Deploy
   d. Generic knowledge
   e. Knowledge transfer
   f. Responsibility
4. Limits
   a. Data
   b. Distance
   c. Expectations
   d. Financials
   e. Legacy
   f. Pressure
   g. Scale
   h. Time
5. Balance
   a. Responsibility
   b. Sensing and seizing
   c. Transforming
   d. Strategy
6. People
   a. Expert
7. Value creation
   a. Direct business value
   b. Indirect business value